

A. Environmental and Social Review Summary

1. General information on the scope of the IIC Environmental and Social Review

This report provides a summary of the results of the review of a number of documents produced by Gas Natural Atlántico S. de R.L. (“GANA”) and two field visits carried out in October 2015 and February 2016. The documents reviewed include: i) the category III environmental impact study (EIS) of the Costa Norte project; ii) the category II EIS of the project for connecting the Costa Norte project to the national electrical system; iii) analysis of the cumulative impacts of the Costa Norte project; iv) sample and analysis of marine sediments at the Manzanillo 3 disposal site, Colón province; v) descriptive study of the fisheries activity in the vicinity of the Costa Norte project; vi) analysis of the safe fill level - final report; vii) environmental site evaluation (ESE), phase II - preliminary status report and soil survey report; viii) GANA organizational structure; ix) occupational safety and health plan; and x) socio-environmental diagnostic for the communities in three locations where the AES Colon plants operate.

The visits included meetings with representatives of: i) GANA and AES’s environmental and social teams; ii) the Ministry of the Environment; iii) the Panama Canal Authority; iv) the Panama Maritime Authority; v) Panama Ports; vi) the Smithsonian Institute; and viii) the residents of Colón and of the towns located within the Project’s area of influence. The visits also included field visits in the place where the Project would be located.

2. Environmental and social classification and rationale

According to the IIC’s Environmental and Social Sustainability Policy, the Project has been classified as a Category A operation, as it could have highly significant environmental and social impacts and risks including : i) alteration of surface and sea water quality due to the increased movement of sediments (erosion); ii) resuspension of sea bed sediments contaminated with heavy metals resulting from the dredging operations, and the disposal of dredged material; iii) risks of spills during the construction and operation phases, especially at the facilities located in marine areas; iv) changes in air quality due to increased emissions (PM10, PM2.5, SO2, NO2, CO); v) increased noise levels; vi) potential effects on land and natural resource use by neighboring communities (small-scale or informal fishing); vii) health and safety risks to neighboring communities, including risk of explosion; viii) increased pressure on public services; ix) possible effects on the lifestyle of the local population; and x) increased social or labor expectations.

3. Environmental and Social Context

The project’s area of influence is located in a heavily modified area in the northeast section of the Panama Canal and characterized by the traffic of ships entering and exiting the Canal in the Atlantic section and by commerce, due to the existing port and fueling area. This area has two large sections: one land, the other marine.

The land section (23.54 hectares), located in the Panama Canal Compatibility Area including commercial and industrial-use land, involves a built-up area where previously a solid waste incinerator plant was located, as well as a small coastal area of about 2.7 hectares containing secondary mangrove growth.

The marine section (154.06 hectares) includes the area where a dock and maneuvering zones will be located, requiring dredging (92.23 hectares); and a site for the final disposal of dredged material (61.83 hectares). The latter area is located in Limón Bay, approximately 8.7 km from the Project site. According to the land

use plan of the Panama Canal Authority (ACP), it is inside the area designated for anchoring ships waiting to pass through the Canal. The location is also not within any areas designated for fishing use.

No protected areas or critical natural habitats are found within the area of influence. The neighboring populations, comprising four neighborhoods in Cristóbal (Ciudad Arco Iris, Cristóbal, Margarita, and Puerto Escondido or Barriada El Esfuerzo) and Barrio Norte and Barrio Sur in the city of Colón, have dense populations and medium to severe overcrowding. Although they are located in an economic context of industrial activities and logistics and port services interspersed with retail commerce, the quality of life in these populations is generally low due to the urban decay of the city and its surroundings, poor health, unemployment, and poverty, which in turn lead to a lack of educational opportunities, an increase in violence, and other significant social problems.

4. Environmental risks and impacts and proposed mitigation and compensation measures

4.1 Assessment and Management of Environmental and Social Risks and Impacts

4.1.a Environmental and Social Management System

AES Colón has not developed a specific Environmental and Social Management System (ESMS) for the Project. However, it does have a corporate environmental management framework for implementing and maintaining ISO 14001-compliant systems in all its operating businesses.

4.1.b Policy

AES Corp. has a Corporate Environmental Policy that rests on four pillars: i) meeting or exceeding national legal requirements and the requirements of financial institutions; ii) meeting or exceeding AES Corp.'s environmental standards; iii) planning and budgeting investments that enable sustainable environmental results; and iv) making an effort to continue improving environmental development across all projects. The EIS for the terminal and the plants gives an overview of the Project's environmental policies.¹

4.1.c Identification of risks and impacts;

The EIS for the terminal and the plants (classified category III under Panamanian law²) was approved by the Ministry of the Environment on February 25, 2016. The EIS for the transmission line (classified category II) is being reviewed by the environmental regulator.

Most of the environmental impacts of the LNG Terminal and Plant have been regarded as moderate or low, and they are associated with: i) impact on air quality; ii) an increase in noise and vibration levels; iii) soil

¹“Perform all the planning, construction, operation, and decommissioning activities for the Project and manage the associated environmental and social risks and impacts in a way that respects and protects the natural, social, and cultural environment and that fosters the sustainable development of the natural resources in the Project area; maintain communications with the surrounding communities affected by its operations and ensure they remain informed of all the Project activities that could affect them, in compliance with Panama’s regulatory framework and with the relevant international regulations and standards.”

² Executive Decree No. 59 regulates Law 41 of 1st and establishes three project categories: Category I, which do not have a significant environmental impact, comply with existing environmental legislation and do not involve environmental risks; category II, whose execution could cause significant negative environmental impacts that partially affect the environment and that can be eliminated or mitigated with well-known and easy to apply measures in order to comply with the environmental regulations in force; and category III, whose execution could have qualitatively or quantitatively significant negative environmental impacts meriting deeper analysis to evaluate their impacts and establish a corresponding environmental management plan.

compaction and contamination; iv) alteration of water quality and drainage patterns; v) loss of vegetation and wildlife habitat; and vi) adverse effects on forests. However, the following impacts have been classified as highly significant ones: i) alteration of surface and marine water quality due to the increased movement of sediments (erosion); ii) resuspension of sea bed sediments contaminated with heavy metals resulting from the dredging operations and the disposal of dredged material; iii) building of facilities in marine areas; iv) risks of spills during the construction and operation phases; v) pressure on public services; iv) effects on the local population's lifestyle; and vii) increase in social and/or work expectations.

As for the transmission line, overall adverse environmental impacts have been qualified as low or moderate during the construction phase, and low during the operation phase. However, any impacts associated with nuisances or inconveniences impacting people residing along the urban legs of the transmission line layout, or potential changes in land use of some land parcels, and any possible occupational health and safety impacts have been regarded as moderate.

