

EXECUTIVE SUMMARY

MODIFICATION TO THE ENVIRONMENTAL IMPACT STUDY OF THE PAMPA MELCHORITA, PERU LNG EXPORT PROJECT

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1.0 INTRODUCTION

This document describes the improvements and modifications introduced to the design of the Pampa Melchorita PERU LNG Export Project as well as the corresponding modifications to the Environmental Impact Study (EIA), prepared for the Project in 2002 and 2003, subsequently approved by R.D. N° 061-2004 MEM/AAE on June 21, 2004.

The document entitled “Modification to the Environmental Impact Study of Pampa Melchorita PERU LNG Export Project” is presented in accordance with the terms established in Report No.044-2005-MEM-AAE/IB, submitted by DGAAE in Official letter N°, 517-2005-MEM/AAE on May 17, 2005, in which the inquiry submitted by PERU LNG S.R.L. (PLNG) regarding improvements and additions to the LNG Export Project was resolved.

It is important to emphasize that the modifications made to the LNG Export Project in Pampa Melchorita do not involve an increase in the production capacity originally established and includes mainly: (1) equipment changes or modifications , (2) the relocation of structures and equipment, and (3) new components. Also, the changes do not involve any modification to the direct area of influence in the marine component of the Project, as was originally established in the EIA approved on June 2004, but it does involve a slight increase in the terrestrial direct area of influence on the east side of the Panamerican South highway, where the plant entrance is projected to be built.

A summary of the Project characteristics originally proposed and the recent modifications made as a result of efficiency and safety improvements introduced into the design is provided below. Also, the information included in the document entitled “Modification to the EIA of Pampa Melchorita PERU LNG Export Project is outlined, which complements the information submitted in the EIA approved by R. D No. 061-2004-MEM/AAE dated June 21, 2004.

2.0 LEGAL FRAMEWORK

Legislative Decree No. 757 (the Framework Law for the Growth of Private Investment) dated November 28, 1991 establishes the principle of a “single window” approach to managing environmental issues with a single environmental authority assigned and responsible for all permitting and regulatory compliance. The sole environmental authority is the Ministry of the corresponding industry sector or the specific supervising entity as determined by law. However, and

in spite of the existence of this principle, there are a number of public institutions with jurisdiction over specific aspects of environmental issues and therefore, participate in the environmental permitting process.

In the hydrocarbon sector, the competent authority is the Ministry of Energy and Mines, which delegates the management of regulatory-technical issues to the General Hydrocarbons Directorate (Dirección General de Hidrocarburos or DGH), supervisory duties (including environmental regulations) to OSINERG (Organismo Supervisor de la Inversión en Energía), and the regulatory-environmental aspects to the DGAAE (Dirección General de Asuntos Ambientales Energéticos).

The EIA for the LNG Export Project (submitted in July 2003) and its Modification (presented herein), were prepared according to the requirements established in the Regulations for Environmental Protection in Hydrocarbon Activities (Supreme Decree No.046-93-EM).

Through Supreme Decree No. 056-97-PCM it was established that in cases where an EIA considers activities or actions that modify the natural state of the country's renewable resources: including water, soil, flora and fauna, the technical opinion of the Ministry of Agriculture's Natural Resource Institute (INRENA) shall be required prior to an approval being granted by the competent sectoral authority. To ensure the participation of INRENA in the assessment procedure, Art. 3° of Supreme Decree No. 053-99-EM established that a copy of the EIA shall be submitted to INRENA, and to the Regional Directorate of Energy and Mines, if necessary, prior to submitting the EIA to the DGAAE .

The public participation program conducted as part of the EIA, an considered part of the administrative procedures for assessment and approval of the environmental studies, were performed in accordance with Ministerial Resolution No. 596-2002-EM/DM dated December 21, 2002 and during the "Modification to the EIA" in compliance with Ministerial Resolution No. 535-2004-MEM-DM dated December 30, 2004 (Regulations of Citizen Participation in Energy Activities within the Administrative Procedures for Evaluation of Environmental Studies), which modifies the former Resolution concerning the activities of the energy sector.

3.0 CHARACTERISTICS OF THE PROJECT

3.1 Nature of the Resource Being Managed, Quantity and Characteristics of the Product being Produced

The LNG Export Project involves the construction and operation of a plant to process natural gas into liquefied natural gas for exportation, with a nominal capacity of 4.4 million metric tones per year (MMTY). This plant will process natural gas coming from the production fields in the Camisea region of Cusco, located 500 Km. east of Lima, and will produce liquefied natural gas (LNG), to be transported by tankers to markets with a high demand for natural gas along the Pacific coast such as Mexico and USA.

The process of converting natural gas into LNG is at present the most economic, safe and efficient way to transport gas long distances, particularly when pipeline construction possibilities are limited. LNG is produced when natural gas is cooled to minus 163 Celsius (°C) at atmospheric pressure. LNG occupies approximately 1/600 of the equivalent volume of natural gas, which facilitates the storage and transport of bulk LNG using specialized ships.

The main characteristics of LNG are: it weighs less than water, is odorless, colorless, non-corrosive, non-toxic and non-explosive. LNG vapors are flammable only under specific conditions that require a methane gas concentration in the air of between 5.3% and 15% along with an ignition source.

3.2 Project Location and Area

The project will be located on a 521 Ha. site at Pampa Melchorita on the west side of the Panamerican South highway between Kms 167 and 170 in the district of San Vicente de Cañete, the province of Cañete and Department of Lima (**Figure RE-1**). The land was purchased by PERU LNG S.R.L. through direct purchase from the Superintendence of National Goods –“Superintendencia de Bienes Nacionales (SBN). In addition, concession of the corresponding marine area required for the Project facilities and operations has been requested from the Harbormaster and Ports Directorate (DICAPI).

