



**1.5 Million Natural Gas Connections  
Project in 11 Governorates**

**Environmental and Social Impact  
Assessment**

**Upgrading of Qantra Shark Pressure  
Reduction Station -Ismailia Governorate**

**Final Report**  
**November 2018**



**EGAS**  
**Egyptian Natural Gas Holding Company**

Developed by



EcoConServ Environmental Solutions



**Petrosafe**  
**Petroleum Safety & Environmental Services Company**



## List of acronyms and abbreviations

QG	Qantra Shark
AFD	Agence Française de Développement (French Agency for Development)
ALARP	Stands for "As Low As Reasonably Practicable", and is a term often used in the milieu of safety-critical and safety-involved systems. The ALARP principle is that the residual risk shall be as low as reasonably practicable.
BUTAGASCO	The Egyptian Company for LPG distribution
CAPMAS	Central Agency for Public Mobilization and Statistics
CDA	Community Development Association
CO	Carbon monoxide
CRN	Customer Reference Number
CULTNAT	Center for Documentation Of Cultural and Natural Heritage
EEAA	Egyptian Environmental Affairs Agency
EGAS	Egyptian Natural Gas Holding Company
EGP	Egyptian Pound
EHDR	Egyptian Human Development Report 2010
EIA	Environmental Impact Assessment
ER	Executive Regulation
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESIAF	Environmental and Social Impact Assessment Framework
ESM	Environmental and Social Management
ESMF	Environmental and Social Management framework
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
GAC	governance and anticorruption
GDP	Gross Domestic Product
GIS	Global Information Systems
GoE	Government of Egypt
GPS	Global Positioning System
GRM	Grievance redress mechanisms
HDD	Horizontal Directional Drilling
HDPE	High-Density Polyethylene pipes
HH	Households
HHH	Head of the Household
hr	Hour
HSE	Health Safety and Environment
IBA	Important Bird Areas
IDSC	Information and Decision Support Center
IFC	International Finance Corporation
IGE/SR	Institute of Gas Engineers/Safety Recommendations
LDCs	Local Distribution Companies
LGU	Local Governmental Unit
LPG	Liquefied Petroleum Gas
mBar	milliBar
MDG	Millennium Development Goal
MOP	Maximum operating pressure



MP	Management Plan
MTO	Material take-off
NG	Natural Gas
NGO	Non-Governmental Organizations
NO <sub>2</sub>	Nitrogen dioxide
OSH	Occupational Safety and Health
P&A	Property and Appliance Survey
PAP	Project Affected Persons
PE	Poly Ethylene
PM <sub>10</sub>	Particulate matter
PPM	Parts Per Million
PRS	Pressure Reduction Station
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SDO	Social Development Officer
SIA	Social Impact Assessment
SO <sub>2</sub>	Sulphur dioxide
SSIAP	Supplementary Social Impact Assessment Framework
SYB	Statistical Year Book
T.S.P	Total Suspended Particulates
Town Gas	The Egyptian Company for Natural Gas Distribution for Cities
WB	The World Bank
WHO	World Health Organization
\$	United States Dollars
€	Euros

Exchange Rate: US\$ = 17.96 EGP as of November, 2018

Exchange Rate: € = 20.5 EGP as of November 2018



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## 1 Introduction

### 1.1 Preamble

Aiming at installing the NG to about 3,630 clients in Qantra Shark City, the Local Distribution Company Sinai Gas will decommission the current rented PRS and install a new 5000  $\text{m}^3/\text{h}$  PRS

The objective of the proposed project is to increase the capacity of the existing PRS in order to install the NG to wider segment of clients. This will enable achieving reduction of leakage; reduction of subsidy allocated for the butane gas and reducing dependence of imported fuel.

### 1.2 Environmental and Social Impact Assessment (ESIA)

ESIA is undertaken to assess and propose mitigations for environmental and social impacts of pressure reduction station (PRS). Off-takes from the national network and HP pipeline “70bar system” already exist.

#### Objectives of the ESIA include:

- Describing project components and activities of relevance to the environmental and social impacts assessments
- Identifying and addressing relevant national and international legal requirements and guidelines
- Describing baseline environmental and social conditions
- Assessing project alternatives and the no project alternatives
- Assessing potential site-specific environmental and social impacts of the project
- Developing environmental & social management and monitoring plans in compliance with the relevant environmental laws
- Documenting and addressing environmental and social concerns raised by stakeholders and the Public in consultation events and activities

**The local distribution company responsible for project implementation in QS is Sinai Gas or (شركة سيناء للغاز).**

### 1.3 Contributors

The ESIA has been prepared by Petrosafe (Petroleum Safety & Environmental Services Company) and EcoConServ Environmental Solutions (Cairo, Egypt) with collaboration and facilitation from EGAS, Egypt Gas, Sinai Gas HSE and Engineering Departments. The names of the Petrosafe and EcoConServ experts who have participated in the preparation of the ESIA study are listed in Annex 1 of this report.