4.1.d Management programs

The Project³ has an environmental management plan (EMP) which consists of the following programs: i) air quality, noise and vibration control; ii) soil protection (control of soil subsidence, landslides, erosion, compaction, pollution, and runoff pattern changes); iii) water resource protection (control of changes in surface, ground, and marine water quality); iv) protection of land flora and fauna (control of vegetation cover loss, land habitat loss, adverse effects on fauna, animals struck by vehicles, poaching); v) water ecosystem protection (control of pelagic and benthic community disturbances, affected water habitats, especially for the terminal and power plants); vi) socioeconomic and cultural issues (health and safety, public services and community lifestyles, managing expectations, boosting job creation, incentives for national economy growth, landscape quality, known and unknown archeological sites); and vii) waste management (solid waste, hazardous waste); hazardous and non-hazardous materials management program. It also includes the following: i) environmental monitoring; ii) community involvement (outreach and consultation strategy, key stakeholder mapping, outcomes); iii) rescue and relocation of fauna and flora; iv) risk prevention; v) contingencies; vi) environmental education; and vii) environmental recovery and decommissioning. The EISs include a budget for environmental and cultural heritage management.

4.1.e Organizational capacity and competency

The Project's organizational structure includes AES Colón as the parent company, Costa Norte LNG Terminal (CONO) as the company responsible for the terminal and the LNG regassification plant, and Gas Natural del Atlántico (GANA) as responsible for the thermal plants and transmission line. So far, AES Colón has a managing director, a project director, an environmental compliance manager, and a security manager. GANA and CONO also each have a construction manager and an environment, safety, and health manager (ESH). The hiring process for the safety specialist is underway.

³ Two EISs will be put in place: one for the terminal and generation plants and the other for the transmission line.

AES Colon, which will be directly in charge of managing the social aspects of the Project, will also have a construction management team to monitor the environmental and health and safety performance of the EPCs.⁴

The EPC for the terminal and the plants is held by POSCO, a multinational company of Korean origin that, under the contract, must hire a general manager for the environment, health, and safety; a site environment, health, and safety manager; several environmental engineers; a safety supervisor/manager; and a permitting manager. It will also have a safety committee. The EPC for the transmission line will be selected in May 2016.

4.1.f Emergency preparedness and response

Panama has four regions or zones that are under threat (Azuerro, Occidental, Metropolitana, and Oriental); Norte de Colón is not among them. The site where the terminal and power plants are to be located is subject to some tectonic risk, as well as—to a greater degree—flooding as a result of overflowing rivers and ravines. Some parts of the transmission line route are subject to landslides exacerbated by the heavy rains that characterize the area. In general, this risk from natural events is considered to be either low or very low.

To manage risks the Project faces due to its location, AES Colón has designed the works it will carry out to include the measures necessary to reduce its vulnerability to the aforementioned natural threats. These measures include: i) structural reinforcement of certain elements to resist seismic loads; ii) placement of the power transmission towers in areas little exposed to landslides; and iii) raising the elevation of the construction and laying a drainage network in the area where the terminal and power plant structures will be built.

The project's environmental, social and occupational safety and health management system has a number of contingency plans and other management instruments enabling the prevention of emergency situations and reaction to them should they occur. The subsystem for preparing for and responding to emergencies is to include regular drills and simulations. The former will allow mainly for evaluation of response times to common events while the latter are to evaluate communications systems and protocols for making decisions in more serious emergency situations that cannot be prepared for with drills.

4.1.g Monitoring and review

Monitoring and evaluation of the project's environmental and social performance will be conducted in redundant layers that include the following social and environmental teams: i) the EPC holder; ii) GANA; iii) CONO; iv) AES Colón; v) the Ministry of the Environment; and vi) the private and multilateral banks financing the project. This follow-up and evaluation system will also include follow-up and monitoring with community participation, as well as any monitoring that the Panama Canal Authority's environmental and social team can carry out.

4.1.h Stakeholder engagement

4.1.h.i Stakeholder analysis and engagement planning

⁴Engineering, procurement, and construction contract.

The EISs for the terminal and plants and for the transmission line identify the types of stakeholders that may have an interest in the project. Nevertheless, AES Colón has contracted the National Association for the Conservation of Nature (Asociación Nacional para la Conservación de la Naturaleza, ANCON) to perform a socio-environmental diagnostic. The contract includes a requirement of mapping key social actors and developing methodology and processes for involving them. To date, however, this plan and the procedure for providing regular updates on the Project's progress to the affected communities is still being prepared and will be a prerequisite for the construction of the Project to proceed.⁵

4.1.h.ii Disclosure of Information

Information on the project has been disseminated in different ways: i) through various informational, consultative, and dissemination workshops; ii) with fliers and signs placed at strategic points in the neighboring communities; iii) through the web pages of the Inter-American Development Bank (IDB),⁶ Panama's Ministry of the Environment,⁷ and the IIC.

4.1.h.iii Consultations

Panamanian law (Decree 123 of August 2009) requires all category 3 projects carry out a consultation process or a hold a public forum to communicate details about the project to the populations in the area of social influence. Also, the provisions of the IIC's Environmental and Social Sustainability Policy have been complied with.

4.1.i External communications and grievance mechanism

The project does not yet have a mechanism for the community to communicate grievances and complaints. The mechanism must be submitted as a prerequisite to moving forward with the works planned and should include the following: i) a mechanism for collecting complaints and grievances in different formats (verbal, explicit, electronic, anonymous, etc.); ii) an analytic process that enables the person presenting the complaint to monitor its status; iii) a protocol for executing corrective actions when the complaint submitted is found to be valid; iv) a mechanism for communicating the result of the analysis of the complaint to the person who filed it; and v) the full mechanism must be reviewed and approved by the residents.

4.2 Labor and Working Conditions

4.2.a Working conditions and management of labor relations

AES Corp. has a corporate code of conduct (AES Values from Words to Action) that describes its five core corporate values on work and safety: i) public safety first; ii) act with integrity; iii) honor commitments; iv) strive for excellence; and v) have fun through work.

⁵See Environmental and Social Action Plan

⁶www.iadb.org/Document.cfm?id=39914187

⁷ On the page <http://consulweb.anam.gob.pa/eia/listaeia.aspx> do a search for category 3 projects, year 2015 (no month) and then select "Proyecto Costa Norte."

AES Colón has not developed human resources policies and procedures specific for the Project that deal with issues related to employment, salaries and benefits, work hours, compensation, and other issues. However, it has expressed that the policy to be adopted, in keeping with AES Corp.'s policies on the topic, includes non-discrimination in the workplace (on the basis of gender, sexual orientation, religion, nationality, etc.) and equal opportunities for all its personnel.