Figure RE- 1 Project Location



3.3 Proponent

The Pampa Melchorita LNG Export Project will be constructed by contractors selected by PERU LNG S.R.L (PLNG), and supervised by it or by a third-party (operator), in accordance with the Regulations for Natural Gas Processing Plants (Law No. 28176). Once the construction is finished, the Plant will be operated by PLNG or by an operator designated by PLNG.

PLNG is subsidiary of a shareholder consortium led by Hunt Oil Company of Peru, L.L.C., which has broad worldwide experience in the energy sector.

3.4 Infrastructure Construction and Process

The Project consists mainly of the following infrastructure components:

- An LNG processing, liquefaction and storage plant;

- Marine installations to facilitate tanker berth and LNG loading operations;
- Administration buildings, housing for shift operators, infrastructure for internal transport, maintenance and operations support services.

The project is designed to be completely self-sufficient with regards to power and water consumption employing natural gas fuelled power generators and a desalinization plant to transform sea water into fresh water for human and industrial consumption. In addition, it is designed to control all effluents (liquid, solid, industrial or domestic) in a safe way and in compliance with national and international environmental requirements.

With regards to the marine facilities proposed for tanker berthing and LNG loading operations, they include:

- A trestle, approximately 1.3 km long, aligned perpendicular to the coast extending from the shore to the loading platform. The trestle will consist of a steel superstructure supported by driven steel pilings and a cast-in-place concrete abutment.
- A breakwater located 1.6 km offshore and not connected to the coast must be constructed due to the fact that the tanker berth site is exposed to long periods of Pacific swells coming mainly from the southwest. The proposed breakwater will be located along the 14 m depth contour, will be 800 m long and aligned parallel to the coastline and the sea bottom contours. A crest elevation of 8.5 m above the low surf level will prevent the 100-year design wave from damaging the structure.
- An area will be dredged around the breakwater described above to the depth required for ship access to the LNG tanker berth structures. The berth site will be connected to approach and departure channels (navigational channels), which will be dredged to provide enough room between the ship keel and the sea bottom during swell periods and ship maneuvers in the protected area of the breakwater. The navigation channels and the berth facility together form a “U” shaped area with the breakwater located in the internal part of the base.
- Lighting and navigational aids will be constructed which will consist of: racon, sea buoys, leading lights, gate buoys, breakwater markings, mooring dolphin markings; and a laser berthing aid system for determining speed and approach distance to the dock.

Section 4 of this Executive Summary describes, some of the modifications proposed to the basic design of the project and considered as modifications to the original EIA. The proposed modifications are located in the same direct area of influence considered in the original EIA approved in June 2004, except for an extension to the terrestrial area of direct influence.

The proposed LNG plant will employ the Air Products and Chemicals Inc (APCI) process that utilizes a liquefaction process based on mixed refrigerant and pre-cooled propane.

The process and units included in the plant for transforming dry natural gas into liquefied natural gas (transformation process from gaseous to liquid state) is outlined below. These processes and units are shown in the following figure (**Figure RE-2**).

Figure RE- 2 Plant Design and Location of Process Units and Installations



- ***Feedgas Receiving, Liquid Separation, Gas Metering and Pressure Reduction;*** the Feedgas receiving unit (FRU) will be designed to separate and store any liquids that could be retained in the gas supply pipeline after initial hydrostatic testing or which could have formed due to abnormal operations in the production block (Production Facilities of the Camisea Block in Malvinas) or due to maintenance of the pipeline (pigging or cleaning operations). The feedgas will flow through an Inlet Knock Out Drum to remove any free liquids collected in the pipeline.
- ***Acid Gas Removal (Carbon Dioxide);*** The Acid Gas Removal Unit (AGRU) will process natural gas from the FRU to remove carbon dioxide, which is the contaminant acid gas present in the feedgas. Carbon dioxide is considered a contaminant because it would freeze during the cryogenic process of converting methane gas into methane liquid thus blocking the process flow. The technology for removal of carbon dioxide (CO₂) and hydrogen sulfide (H₂S) (collectively called acid gas) from natural gas uses activated methyl diethanolamine (MDEA), a tertiary amine. The activated diethanolamine is an aqueous solution of MDEA with a chemical activator.
- ***Gas Dehydration and Carbon Adsorption Units;*** The Dehydration Unit dries the water-saturated gas to meet the cryogenic process specification requirements. The Dehydration Unit uses a three-bed molecular sieve configuration; two beds operating in the absorption mode while the third bed is regenerating. Each molecular sieve bed is regenerated in 24 hours. The dehydration unit dries the water-saturated treated gas to less than 1 ppm(v) of water to avoid freezing and plugging in the cryogenic liquefaction unit by gas hydrates. An activated carbon absorber is provided as a safety measure to ensure the reliable operation of the LNG plant. An activated Carbon Absorber will remove any heavy metals present in the feedgas to avoid corrosion problems in the aluminum components of the liquefaction process equipment. This will be achieved using an activated carbon bed.
- ***Refrigeration and Liquefaction;*** The Air Products and Chemicals, Inc. (APCI) propane multi-component refrigerant process uses two types of refrigeration cycles to pre-cool and liquefy the feedgas. The feedgas is first pre-cooled using propane as the refrigerant at four descending pressure and corresponding temperature levels. After being cooled by propane, the feedgas enters the main cryogenic heat exchanger. In the main cryogenic heat exchanger, the feedgas is further cooled and totally condensed by the mixed refrigerant. A control valve reduces the pressure of the sub-cooled LNG coming from the main cryogenic heat exchanger and sends it to

the storage tank. The LNG entering the storage tanks is at 1.08 Bars pressure and -163 °C temperature.

- **LNG Storage;** the two (2) storage tanks proposed for the plant have a single containment design. In compliance with NFPA 59A, the tanks will have a common secondary containment area. The capacity of the tanks originally proposed has been modified and is described in Section 4 of this Executive Summary.
- **Refrigerant Storage;** propane and ethylene will each be stored in a horizontal bullet type storage tanks. Two propane tanks will have a volume of 602 m³ each. Two ethylene tanks will be 4 m in diameter and 20 m long with a total capacity of 200 m³ each.