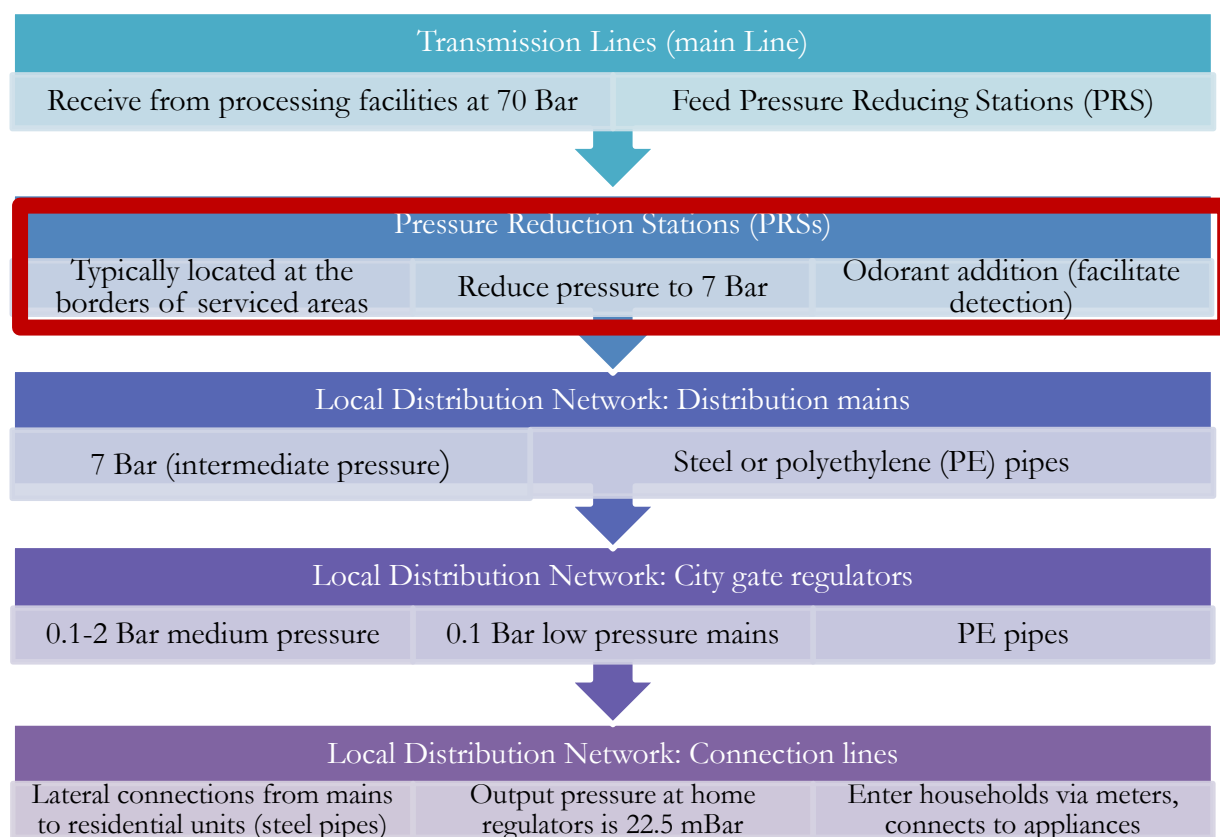


## 2 Project Description

### 2.1 Background

Natural Gas is processed and injected into the high pressure lines of the national Grid (70 Bar) for transmission. Upon branching from the main lines to regional distribution networks, the pressure of the NG is lowered to 4-7 Bar at the Pressure Reduction Stations (PRS). An odorant is added to the NG at PRSs feeding distribution networks to residential areas<sup>1</sup> in order to facilitate detection. Regulators are then used to further lower the pressure to 100 mbar in the local networks, before finally lowering the pressure to 20 mbar for domestic use within the households. In addition to excavation and pipe laying, key activities of the construction phase also include installation of pipes on buildings, internal connections in households, and conversion of appliance nozzles to accommodate the switch from LPG to NG.

The city distribution network comprises the following components: The box below denotes the network components covered in this ESIA. Other components are addressed in a separate ESMP:



**Figure 2-1 : General Components of the City's distribution network**

<sup>1</sup> Because natural gas is odorless, odorants facilitate leak detection for inhabitants of residential areas.



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## 2.2 Project Work Packages

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### 2.2.1 Off-take

The off take is the point on the HP national grid pipeline where a branch of the pipeline is constructed to connect the existing PRS to the national grid. The off take is 15 meters from the outlet point (on the line of GASCO Company Al tenah / Oyoum Moses road) and it already exists.

### 2.2.2 Inlet connection/Pipeline “70 bar system”

A 15m carbon steel pipeline having a 6 inch diameter connects between the off-take from the national high-pressure grid (70:25 bar) and the PRS and it already exists within the premises of the PRS

### 2.2.3 Pressure Reduction Station (PRS)

The already existing PRS in Qantra Shark is a twin stream regulator with a capacity of 5000 m<sup>3</sup>/h. The PRS is currently being rented from Egypt Gas for one year. The PRS consists of the following components: an inlet unit (isolated cathodic system), a liquid separation unit, a filtration unit, and a pressure and temperature gauge. Other components include auxiliary devices such as a safety valve (Slam Shut), relief valves, an odorizing unit, ventilation equipment, as well as diesel and jockey pumps

Utilities existing in a PRS include a control room, a firefighting system (firefighting water tank, firefighting valve), a staff bathroom, and a storage area and entrance room located adjacent to the entrance gate.