One of the requirements is that prior to starting work, AES Colón must present evidence of an internal mechanism for complaints and grievances that enables any of its employees to file complaints and grievances when they feel any of their labor, health and safety, or community rights have been violated. Also, sixty days prior to the completion of the project's construction phase, a plan must be presented for demobilizing the staff that will not be providing services during the operation phase.

4.2.b Protecting the work force

The Project will abide by Panamanian law prohibiting forced labor and the hiring of minors. There is therefore virtually no possibility any forced or child labor will be used on the project.

4.2.c Occupational health and safety

AES Corp. has developed more than 50 health and safety policies and procedures applicable to all its worldwide operations intended to guarantee a safe and healthy working environment for its employees while taking into account the risks inherent to the sector. AES Colón is in the process of updating these protocols to reflect the risks and impacts specific to the Project.

4.2.d Workers engaged by third parties

The requirements of the POSCO contract (the EPC for the terminal and the plants) include protection of labor and worker rights pursuant to Panamanian law and IFC performance standard 2. The agreement also spells out the need to establish a mechanism for responding to worker complaints.

4.3 Efficient resource management and pollution prevention

4.3.1 Efficient resource use

4.3.a.i Greenhouse gases

The methods and models used to determine the potential for pollution of the construction and operation of the terminal and the plants included the use of historical information on air quality through measurement of particulates (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂), ozone (O₃), and sulfur dioxide (SO₂).

For the construction phase, the EIS, which included modeling of the dispersion of the plume of these compounds, finds that gases will be generated (CO₂, CO, NO_x, and SO₂) through combustion as a consequence of the groundwork, excavation, fill, moving of materials and equipment, and dredging work. However, it considers these impacts to be moderate.

To assess the potential impact on air quality during Project operation, it used the United States Environmental Protection Agency's Industrial Source Complex Version 3 – Short Term (ISCST3) model

to establish the dispersion of the pollutants (SO₂, NO₂, CO, and PM₁₀) that would be emitted into the atmosphere from the power plant's stacks. The results indicate that the concentration of these pollutants is below the maximum levels indicated in the World Bank Group's ESH guides and the draft environmental air quality rules.

A preliminary calculation finds that the plant would emit around 1.66 million tons of CO₂ per year to produce an estimated 3,000 GWh. Although this figure seems high, it is considerably lower (72%) than the amount of CO₂ that a coal power plant (2.86 million tons) or a petroleum power plant (2.23 million tons) would emit.

4.3.a.ii Water consumption

Aside from domestic use (estimated at 0.6 l/s), the project will not consume water other than in the form of water vapor produced during cooling of the power generation equipment. Sea water will be used for that purpose, and almost all of it will be returned to the ocean.

4.3.b Pollution prevention

The most significant impacts identified in the EIS with regard to water resources and the marine environment have to do with the dredging (removal and placement of the sea bed) and the thermal discharge that will take place during the Project's construction and operation. The sediment and thermal plumes were determined using mathematical models that simulated different operating scenarios for the terminal and the plants, along with various conditions for the tides, winds, and marine currents.

Regarding the dredging activities, the main concern mentioned in the EIS has to do with the increase in turbidity of the water and sediment concentration. With regard to the impacts associated with the discharge of hot water from the cooling systems of the power plants, the main concern has to do with possible impacts on marine flora and fauna from the increase in temperature.

To mitigate the former impact, the EIS recommends using specialized equipment⁸ to reduce the sediment plume during removal of the marine soil and the selection of a site approved by the ACP for disposal of dredged material. To mitigate the effects of the thermal plume, the discharge piping will include difusers with nozzles to increase the mix area and comply with Panamanian law and the World Bank Group's ESH Guide.

The studies on noise and vibration carried out for the terminal and the plants⁹ include evaluation of occupational noise (worker exposure) and off-site ambient noise. Regarding the former, the studies conclude that noise levels exceed local and international standards. To mitigate this effect, the EIS suggests using personal protective equipment and limiting the amount of time workers are exposed to such excessive noise. With regard to exterior noise, the results of the model indicate that only in an extreme and unlikely scenario in which all six turbines are running at maximum speed while at the same times winds are blowing from the west at speeds greater than 3.2 m/s can the maximum noise level of 50 dBA as established in

⁸ Initially a self-propelled dredge. Should one be needed and depending on the texture of the sediments, a stationary dredge (a clam dredge or similar) will be used, with its corresponding transport barge.

⁹ Panamá AES Costa Norte Project Noise Analysis Draft, AECOM 2016.

international standards be surpassed in the closest populated areas. The rest of the time, and under more common circumstances, exterior noise is under the limits established in the standards.

North of the plants is an inactive incinerator owned by Servicios Tecnológicos de Incineradores (STI), which is currently in the process of being relocated. Preliminary sampling suggests that the area where the incinerator is located could become an environmental liability unless STI effectively executes its decommissioning plan. To verify this, the Ministry of the Environment is planning to conduct an audit.

The marine sediments in the dredging area have concentrations of arsenic, copper, nickel, and mercury that are above the maximum levels allowed. The marine sediments in the area where the dredged material is to be deposited have concentrations of arsenic and copper that also exceed the standards of reference. There is no mitigation plan for this situation, but there is a monitoring plan that will enable detection of any future change in these concentrations.

4.3.b.i Waste

The terminal and the power plants combined will produce 0.5 and 0.13 l/s of domestic sewage during construction and operation, respectively. During construction, the liquid effluent will be collected through use of portable toilets. During operation, the effluent will be managed locally in a treatment plant¹⁰ to be built for the Project. The domestic sewage generated during construction of the transmission line will be handled using portable bathrooms.

The common¹¹ and hazardous¹² solid waste will be collected and stored in locations prepared for such purpose, then taken away and disposed of by specialized companies duly licensed by the Ministry of the Environment. The EMPs include waste handling programs that include minimization and recycling of waste, as well as waste classification and handling, most appropriate and safe transportation of waste, and its final disposal. The hazardous waste management program establishes specific measures for this type of waste that include storage, registration, and training the staff on how to handle it.

4.3.b.ii Hazardous materials management

Management of hazardous materials will be governed by the regulations in force in the Republic of Panama, the most important of which include: i) technical rule DGNTI-COPANIT 43-2001, “Industrial Health and Safety: Health and safety conditions for regulating atmospheric pollution produced in work environments by chemical substances.” Ministry of Commerce and Industries — Office on Industrial Regulations and Technology. Resolution No. 124 of March 20, 2001; ii) Resolution of the Fire Department of Panama, CDZ-003/99 of February 11, 1999, “By which Resolution No. CDZ-10/98 of May 9, 1998 is clarified by amendment of the Technical Safety Manual for petroleum product facilities and petroleum product storage, handling, distribution, and transportation;” iii) Rules of the Dynamiter of the Office on Safety of the Fire Department of Panama of March 10, 1994; iv) Executive Decree No. 354 of December 29, 1948, “On the Use of Arms, Munitions, and Explosives;” v) Resolution No. CDZ-003/99 of February 11, 1999; and vi)

¹⁰The plant meets the requirements of technical rules DGNTI-COPANIT 39-2000 and DGNTI-COPLANIT 35-2000.