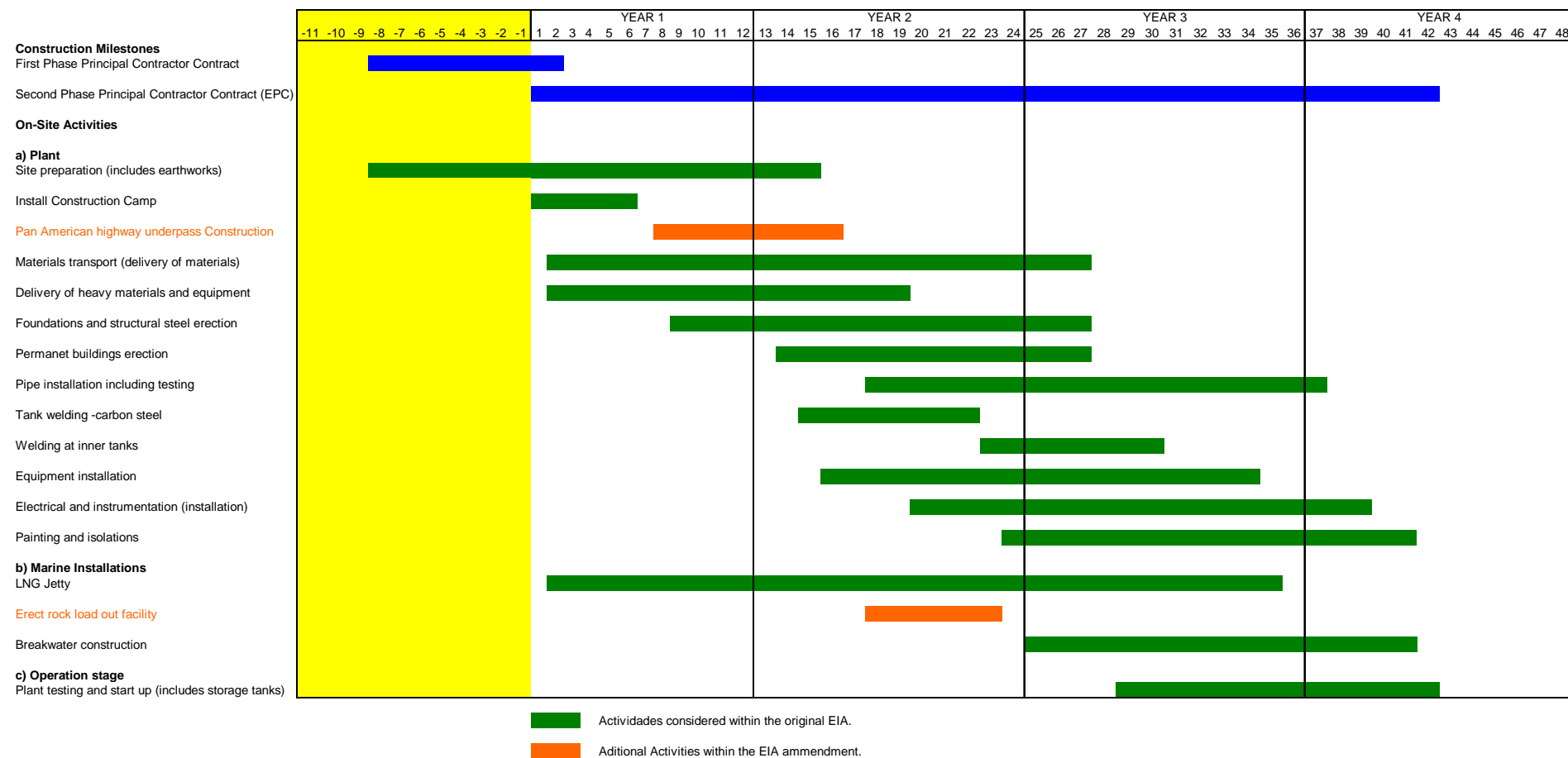
Section 4 describes some of the modifications proposed to the basic design of the project involving the relocation of the previously described process units. These do not involve process changes or changes in plant production capacity.

3.5 Execution Schedule and Activities

The table shown below summarizes the stages of the Project and the activities completed to date, distributed in the following manner: the first stage involved the technical studies performed to determine the project feasibility, the second stage includes those activities required to prepare for project construction. In addition, **Table RE-1** provides a general construction schedule for the project.

Technical Studies – Feasibility (2001 - 2005)	Construction (II Semester 2005 - II Semester 2009)
<ul style="list-style-type: none"> • Analysis of Alternatives (2001) • Basic Engineering (2002) • EIA and Consultation Process (2002 - 2004) • Permits (2002 - 2004) • Business Agreements (2002 - 2005) • Financing (2002 a 2005) • Modification to Basic Engineering (2004 - 2005) • Complementation to EIA (2005) • Continuous Information to stakeholders 	<p>Stage 1: Earth moving and site preparation (II Semester 2005)</p> <p>Stage 2: Civil Works and Terrestrial and Marine Structure Mounting; Testing and Initial Production (2006 - II Semester 2009)</p>

Table RE- 1 Schedule of Construction Activities



The planned project construction period extends from the second semester of 2005 to the second semester of 2009 and has been structured in two phases. Phase 1 involves delineating the property boundaries and developing an internal access road from the Panamerican South highway to the area where rock material will be stored for the breakwater construction.

Phase 2, considers the main construction activities including construction of the plant and the marine facilities planned between 2006 and the second semester of 2009. This phase has been also subdivided into a light construction stage (Phase 2 A), during which the earthworks related to construction in the area adjacent to the Panamerican South highway, the Plant, beach and construction camp will be performed, and a heavy construction stage (Phase 2 B) which consists of all civil works, metal-mechanical structures and equipment installation. Due to this subdivision of construction activities to be performed for the plant and marine installations, certain activities of the Community Relations Plan to be performed in Phase 2, shall be understood to occur during Phase 2B.

3.6 Labor Requirements

According to the information provided in the EIA (chapter II, section 3.3.1), the construction stage of this project will require approximately 15 million man-hours of work to complete the works. At the peak of construction activities, it is estimated 3,000 people will be employed.

Most of the labor and skilled trades required for constructing the LNG Export Plant will go to Peruvian workers; however, the main contractor designated by PERU LNG for constructing the project and some specialized subcontractors may require specialized foreign personnel for planning, organization, training, and management of the work. The following table presents a list of the different skilled trades with an estimate of the number of positions to be filled by the main contractor or its subcontractors.

Crafts	Maximum number
Semi-qualified workers	500
Carpenters	300
Iron workers (structural and bars)	200
Masons	100
Electricians/Instrumentations, helpers	250

Crafts	Maximum number
Workers for shaft and pulley installations, mechanics	100
Tank builders	100
Workers for pipeline mounting, welding helpers	500
Welders of carbon steel	225
Welders of stainless and alloy steel	200
Workers for cable installation	20
Equipment operators	50
Specialized marine crew	50
Drivers	100
Painters	50
Others- insulators, surveyor, storekeeper, watchmen, food service.	500
Total of work positions – in all crafts	3,245

Other personnel categories will include management positions, engineering, supervision, technical personnel, quality control and inspection and administrative support personnel. These categories could represent an additional 10% of workers.

For certain specialized trades it will be difficult to find workers that live in the local area so qualified personnel from other regions of Peru will be hired and relocated to the site, while certain management and technical personnel will be hired from abroad.

The modifications proposed to the project do not consider an increase in the number of workers over that estimated in the original EIA approved in June 2004.

4.0 MODIFICATIONS PROPOSED TO THE PAMPA MELCHORITA PERU LNG EXPORT PROJECT

The modifications to the Pampa Melchorita LNG Export Project do not imply an increase in the production capacity originally established but include mainly: (1) changes or modifications of equipment, (2) relocation of structures and equipment and (3) new components (**Figure RE-3**). These modifications are described briefly below.

Figure RE- 3 Original Map of General Plant with Modifications

Equipment Changes or Modifications

- Increase in the tank storage capacity from 110,000 m³ to 130,000 m³ and modifications to the tank separation and secondary containment system in the tank area. These modifications are made in compliance with NFPA 59A the standard related to requirements for limiting accidental thermal radiation.
- The vent system and vertical flare will be changed to a new system of horizontal flares located in a pit.
- Modifications in the trestle structure to support rock hauling required for construction of the breakwater with 30-tons trucks traveling in two directions, and support for the LNG loading pipeline.
- Relocation of the utility service dock to the north area of the trestle and relocation of the control room, substation and transformers originally located on the loading dock.
- The GE MS5001 Gas turbines will be replaced by the new GE LM2500+ systems.
- The configuration of the navigational channel to be dredged around the breakwater has been modified to facilitate ship turning maneuvers in the tanker berth area.

Relocation of Structures and Equipment

- Relocation of the diesel and gasoline storage and supply tanks from the interior of the plant to the administration area.
- Centralized location of all services related to waste management such as the wastewater treatment plant, incinerator, CPI separator and solid waste deposit.
- The storage of process fluids such as aMDEA and Therminol 55 were relocated to the perimeter of the process area to avoid the entrance of supply trucks into the process area.
- The gas regeneration equipment and hot oil systems were spaced further apart and relocated to enhance the isolation of their pipelines.
- The containers that store liquid refrigerants were relocated to the opposite side of the compressors and will be placed on a pedestal or base.

- The electrical substation was divided in two to reduce the electric cables and its underground layout and they were relocated farther from any equipment containing hydrocarbons.
- The height of the boil Off Gas flare from the loading dock was increased from 20 to 30 m to prevent accidental discharges and the gas vapor compressors were located closer to the LNG tanks, but at a higher elevation ,to reduce the return pressure.
- The permanent housing area for the plant workers has been relocated farther away from the cliff.
- The access road to the beach was relocated towards the north boundary of the property to provide access through the cliff during both the construction and operation stages.

New Components

- The access to the plant has been modified to avoid traffic interruptions on the Panamerican South Highway during the construction and the operation stages, through the construction of acceleration and deceleration lanes and two underpasses to facilitate the entrance and exit of vehicles to and from the plant.
- The construction of a rock load-out jetty on the north side of trestle has been included in the Project to facilitate the construction of the breakwater. It may also subsequently be used as a utility dock and berth for small vessels.

5.0 MODIFICATIONS TO THE ENVIRONMENTAL IMPACT STUDY

The modifications to the Environmental Impact Study originally approved in June 2004 were grouped according to the content of the original document as follows:

- **Section I** – describes the characteristics of the Project and presents supplementary information to the Legal and Institutional Framework presented in the approved EIA;
- **Section II** – includes all the modifications related to Chapter II Description of the Project;
- **Section III** – includes all the changes related to the socio-economic baseline information, the public consultation and citizen participation process proposed to inform people of the changes in the project and the EIA and the update of the environmental baseline studies. All these

modifications represent supplements to Chapter III Baseline Studies, sections 2 (Physical Environment), 3 (Biological Environment) , 4 (Environmental Quality), 5 (Socio-economic environment) and Chapter VI Public Consultation of the original EIA

- **Section IV** – includes an assessment of additional impacts considering the new components of the project and the equipment modifications and relocations. This section complements Chapter IV Impact Assessment presented in the original EIA.
- **Section V** – presents the management measures related to the environmental aspects identified in the previous section and to the modifications made to the original project. This section modifies and complements the environmental management measures originally presented in Chapter V Environmental Management and Monitoring.