¹¹During construction, it is estimated that around 0.75 m³/day will be produced.

¹²Includes waste that is corrosive, reactive, toxic, explosive, flammable, infectious, or radioactive, such as batteries, used oils materials contaminated with oils and fats, sludge, and contaminated containers.

regulations on the handling and storage of flammable liquids, solvents, and fuels of the Government of Panama (Law 6 of 2007 regarding Regulations on the Handling of Oily Waste Derived from Hydrocarbons or Synthetics on the National Territory).

These provisions have been incorporated into the Project's Hazardous Materials Management Plan that forms part of the EMP.

The Project will not use pesticides, aside from small amounts for weed control in its gardens.

4.4 Community Health and Safety

4.4.a Community health and safety

The Project has been designed by qualified professionals who have proven experience designing and building projects of similar complexity. Also, AES Corp. has experience developing and operating these types of projects in Panama.

The Project is not expected to present a danger to the community, whether in terms of exposing it to potential illnesses through the presence of foreign workers¹³ or by representing a threat in terms of risk management. However, the Project will work with the community to detect any unusual outbreak of illness and train the community in preventing or reacting to circumstances of risk that may arise from the Project.

4.4.b Security personnel

Given the risks to public safety from crime in Colón, the relatively large number of personnel circulating in the immediate area where the infrastructure is to be built, and the sensitivity of the regasification and power generation facilities, the Project will have its own security system. The system will also allow for monitoring the personnel entering and leaving the unloading, LNG storage and regasification, and power generation facilities.

4.5 Land Acquisition and Involuntary Resettlement

The construction of the terminal and power plants will not result in any physical or economic displacement. However, although the design follows corridors that are open and in use, the imposition of the easement strip for the transmission line could potentially affect six pieces of private property whose owners are far from vulnerable.¹⁴

AES Colón has launched the process to free up the easement strip. It involves approaching the owners of the plots that may be affected to negotiate the space needed for the line to pass.¹⁵ Should the negotiation

¹³ It is estimated that the possibility of exposure to outside illnesses is low, as the vast majority of the Project workforce will be hired locally. However, as part of the monitoring expected, especially during the construction phase, the corresponding epidemiological follow-up will be conducted.

¹⁴ These are landholders who own large tracts of land.

¹⁵ The negotiation would include payment for any damages should structures or long-cycle crops (including forests) have to be removed, and for loss of profits should short-cycle crops be affected. The amount of compensation in each case is set in each case by a credentialed expert who calculates the corresponding values at market prices.

fail, there are two options: use an alternative route for the line or start a legal process to impose the easement, with support from the National Utilities Authority.

The Project will not result in any physical or economic displacement of the population.

4.6 Biodiversity Conservation y Natural Resources Management

4.6.a General requirements

The Project has been generally conceived so as to conserve biodiversity and ensure good management of natural resources, with strict adherence to corresponding Panamanian regulations.

4.6.b Protection and Conservation of Biodiversity

The Project's area of influence, located in an area that has been heavily modified by human activity, is characterized by the traffic of ships going in and out of the Canal in the Atlantic section and by land containing heavily modified habitats. It therefore has no great ecological or ecosystemic value, and the main activity there is commerce, due to the existing port and fueling area. The Project consequently involves no material risks to or significant impact on biodiversity or natural or critical habitats. Despite this, the Project's EMP includes a series of programs for protecting the value that these areas do have, including: i) programs for protecting land flora and fauna (control of vegetation cover loss, forest conservation, land habitat loss, adverse effects on fauna, animals struck by vehicles, poaching); ii) water ecosystem protection (control of pelagic and benthic community disturbances, affected water habitats); iii) a plan for rescuing and relocating fauna and flora; and iv) measures for managing seabed flora and fauna.

4.6.c Modified, natural, and critical habitat

The Project's construction will require the use of a rectangular strip of mangrove approximately 30 meters wide by 546 meters long (approximately 2.7 hectares). This area has been rated of medium environmental importance, for which reason based on the corresponding environmental license, AES Colón shall pay environmental authorities an ecological indemnification of US\$26,490 for the loss of this ecosystem. It will be required to restore the area used in a ratio of 1 to 10—that is, it must develop a program to restore mangrove and plant approximately 30 hectares. Complementary to this, it also must prepare a fauna and flora rescue and relocation plan and present it for the approval of the Ministry of the Environment's Office on Wildlife and Protected Areas.

4.6.c.i Legally Protected and Internationally Recognized Areas

A section of approximately 1.8 km of the transmission line—located partially within the right-of-way of the Panamá-Colón highway—will cross the Gatún Lake recreational area. This area, which is part of Panama's National Protected Areas System, is categorized as Category V¹⁶ by the International Union for Conservation of Nature (IUCN), meaning it is not an area set aside strictly for the protection of biodiversity.

4.6.c.ii Invasive Alien Species

¹⁶The objective of the category of “protected landscape and protected seascape” is to protect and maintain important landscapes and seascapes and conserve the nature associated with them, while protecting other values created through interaction with human beings via traditional management practices.

The Project will not use or introduce invasive alien species.

4.6.d Management of Ecosystem Services

The Project will not affect the fishing activities currently carried out in Manzanillo Bay. The loss of approximately three hectares of mangrove will not have a significant impact on the ecosystem services associated with them. The transmission line will not materially affect the ecosystem services that the Gatún Lake recreational area currently provides.

4.7 Indigenous Peoples

The Project's direct and indirect areas of influences (terminal, plants, and transmission line) do not affect ancestral lands or areas belonging to indigenous communities.

4.8 Cultural Heritage

The archeological review performed on the surface of the land area and the bathymetric survey conducted in the marine area to be affected by the terminal and the plants did not find any kind of structure or vestiges of elements that could be considered part of Panama's cultural heritage. Likewise, the surface and subsurface surveys to detect traces of what could be considered cultural or historical heritage came back negative.

However, the terms of the construction contracts state that the environmental management plan that every contractor is required to submit before starting work must comply with performance standard 8 and ensure that the plan for chance finds is implemented pursuant to international best practices and in compliance with the Custody, Conservation, and Management of National Cultural Heritage Act.¹⁷

5. Local Access to Project Documentation

Project documentation can be accessed through the following link:<http://www.iadb.org/en/projects/project-description-title,1303.html?id=PN-L1123>.