The following sections identify the supplementary information provided as part of the present EIA Modification and as a compliment to the original EIA prepared between 2002 and 2003 and approved in June 2004.

5.1 Modifications to the Project Description

The modifications to the project description, presented in the original EIA approved in June 2004, were detailed in the previous section of this document (see section 4.0).

5.2 Changes in the Social and Environmental Baseline

The direct area of influence of the LNG export project on both terrestrial and marine environments is restricted to the location of the proposed structures and their radius of direct influence during the construction and operation stages of the project.

With respect to the marine area of influence (see map included in response N° 44 of the document: “RESPONSES TO EIA COMMENTS IN REPORT N° 029-2003-EM-DGAA/OC/RM/FD/ML “EVALUATION OF THE EIA OF PAMPA MELCHORITA PERU LNG EXPORT PROJECT” Ref: Appeal N°. 1421938), this area consists of 7 Km of coast, extending 4.5 Km. north and 2.5 Km. south of the trestle, and a rectangular area 2.5 Km. by 3.2 Km. defined by the trestle alignment and the location of monitoring stations placed along the 16-m depth interval of the sea bottom (**Figure RE-4**). The criteria used to define this area of influence are explained below:

Figure RE- 4 Environmental Direct Influence Area – Marine Component

- Location of the planned structures and marine facilities such as the trestle, navigational channel, breakwater, and aid structures for navigation and berth.
- The area of influence of construction activities and the location of the monitoring facilities for measuring and controlling the potential effects described in Chapter IV of the original EIA.
- The area of influence of the structures once constructed and the potential effects as described in Chapter IV of the original EIA.

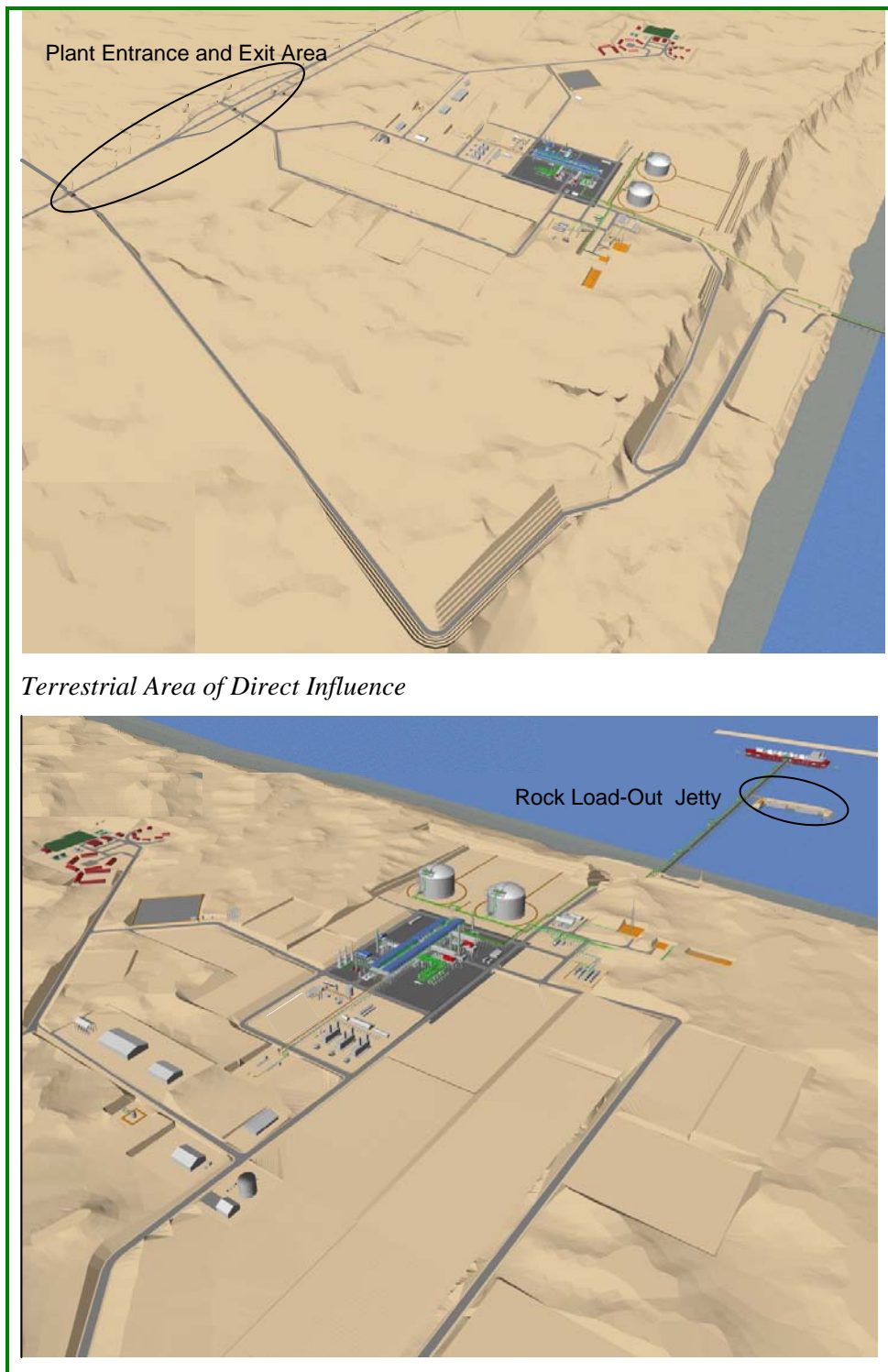
The terrestrial area of influence comprises the 521 hectares established as property and occupied mainly by the process infrastructure, administrative buildings, utility units (internal access roads, shops, warehouses, waste management, power generation, water treatment facilities, etc) and staff housing facilities.