6. Environmental and social action plan

The Environmental and Social Action Plan (ESAP) for the project is summarized as follows:

¹⁷Law 14 of May 5, 1982

COSTA NORTE PROJECT

Environmental and Social Action Plan (ESAP)

(Consolidated – Abril 4, 2016)

1. Pre-operation phase (site preparation)

No.	Topic	Action	Product/Deliverable	Delivery date
ND 1: Assessment and Management of Environmental and Social Risks and Impacts				
P1.1	ESHS policy.	Develop, implement, and revise the ESHS policy specific to the Project, which in order to comply with ND 1 (paragraph 6 in particular) must identify who will be responsible for ensuring compliance and must be communicated to all levels of the organization.	1. Specific policy adopted and in force. 2. Review of ESHS policy	1. Prior to the first disbursement 2. When necessary
P1.2	Second public consultation.	Conduct the second consultation.	1. Copy of the announcement, the minutes, and the meeting attendance.	1. Board approval.
P1.3	Mechanism for managing community complaints.	Develop, disseminate, and implement a mechanism for managing community complaints that includes: i) a requirement to communicate the final decision on the complaint to the complainant; ii) a process through which affected communities can submit complaints or suggestions anonymously; iii) must have been discussed and approved by the community.	1. Copy of updated complaint management mechanism. 2. Copy of the announcement, the minutes, and attendance of the dissemination meetings. 3. Evidence of complaints and grievances received and actions taken.	1. 15 days prior to notice to proceed (NTP) 2. 15 days prior to NTP 3. ESCR reports
P1.4	Plan for stakeholder participation.	Develop and implement a plan for stakeholder participation that includes: i) a procedure for providing Project progress reports and action plan execution reports to affected communities; ii) an up-to-date mapping of interest groups; iii) a procedure for disseminating information on the environmental and social management plans; iv) details on contractors' responsibilities regarding communication with communities and community relations; v) ways and mechanisms for disseminating information on the progress of ESAP implementation and compliance; vi) ways of identifying material information and disseminating it to the communities, including the local hiring plan and the complaints mechanism; vii) ways of communicating the emergency plan; viii) performance indicators and benchmarks; and ix) details of the organizational structure and AES's commitments to the community. Establish information offices within communities	1. Copy of plan for stakeholder participation. 2. Updated organizational chart for the staff responsible for implementing and monitoring, along with their resumes. 3. Report on the actions taken under the participation plan, including information offices. 4. Updated mapping of stakeholders.	1. 15 days prior to NTP 2. June 30, 2016 3. ESCR reports 4. ESCR reports
P1.5	Social Investment Plan.	Develop and implement a social investment plan that includes a description of AES's vision for social investment, focus areas, and the roles and responsibilities of those responsible for its implementation. Internal and external complaint mechanism.	1. Copy of social responsibility plan. 2. Report on actions implemented. Copy of the mechanism	1. 15 days prior to NTP 2. ESCR reports September 2017
P1.6	Permits	Maintain an updated permits table	Table updated	ESCR reports
P1.7	Contingency and Emergency Plans	Prepare and implement the Emergency Preparedness and Response Plan, Contingency and Risk Prevention Plan, and environmental emergency plan: i) include risks to the local population ii) based on technical risk studies, such as HAZOP	1. EPC plans for the construction phase, approved by AES 2. Plans for the operation phase.	1. Fifteen days before the NTP 2. September 2017 3. ESCR reports

No.	Topic	Action	Product/Deliverable	Delivery date
		<ul style="list-style-type: none"> iii) analyze extreme event and climate change scenarios iv) establish efficient communication systems v) establish training and accident simulations vi) take into account the risks of nearby activities 	<ul style="list-style-type: none"> 3. Report on accidents / incidents and actions taken 4. Training and accidents simulation reports 	4. ESCR reports
ND 2: Labor and Working Conditions				
P2.1	Human Resources Policies and Procedures	Develop, implement and review human resources policies and procedures, which in order to meet the requirements of ND 2 must include the rights established by national law and rights related to working hours, wages, overtime, compensation, and benefits, and should be clear and understandable.	1. Human Resources Policies and Procedures	1. Fifteen days before the NTP (15 days before NTP)
			2. Review of policy and procedures.	2. If required
			3. Report on actions implemented.	3. ESCR reports
ND 3: Resource Efficiency and Pollution Prevention				
P3.1	Details on the sources of materials needed for fill.	Provide a list of the origin of the fill materials and the transportation permits.	1. Copy of the permits and maps of the quarry locations.	1. Before the NTP
		Develop and implement a transportation plan to ensure safe transportation of fill materials from their place of origin to the Project.	2. Copy of the transportation and safety plan.	2. Before the NTP
		Monitor the use of the fill materials.	3. Monitoring report.	3. ESCR reports
P3.2	Soil analysis in the area around the incinerator.	Check soil characteristics through a Phase I/II assessment focused on the project area, especially the area around the incinerator	1. Results of soil sampling.	1. August 30, 2016
		Establish what actions STI should take, implement them, and ensure they are being carried out.	2. Remediation plan	2. If required
			3. Report on actions implemented.	3. ESCR reports if necessary
ND 4: Community Health, Safety, and Security				
P4.1	Security policy and protocols.	Develop and implement a Project security policy and plan that includes: (i) background checks for all security personnel, (ii) training for the public security and/or private security officers; (iii) details on the limits on the use of force, (iv) a plan for communicating information on the security plan to the communities, (v) a monitoring and reporting plan, (vi) details on roles and responsibilities and (vii) a complaint mechanism. It must consider both marine and terrestrial risks and be based on the analysis of potential risks associated with the Project and the use of security personnel.	1. Copy of the policy and security protocols for the Project.	1. Fifteen days before the NTP
			2. Review of the policy and protocols.	2. If required
			3. Report on actions implemented.	3. ESCR reports
ND 5: Land Acquisition and Involuntary Resettlement				
P5.1	Acquisition of land on the transmission line route.	Develop and implement a land acquisition framework and benchmark with methodology that: (i) provides for compensating people with rights to the land or who use the acquired land; (ii) takes into account any economic displacement for full land acquisition; (iii) prioritizes land-for-land compensation.	1. Copy of the Framework for Land Acquisition.	1. May 31, 2016
			2. Copy of the Land Acquisition Protocol.	2. July 31, 2016