In the EIA modification the terrestrial area of influence has been extended to include a 1600 m x 100 m area east of the Panamerican South highway, where two underpasses and the acceleration and deceleration lanes shall be constructed, this being a modification of the original vehicle entrance/exit design proposed for the plant. The new marine facility referred as the rock load-out jetty will be constructed in the same marine area of direct influence previously identified (**Figure RE-5**).

The environmental baseline for the marine component was updated in June 2005, using the same survey grid established in 2002 and comprised of 8 transect lines located in an area of approximately 5 Km along the South-North bearing and 3 Kms along the East-West bearing from 0 m to 17 m depth.

This survey grid covers the entire marine area of direct influence defined for the project. The surveys performed during this update include: updating the physical oceanographic data, physical and chemical water quality, physical and chemical marine sediment quality, intertidal and subtidal benthos community profile, subtidal plankton community profile, fish, birds, mammals and reptiles profiles. The sample collection and analysis methods were consistent with those used during the baseline studies in 2002. The data obtained in this update is closely related with the information collected in 2002; however, the variations observed in the update were related to a “red tide” phenomenon registered during the monitoring of physical and chemical parameters. The information related to this update is located in **Appendix C, Volume 2A** of the document entitled “Modification to the EIA”.

Figure RE- 5 Location of the Project New Components



Terrestrial Area of Direct Influence



Marine Area of Direct Influence

The environmental baseline for the terrestrial component was also updated in June 2005 using the same sampling sites as those in 2002 for establishing air, soil and noise quality. The sampling sites are those locations and components considered potential receptors of the environmental effects of the project. The sample collection and analysis methods used were the same as those used in 2002. The data obtained in this update is closely related with the data obtained previously. However, there is a significant variation in parameter PM-10 from the stations located on the marine side of the project. These stations were subject this time to the phenomenon known as “sea spray”, which involves the transport of particles less than 10 microns blown by ocean winds from the sea to the continent. This increased the concentrations of parameter PM-10 to near the permissible limits defined by the national and international standards used for reference and comparison of results. The information regarding this update is presented in Appendix C, Volume 2 A of document entitled “Modification to the EIA”.

During the social and economical baseline studies performed in the EIA of the Pampa Melchorita PERU LNG Export Project, approved in 2004, only two housing associations were recorded in the project area with these located along the Panamerican South highway (one at Km 154 and the other at Km 174). According to the recent information collected as part of the EIA update it was observed that there are now four new settlements, located along the Panamerican highway between Km 158 and Km 170. The updated inventory of these settlements is detailed below:

- Herbay, Nestor Cáceres, Nueva Esperanza and el Olivar – located on the west side of Panamericana Sur highway at Km 154;
- Asociación de Campesinos Eliane Karp – located on the east side of Panamericana Sur Highway at Km 158 to 163;
- Asociación Agrícola Las Brisas del Concon – located on the east side of Panamericana Sur Highway on Km 164.5;
- Asociación de Productores Agroindustriales el Trébol del Pacífico – located on the west side of Panamericana Sur at Km 164.5;
- Asociación de Vivienda de Trabajadores Eventuales de Cañete CETEC - located on the east side of Panamericana Sur at Km 170;

- Asociación Agropecuaria Primavera - Proyecto Agroindustrial Concon – located on the east side of Panamericana Sur Highway at Km 174 and Km 175
- Jahuay Cinco Cruces – located on the west side of Panamericana Sur highway at Km 174;
- Centro poblado Nuevo Ayacucho (composed of four associations) – located on the east side of the Panamericana Sur highway at Km 175 -179.

The new settlements, observed during the EIA Modification, have been established on State lands belonging to the Ministry of Agriculture, where straw huts are occupied only occasionally, especially on weekends. According to local information obtained these new settlements have been installed by illegal land trades made by unscrupulous people responding to the need of migrants from other regions of the country in need of property for housing and farming activities.

The public consultation and participation process conducted to provide information about the modification of the Pampa Melchorita Peru LNG Export Project EIA was coordinated with the DGAAE of the Ministry of Energy and Mines. As part of this process, 5 (five) workshops were held in June 2005 with a total attendance of 224 people, distributed as follows:

- Chincha/Pueblo Nuevo – June 20 (10 AM) – 86 participants;
- Grocio Prado – June 20 (3 PM) – 30 participants;
- Tambo de Mora – June 21 (10 AM) – 29 participants;
- Sunampe – June 21 (3 PM) – 34 participants;
- San Vicente de Cañete – June 22 (10 AM) – 45 participants.

Also, 2 (two) workshops were held with the fishermen of Cañete and Chincha in which 135 people attended, as detailed below:

- Chincha – July 6 (10 AM) – 73 participants;
- Cañete – July 6 (2 PM) – 62 participants.

Appendix D – Public Consultation and Participation Process – of the document “Modification to the EIA”, provides the corresponding evidence of the workshops and public participation program conducted.

5.3 Supplementary Environmental Assessment

Section III of the EIA Modification concludes (using the same impact identification and qualification methods as the approved EIA) that the changes introduced to the project will not result in new impacts; however, they will introduce new activities to the project construction stage (**Table RE-2**). Only in the operation stage it was considered that the interaction of the new rock load-out jetty with the other marine facilities (i.e. the trestle and breakwater), will generate a slight cumulative effect on ocean current dynamics, swell and sediment transport in the marine component.

Table RE- 2 Matrix of Impact Qualification

Environment	Component	Indicator	PROJECT STAGES				
			Construction			Operation	
			Construction of Underpasses	Rock Transport	Construction of Rock Load-out Jetty and Modifications to the Dredging of Navigational Channel	Equipment Changes and Relocation	Operation of the Marine Facilities
Physical	Air	A-1	-3	-3	-3	5	
	Noise	R-1	-2.5	-2.5	-3.5		
	Water	H-1			-4.9		-4.5
		H-2		-1..2	-3		-5
	Soil	SU-1	-1.6	-5			
		SU-2	-2.5	-2.5	-3		
		SU-3	-6		-9		
		SU-4			-3.5		-5
Biotic	Terrestrial and Marine Flora and Fauna	FF-1	-1				
		FF-2			-8		0
		FF-3			0		0
		FF-4			-4.2		
SOCIAL	Social	S-3	-3		-3		
		S-4	-3				
	Economic	E-3	7		7		
	Cultural	AR-1	-1				

For the impact assessment, 16 of the 22 environmental and social change indicators identified in the original EIA were used. Each indicator was analyzed in relation to the new activities associated with the project modifications and qualified through analysis and consideration of the 7 impact attributes identified in the EIA. The final qualification identified in the matrix, is a comprehensive multiple index which combines the individual qualifications for each attribute with every activity interaction – environmental or social indicator.

The impact qualification results are presented in Table RE-2, and summarized below:

In the physical component, the impact called geo-form alterations (code SU-3 referring to landform/landscape changes caused by cut and fill activities during construction), is considered as moderately negative especially during construction of the rock load-out jetty, dredging of the navigational channel and construction of underpasses. Other impacts such as: air quality alteration (A-1), increases in noise levels increase (R-1) and alteration of the soil physical-chemical properties (SU-2), caused by new construction activities are considered slightly negative. In addition, impacts such as increased sea water turbidity (H-1) and alteration of the beach morphology (SU-4), caused by new marine construction activities, are considered slightly negative. The rock transport activity for construction of the jetty and subsequently the breakwater, is considered to have a slightly negative impact on the physical, chemical water quantity and quality of seawater and rivers (H-2) due to the use of water from the Cañete river or other sources for dust control.

In the physical component the activity assessed as “Equipment Changes and Relocation” will have a positive effect on air quality during the operations stage (A-1), since the new equipment characteristics and location will improve the efficiency and safety of the plant reducing atmospheric emissions to a level estimated by air quality modeling to be nearly 60% below national standards. Also, the interaction of the marine structures including the trestle, the rock load-out jetty and the breakwater with the marine currents, waves and sediment transport dynamics (considered in this EIA Modification as ‘Operation of the Marine Facilities’) is expected to produce effects such as: an increase in sea water turbidity (H-1), alteration of the seawater physical and chemical properties (H-2) and alteration of the beach morphology (SU-4), impacts assessed as slightly negative.

In the biotic component, impacts: on the structure and composition of marine communities (FF-2) caused by construction of the rock load-out jetty and dredging of the navigational channel, are

considered to be moderately negative. While the impacts on “reduction in marine fauna” (FF-4), that could occur during marine construction activities, are considered slightly negative the impact on “changes in the fish captures” (FF-3) is considered neutral, since the marine construction activities will be performed within a restricted area and no effect is expected to be produced on the fishing activity currently performed in neighboring areas. The construction of underpasses will create a loss of terrestrial vegetation cover (FF-1), that is considered a slightly negative effect due to the scarce presence of *Tillandsia* fields on the east side of the Panamerican highway.

During the operations stage, impacts on the biotic component produced by operation of the marine installations such as: alteration of the structure and composition of the marine communities (FF-2) and changes in fish captures (FF-3) are considered neutral, meaning that the activity assessed does not represent any damage or benefit to the resource.

Project construction will have a positive impact on local employment creation (E-3). However, construction activities will also generate impacts such as nuisance to the population (S-3) and interruption of the road infrastructure (S-4), considered as slightly negative. Construction of the underpasses could produce a slightly negative effect on archaeological heritage, if artifacts or other archaeological materials (AR-1) underlying the affected surfaces are destroyed or altered.

During the impact assessment, prevention, mitigation and control measures which might avoid or reduce the impacts of the identified activities were considered.

5.4 Modification to the Social-Environmental Management Plan

Regarding Section IV of the EIA Modification, the following data sheets originally included in the Environmental Management and Monitoring Plan have been modified:

AC-2 Transport and Mobilization

AC-3 Sign Posting AC-4 Site Preparation

AC-4 Site Preparation SM-2 Monitoring of the Water Quality

AC-8 Marine Construction Activities

SM-2 Monitoring of the Water Quality

SO-7 Monitoring of the Coastline

Each of the data sheets identified includes a series of measures to help counteract the effects caused by the construction activities, as is the case with the data sheets using the code AC. Also, the monitoring programs planned for construction have been modified or extended, as is the case with SM-2 'Monitoring of Water Quality' or for the operations stage SO-7 'Monitoring of the Coastline'.

Data sheets for the Environmental Management Plan have been modified as detailed below:

In data sheet 'AC-2R TRANSPORT AND MOBILIZATION', everything related to dust control including the use of water from the Cañete River, sea water, water from sewage treatment, water from wells, or through the application of polymers or other dust-suppressor agents has been modified. The proposal for using other agents for dust control other than water from the Cañete River is intended to reduce pressure on a resource that can present shortages during certain periods of the year.

In data sheet 'AC-3R SIGN POSTING', a series of measures have been introduced to improve traffic controls along the Panamerican highway while minimizing inconvenience during construction of the underpasses and acceleration / deceleration lanes near the plant entrance.

Data sheet 'AC-4R SITE PREPARATION' was modified in a manner consistent with data sheet AC-2R (previously discussed) concerning the use of dust suppressors other than water from the Cañete River, such as sea water, treatment system effluent or environmentally safe polymers.

Data sheet 'AC-8R MARINE CONSTRUCTION ACTIVITIES', has been expanded to include measures for the safe environmental management of vessels involved in rock transport during construction of the rock load-out jetty and breakwater, detailing as well the start-up of shoreline monitoring activities specified in data sheet SO-7R. This document has also been modified to include a proposal for hydro-biological monitoring in the vicinity of the construction works, with the aim of monitoring variations in the diversity and abundance of marine species characteristic to the area in relation to project activities.