No.	Topic	Action	Product/Deliverable	Delivery date
			3. Report on actions taken, including a table tracking the status of land negotiations with affected persons.	3. ESCR reports.
ND 6: Biodiversity Conservation and Sustainable Use of Natural Resources:				
P6.1	Compensation plan for converting 2.7 hectares of mangrove.	Prepare and implement a Mangrove Restoration Plan to achieve a net zero loss of the natural habitat and 10-to-1 replacement.	1. Terms of reference for the consultant responsible for developing the plan.	1. 15 days prior to NTP
			2. Copy of mangrove restoration plan that includes details on the compensation site locations.	2. May 31, 2016
			3. Copy of the Ministry of the Environment's approval of the Plan.	3. June 30, 2016
			4. Report on actions implemented.	4. ESCR reports
ND 8: Cultural Heritage				
P8.1	Identification, location, classification, description, and evaluation of architectural and intangible or living heritage.	Present the evaluation of architectural heritage and consultations with non-institutional stakeholders on specific and general cultural heritage resources with a focus on living and intangible heritage.	1. Evidence of architectural heritage evaluation and consultations with stakeholders.	1. May 2016
P8.2	Considerations on local paleontological heritage and its potential, both on land and under the ocean.	Analysis of paleontological potential in the Project area.	1. Evidence of discussion with experts on the Project area's paleontological potential.	1. May 2016

2. Construction Phase

No.	Topic	Action	Product/Deliverable	Delivery date
ND 1: Assessment and Management of Environmental and Social Risks and Impacts				
C1.1	Noise mitigation.	Propose mitigation measures for scenarios in which night construction takes place. Offer measures (consider: wind direction and humidity).	1. Mitigation measures proposed.	1. 15 days prior to NTP
			2. Report on actions implemented.	2. ESCR reports
C1.2	Specifications for major management measures	Produce technical environmental specifications (TESS) for the most important environmental management metrics.	TESS	15 days before the NTP
C1.3	Environmental and Social Management System (ESMS) for the Project:	Based on AES Corp guidelines, develop and implement an integrated ESMS.* In accordance with ND 1, this system must include at least (i) a policy, (ii) identification of risks and impacts,	1. Copy of integrated ESMS and associated procedures.	1. 15 days prior to NTP

No.	Topic	Action	Product/Deliverable	Delivery date
		(iii) management programs, (iv) organizational capacity and competency, (v) emergency preparedness and response, (vi) stakeholder engagement, and (vii) monitoring and review. * Applicable for all Project phases and in accordance with the management of technical and administrative aspects.	2. Report on actions implemented.	2. ESCR reports
C1.4	Monitoring plan for Project construction.	Develop and implement an ESHS monitoring plan for Project construction. Include terrestrial flora and fauna, terrestrial habitats, noise and vibration, emissions, effluents, and socioeconomic aspects, and adequately describe: parameters, frequency, methodology, location of monitoring stations and national and international references, including current IFC guidelines: General ESH Guide - Air: Tables 1.1.1 and 1.1.2, Noise: Tables 1.7.1 and 2.3.1; ESH Guide to Thermal Plants - Effluents: Table 5, Emissions: Table 6 and 7, Electric and Magnetic Fields: Table 8.	1. Copy of the plan.	1. April 30, 2016
			2. Monitoring reports.	2. ESCR reports
C1.5	Participatory monitoring plan.	Develop and implement a participatory monitoring plan with neighboring communities to verify the Project's environmental and social compliance.	1. Copy of the plan. 2. Monitoring reports.	1. October 31, 2016 2. ESCR reports
C1.6	Conformation of Project's ESHS team.	Update the organizational chart, functions, responsibilities and authorities of the ESHS positions for planning, executing, and verifying (auditing) the Project.	1. Copy of the updated organizational chart	1. 15 days before the NTP and ESCR reports
		Provide a timetable for filling the vacant positions.	2. Copy of recruitment schedule.	2. 15 days prior to NTP
		Provide information on the roles, responsibilities and authorities of the EPC's ESHS positions.	3. Copy of the updated EPC chart.	3. 15 days prior to NTP
C1.7	EPC Environmental and Social Management System:	Develop, review and implement an integrated ESMS for the EPC consistent with the principles of ISO 14001 and OSHA 18001, with key performance indicators (KPIs) and including the following plans: i) occupational health and safety; ii) management of air, noise, emissions, greenhouse gases (GHG), effluents, surface and groundwater, and working conditions; iii) waste management; iv) health and safety of the community; v) supply of goods and local workers; vi) transport safety and traffic management; viii) security; ix) participatory monitoring; x) internal and external complaint mechanisms.	1. Copy of each plan and procedure approved by AES.	1. 15 days prior to NTP
			2. Review of plans.	2. If required
			3. Report on actions implemented.	3. ESCR reports
ND 2: Labor and Working Conditions				
C2.1	EPC Human Resources Policies and Procedures.	Review and ensure that EPC human resources policies and procedures meet the requirements of ND 2, meaning they must incorporate the rights included in national law and the rights related to working hours, wages, overtime, compensation, and benefits. They must also be clear and understandable.	1. Copy of policies and procedure approved by AES.	1. 15 days prior to NTP
			2. Review of policy and procedures.	2. If necessary
			3. Report on actions implemented.	3. ESCR reports
C2.2	Local Plan for the construction phase.	Develop and implement a local hiring plan for the construction phase that includes: i) procedures for equitable and non-discriminatory hiring of men and women; ii) registration of local employees by community; iii) preferential hiring process for residents of affected communities and/or members of the surrounding communities; iv) details on the number of employees from outside the zone of influence and where they reside (including information on the transport of these employees; v) detailed training programs for local employees; vi) key	1. Copy of local hiring plan.	1. 15 days prior to NTP
			2. Report on actions implemented.	2. ESCR reports

No.	Topic	Action	Product/Deliverable	Delivery date
		performance indicators (KPIs); vii) complaints mechanism for workers; and viii) roles and responsibilities of workers.		
C2.3	EPC workplace health and safety protocols for the Project.	Based on the guidelines of AES Corp, develop and implement workplace health and safety policies, procedures and protocols specific to the Project.	1. Project health and safety policies, procedures, and protocols approved by AES. 2. Report on actions implemented.	1. 15 days prior to NTP 2. ESCR reports
C2.4	EPC workforce demobilization plan.	Approve a demobilization plan for the contractors prior to completion of construction of the work.	1. Workplace demobilization plan approved by AES. 2. Report on actions implemented.	1. Minimum of 60 days before the end of construction 2. ESCR reports
C2.5	Internal EPC mechanism for receiving complaints.	Review and implement the <i>Hablado Seguro</i> program and other internal complaint mechanisms that comply with ND 2. In particular, they should: i) ensure anonymity; ii) establish committees to evaluate claims; iii) prepare reports on actions taken; iv) integrate with contractors' own mechanisms.	1. Internal complaint management mechanism approved by AES. 2. Report on actions implemented.	1. 15 days prior to NTP 2. ESCR reports
C2.6	Plan for monitoring aspects of working conditions	Key features of the plan for monitoring aspects of working conditions: i) results of internal audits of contractor activities ii) outcome of internal audits of the housing conditions of migrant workers	1. Report on actions implemented.	1. ESCR reports
ND 3: Resource Efficiency and Pollution Prevention				
C3.1	Dredging plan, including the management of associated sediments. In addition, the study of sediment quality in the dredging area included few samples and only from the surface.	Improve dredged material dispersion studies considering: (i) expansion of the Panama Canal; (ii) use of three-dimensional model. Expand baseline data on the dredged material: take nine deeper samples at the same six locations. Develop a dredging plan with the contractor that includes sediment management and that describes: (i) use of technology to avoid affecting Galeta Island; (ii) use of operating conditions to avoid affecting Galeta Island; (ii) handling of associated sediment.	1. Copy of deeper sediment sampling. 2. Copy of dredging plan. 3. Report on actions implemented.	1. April 15, 2016 2. April 15, 2016 3. ESCR reports
C3.2	Total water needed for construction and operation of the Project (ie, water for industrial purposes like construction and drinking water during operation).	Confirm estimate and/or estimate the need for industrial and drinking water for the regasification plant, thermal plants, and transmission line for both the construction and operation phases.	1. Details on water need of regasification plant and thermal plants. 3. Monitoring report.	1. 15 days prior to NTP 2. ESCR reports
C3.3	Analysis of alternatives for the regasification plant and thermal plants.	Provide an analysis of technology alternatives for the regasification and thermal power plants and the transmission line.	1. Analysis of technology alternatives.	1. 15 days prior to NTP

No.	Topic	Action	Product/Deliverable	Delivery date
C3.4	Qualitative Risk Assessment (QRA).	Once the detail engineering is completed, conduct a QRA to confirm that there would be no catastrophic impacts on the community as a result of a significant accident.	1. QRA report.	1. July 2016
C3.5	HAZOP.	Approve the contractors' safety plan based on the HAZOP and other studies.	1. Approval of the HAZOP.	1. Fifteen days before NTP
C3.6	Thermal discharge.	Present the basic outline of the effluent discharge system, featuring dispersers to reduce the impact on the water temperature.	1. Basic project.	1. May 2016
C3.7	Air emissions.	Approve contractors' air emission and air quality plan (construction phase). Estimating GHG emissions	1. Plan approval. 2. Estimated GHG emissions	1. Fifteen days before the NTP (March 31, 2016)
C3.8	Environmental accidents.	Monitor and implement actions for addressing environmental accidents.	1 Report on accidents / incidents and actions taken.	1. ESCR reports
C3.9	Hazardous materials.	Develop and implement a detailed procedure for storing and handling hazardous materials. This procedure should follow the requirements of Panamanian law, ND 3, IFC (General EHS Guidelines - Sections 1.5 and 3.5; EHS Guidelines for Thermal Power Plants - Section 1) and the UN's model for regulating hazardous materials.	1. Hazardous materials management procedure:	1. 15 days prior to NTP
			2. Report on actions taken and monitoring conducted.	2. ESCR reports
C3.10	Hazardous materials.	Develop and implement a protocol for materials disposal, including of hazardous materials, that covers such materials from origination to disposal and includes details on all intermediaries (ie. waste collection companies) to ensure the waste is being managed in accordance with ND 3 and IFC guidelines (General EHS Guidelines - Sections 1.6 and 3.5; EHS Guidelines for Thermal Power Plants - Section 1). Monitoring waste generation through inventory using at least the following information: volume; classification; temporary destination; final destination.	1. Procedure for hazardous waste management.	1. 15 days prior to NTP
			2. Report on actions implemented and monitoring.	2. ESCR reports
C3.11	Plan for monitoring aspects of pollution prevention	To emphasize in the plan for monitoring aspects of pollution prevention: i) sources of erosion in the Lake Gatún region; ii) evaluation of the noise generated using Table 1.7.1 from the General EHS Guidelines; iii) evaluation of the quality of liquid effluents using Table 5 of the EHS Guidelines for Thermal Power Plants and the recommendation that the environmental temperature not be increased more than 3°C;	1. Report on actions implemented and monitoring.	1. ESCR reports
ND 4: Community Health, Safety, and Security				
C4.1	Evaluation of electromagnetic field (EMF) of the transmission line.	Check the levels of electromagnetic fields and determine the risk to which houses or any other structures near the easement would be subject.	1. Copy of the analysis.	1. July 31, 2016
C4.2	Health in the communities surrounding the Project.	Collect information on the health of surrounding communities including details on: (i) The Project's potential impacts and (ii) An analysis of the current human health situation including: a. Information on the status of health in the area including an analysis of the information and social baseline mortality rates, cause of death and common illnesses by region.	1. Analysis of the health of the communities surrounding the project.	1. November 30, 2016
			2. Monitoring and mitigation plan.	2. November 30, 2016
			3. Report on actions implemented and monitoring.	3. ESCR reports

No.	Topic	Action	Product/Deliverable	Delivery date
		<p>b. Details of community access to the various healthcare services (eg. number of hospitals, clinics, healthcare centers, doctors, nurses, etc.) and a description of the use of these services and any difficulties (eg. money, transportation, etc.) accessing them.</p> <p>c. An analysis of Project activities that may have an impact (positive or negative) on the health of the surrounding communities.</p> <p>Design and implement a plan for monitoring human health, developed using key health indicators.</p> <p>Design and implement a plan to mitigate potential impacts on the health of communities. In particular, consider (i) risks associated with sexually transmitted diseases; (ii) that there will be a significant inflow of workers to the area.</p>		
C4.3	Transportation Safety	Design and implement a transportation and land and maritime traffic safety plan. Specifically, propose actions to improve the conditions of Project access roads.	<p>1. Copy of the Plan.</p> <p>2. Report on actions implemented.</p>	<p>1. Fifteen days before NTP</p> <p>2. ESCR reports</p>
ND 6: Biodiversity Conservation and Sustainable Use of Natural Resources:				
C6.1	Creation of the easement for the transmission line.	Prepare and implement a reforestation plan for zero net loss of forest cover due to construction of the transmission line that includes: (i) an analysis of biodiversity compensation measures; and (ii) details of mitigation measures, including information on the relocation site for the species to be replanted.	<p>1. Copy of biodiversity management plan.</p> <p>2. Plan implementation report.</p>	<p>1. September 30, 2016</p> <p>2. ESCR reports</p>
C6.2	Fishing in La Playita.	Monitor fishing activities in the project region, especially around La Playita.	1. Monitoring report.	1. ESCR reports
C6.2	Plan for monitoring aspects of biodiversity	Key features of the plan for monitoring aspects of biodiversity: i) process for relocating protected, threatened, and endemic species, guaranteeing zero loss of biodiversity; ii) complementary activities for identifying bird species;	1. Report on actions implemented.	1. ESCR reports
ND 8: Cultural Heritage				
C8.1	Chance findings plan.	Design and implement a chance findings protocol for the transmission line, terminal, and thermal plant.	<p>1. Chance findings plan.</p> <p>2. Exploratory examination of the tower bases of the transmission line</p> <p>3. Report on actions implemented.</p>	<p>1. 15 days prior to NTP</p> <p>2. (none)</p> <p>3. ESCR reports</p>