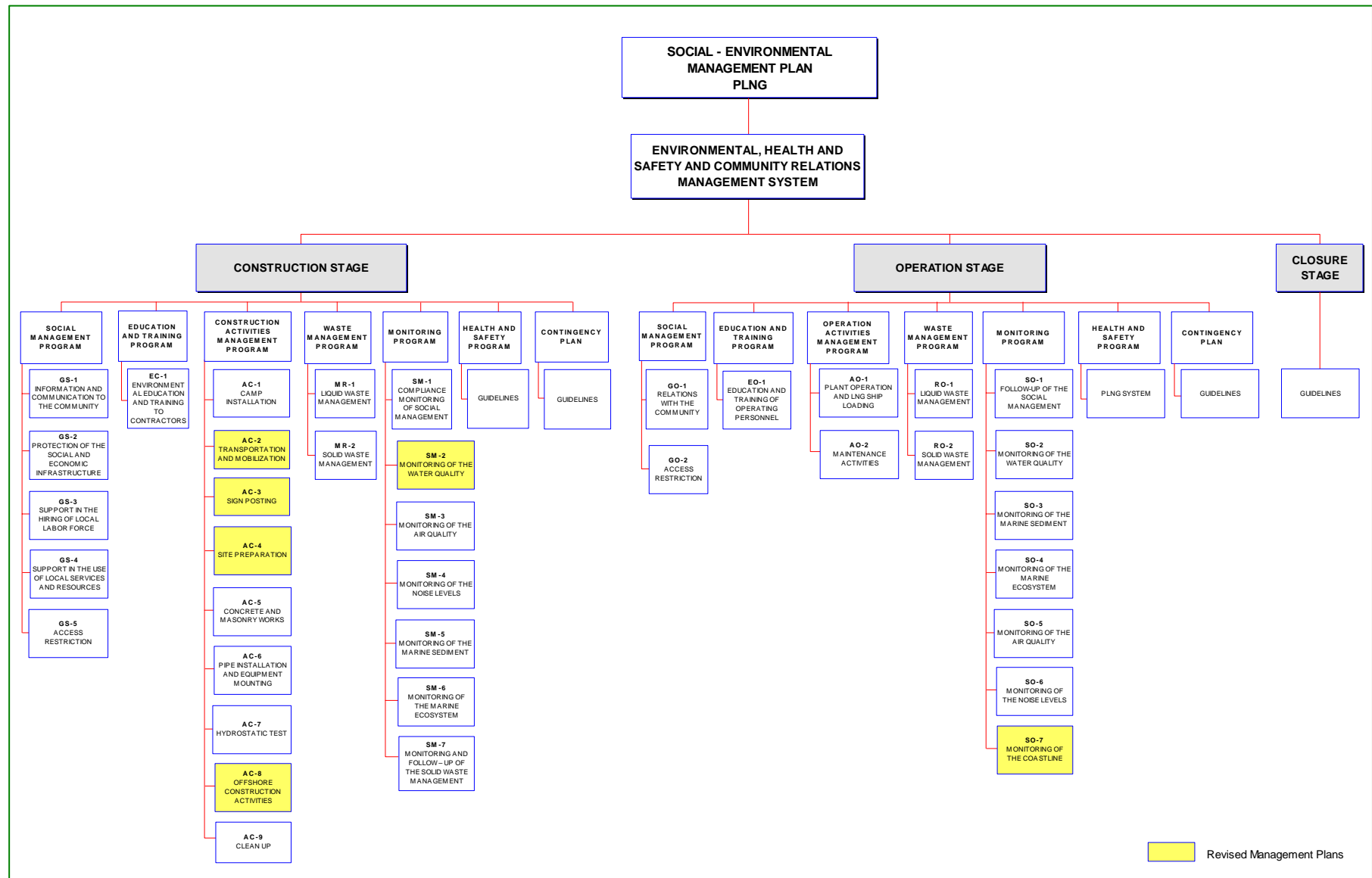
In data sheet 'SM-2R MONITORING OF THE WATER QUALITY' the daily turbidity monitoring program (to be implemented during dredging activities) has been modified with regards to the location of the monitoring stations due to modifications proposed to the final configuration of the channel. The same monitoring pattern is kept, three to the north and three to the south, but in different

positions from those identified in the former monitoring program. The turbidity parameter and its standard have been maintained.

Data sheet 'SO-7R MONITORING OF THE COASTLINE', has been modified to include the clarification that coastline monitoring will occur within the area 4 Km north and 3 Km south of the trestle axis, covering a total length of 7 km and consistent with the text provided in the original data sheet which states "a section covering one kilometer to the south and three kilometers to the north from the PLNG property boundary".

The environmental management plan for construction, originally proposed and organized in 7 programs and 26 data sheets, has been modified in 5 of its original data sheets (four in the Construction Activities Management – AC and one in the Monitoring Program –SM as shown on **Figure RE-6**). Only one of the original data sheets included in the environmental management plan for project operations, (originally organized in 7 programs and 16 data sheets) has been modified with this being the Monitoring Program –SO.

Figure RE- 6 Structure of the Environmental Management Plan



5.5 Structure of the Document Entitled “Modification to the EIA”

The document “Modification to the EIA of Pampa Melchorita PERU LNG Export Project” was prepared by Golder Associates Perú S. A (Golder) and PLNG according to the following structure:

Volume 1

Section I – Characteristics of the Project and Legal and Institutional Framework

Section II – Modifications to the LNG Export Project Design

Section III –Baseline Information Changes

Section IV – Supplementary Environmental Assessment

Section V – Modification to the Social - Environmental Management Plan

Volume 2 A

Appendix A – Analysis of Thermal Radiation Consequences

Appendix B – Description of the Flare and Blowdown System

Appendix C – Update of the Environmental Baseline

Volume 2 B

Appendix D – Public Consultation and Participation Process

Appendix E – Legal Status of Sub-Standard Human Settlements in the Area – Ministry of Agriculture

Appendix F – Impact Assessment of the Modification to the EIA

Appendix G – Modeling of Sediment Transport and Wave Energy