3. Operation phase

No.	Topic	Action	Product/Deliverable	Delivery date
O0.1	General	Continue to implement and report on relevant aspects that persist after construction.	Reports	ESCR reports
ND 1: Assessment and Management of Environmental and Social Risks and Impacts				

No.	Topic	Action	Product/Deliverable	Delivery date
O1.1	Monitoring plans for the operation phase.	Develop an ESHS monitoring plan for the operation phase that includes the requirement to conduct performance testing before the start of land and maritime operations.	Copy of updated monitoring plan.	September 2017
O1.2	ESHS plans and procedures for the operating phase.	Develop and implement ESHS plans and procedures for the operating phase that include the following plans: i) occupational health and safety; ii) management of air, noise, emissions, GHG emissions, effluents, surface water and groundwater; iii) waste management; iv) community health and safety; iv) supply of goods and local workers; v) transport safety and traffic management; vi) security; vii) participatory monitoring	Copy of each plan and procedures.	September 2017
		Internal and external complaint mechanism.	Copy of the mechanism	September 2017
O1.3	Environmental, social and health and safety indicators for the operating phase.	Develop environmental, social and health and safety performance indicators for the operating phase.	Definition of key performance indicators (KPIs).	September 2017
O1.4	Plan for stakeholder engagement during the operating phase.	Update the stakeholder participation plan for the operating phase, which integrates the lessons learned from the construction phase.	Copy of updated plan for stakeholder engagement.	September 2017
O1.5	Estimated greenhouse gas emissions.	Provide an estimate of annual greenhouse gases emissions for the terminal and plants.	Report.	September 2017
ND 2: Labor and Working Conditions				
O2.1	Local hiring plan for the operating phase.	Develop and implement a local hiring plan for the operating phase.	A copy of the plan.	September 2017
O2.2	Occupational risk analysis for the operating phase.	An analysis of occupational risk for the operating phase that includes prevention and mitigation.	A copy of the analysis.	September 2017
O2.3	Plan for monitoring aspects of working conditions	Key features of the plan for monitoring aspects of working conditions: i) results of internal audits of risky activities	1. Report on actions implemented.	1. ESCR reports
ND 3: Resource Efficiency and Pollution Prevention				
O3.1	Estimate energy consumption during operation.	Estimate energy consumption and list actions to be taken to ensure energy efficiency.	Estimate of energy consumption and list of actions to achieve energy efficiency.	March 15, 2017
O3.2	Protocols for estimating GHG emissions and handling of waste and hazardous materials.	Develop and implement a protocol for estimating Project GGE.	A copy of the GGE quantification protocol and estimate of GHG emissions for the project	September 2017
		Develop and implement a protocol for handling and disposing of hazardous waste.	A copy of the protocol.	90 days before the start of operations
		Develop and implement a protocol for storing and handling hazardous materials.	A copy of the protocol.	90 days before the start of operations
O3.3	Emergency response plan and spill prevention plan for the operating phase.	Develop and implement an emergency response and spill prevention plan for the operating phase.	A copy of the plan.	90 days before the start of operations
O3.4	HAZOP for Project operation.	Conduct a HAZOP for the Project's operation phase of the project, considering, among other factors, extreme environmental events and the effects of climate change.	A copy of HAZOP.	September 2017

No.	Topic	Action	Product/Deliverable	Delivery date
O3.5	Protocol for process safety during Project operations.	Develop a process safety protocol that includes information on how to carry out the activities safely and that covers all Project activities and includes information on the roles and responsibilities of personnel in charge.	A copy of the process safety protocol.	A minimum of 90 days before the start of operations
		Establish and implement a management of change (MOC) mechanism.	A copy of the MOC.	A minimum of 90 days before the start of operations
		Develop and implement a mechanical integrity procedure for the following equipment: pressure valves, storage tanks, ventilation systems, emergency shutdown systems, and firefighting controls and equipment.	A copy of the mechanical integrity procedure.	A minimum of 90 days before the start of operations
O3.6	Closure plan.	Develop a framework for Project closure.	Copy of the closure plan.	April 2019
O3.7	Emissions	Submit the air emissions and quality control plan (operating phase)	Plan for controlling air emissions.	June 2017 (a minimum of 90 days before the start of operations)
O3.8	Noise	Basic project to adjust the exhaust pipes for noise abatement during the operation phase.	Basic project	June 2017 (a minimum of 90 days before the start of operations)
O3.9	Plan for monitoring aspects of pollution prevention	To emphasize in the plan for monitoring aspects of pollution prevention: i) sources of erosion in the Lake Gatún region; ii) evaluation of the noise generated using Table 1.7.1 from the General EHS Guidelines; iii) evaluation of the quality of liquid effluents using Table 5 of the EHS Guidelines for Thermal Power Plants and the recommendation that the environmental temperature not be increased more than 3°C; iv) evaluation of air emissions using Table 6B of the EHS Guidelines for Thermal Power Plants; v) evaluation of the local air quality using Table 1.1.1 from the General EHS Guidelines; iv) evaluation of turbine efficiency in terms of greenhouse gas emissions versus power generated using Table 4 of the EHS Guidelines for Thermal Power Plants;	1. Report on actions implemented and monitoring.	1. ESCR reports
ND 4: Community Health, Safety, and Security				
O4.1	Risk analysis and emergency response mechanism for the operation phase.	Develop a quantitative analysis of risk to surrounding communities.	A copy of the quantitative risk analysis.	A minimum of 120 days before the start of operations
		Develop and implement an emergency response plan.	Report on emergency response mechanisms for the operation phase.	A minimum of 120 days before the start of operations
		Share information about the emergency response mechanism for the operation phase with local authorities. If necessary, assist local authorities in developing an emergency	Evidence that the report has been shared with local authorities and that they have the necessary capacity to	A minimum of 60 days before starting the operation

No.	Topic	Action	Product/Deliverable	Delivery date
		plan focused on the wellbeing of the surrounding communities, to be implemented in the event of an emergency. This plan should require communities be informed of it.	take action in the event of an emergency.	
O4.2	Security plan for the operation phase.	Update the security plan for the operation phase.	A copy of the plan.	A minimum of 60 days before starting the operation
ND 6: Biodiversity Conservation and Sustainable Use of Natural Resources:				
C6.2	Plan for monitoring aspects of biodiversity	Key features of the plan for monitoring aspects of biodiversity: i) the impact of water use and effluent discharge on coral, seagrasses and turtle species;	1. Report on actions implemented.	1. ESCR reports