New components, processors and units in PRS will be installed to reduce an inlet pressure of 25-70 bar to an outlet pressure of 4-7 bar at a flow rate of 5,000 m<sup>3</sup>/h



Figure 2-2: Current PRS in Qantra Shark



Figure 2-3: Thunder stick in Qantra Shark PRS



Figure 2-4: Control room in Qantra Shark PRS      Figure 2-5: Qantra Shark PRS fence

### 2.3 Qantra Shark's PRS Location

The PRS siting was selected according to international best-practice and guided by minimizing the possible negative impacts on the surroundings: the safety of neighboring areas from possible gas release accidents and noise associated with reducers operations. The PRS is fenced for safety and security purposes (including reducing noise impacts of the PRS reducers on the surrounding receptors).

The PRS is located in a low-population-density area on a plot of land measuring approximately 50m x 50m adjacent to the Ras Sedr- Qantra Shark road as shown in the following figure.

The PRS is accessible by an existing road to ensure quick response in the case repairs or emergencies. The closest high pressure pipeline is located within the PRS's site .

The site was obtained from state owned lands in according to transfer of ownership ministerial decree number 2835 of year 2015.



Figure 2-6 Location of Qantra Shark PRS

Currently, there is a dredger company (شركة الكراكات المصرية) at a distance of 20m from the PRS. There are also industrial areas across the street from the PRS at a distance of 350m. The PRS's storage area is located approximately 1,017 meters away from the PRS.



Figure 2-7 : QS PRS and the close receptors



Figure 2-8:Qantra Shark rented PRS



Figure 2-9: QS rented PRS from the inside

## 2.4 Project Execution Methodology

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### 2.4.1 General survey

- Identifying availability of utilities in the area and their conditions (electricity, water, telephone lines, and sanitary pipelines) through data and maps from the relevant authorities.
- Obtain the latest aerial maps of the project areas from the Egyptian Survey Authority
- Identifying Global Positioning System (GPS) coordinates of the sites
- GPS team develops a survey map to be used by the survey team to generate exact route for the inlet connection/pipeline “70 bar system”
- Data is entered into a central database and G.I.S system for review by a design team
- Design team finalizes pipe sizing, capacity & locations and routing.

### 2.4.2 Design and material take-off (MTO) including procurement

Once the final location of project components is finalized, a final design of the PRS is utilized to estimate the materials and equipment needed to implement the project. Procurement of the materials includes local and international components. The main international purchases may include regulators, and metering stations.

### 2.4.3 Construction works of the PRS (Decommissioning of the current PRS and Commissioning of the new PRS)

#### 2.4.3.1 Pressure Reduction Station Civil Works

The main construction activities will be during the replacement of the current rented PRS with the permanent one and this will include:

- Site preparation
- Welding activities to connect the off-take with the new PRS inlet.



- Removing the current components of the PRS and transporting it to the designated place after agreement between EGAS and Sinai Gas.
- Assembling the components of the new PRS and fixing it into the PRS concrete base

#### 2.4.3.2 Pressure Reduction Station Mechanical Works

New QS's PRS comprises two pressure streams, the upstream (inlet) high pressure ranging from 30 to 70 Bar and the downstream (outlet) low pressure 7 Bar. The PRS design is in accordance with Institute of Gas Engineers/ Safety Recommendations IGE/SR/9, 10, 16, 18, 22, 23, 24, 25; Institute of Gas Engineers/ Transmission Distribution IGE/TD/13; and National Fire Protection Association NFPA 15.

Following the assembly of the components of the new PRS and fixing it to the new concrete base, construction will continue with installation of mechanical components.

Fixing of all the mechanical components of the PRS which include the following:

- Fixing of the water bath heater unit on the heater concrete base.
- Electrical wiring work:
- Fixing the control unit
- Connecting the control unit with the PRS device
- Connecting the control unit with the water bath heater component.
- Adjusting of the pressure reduction unit, Odorizing unit, and the water bath heater unit

The PRS's mechanical components are:

- Inlet ball valve
- Solid filtration
- Liquid filtration
- Water bath heater
- Reduction regulator
- Active regulator
- Monitor regulator
- Slam shut /Safety valve
- Relief valve
- Measuring unit
- Odorizing unit
- Outlet unit

#### 2.4.3.3 Testing

Following mechanical completion, testing of the facility components will be performed in accordance with applicable standards.

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## 2.5 Operation phase

### 2.5.1 Operation of the Off-take

The main activities during the operation phase are the monitoring of the main off take valve and the routine checking for the occurrence of gas leaks.



- *SCADA (Supervisory Control and Data Acquisition System)*

GASCO company is working with SCADA is a highly sophisticated integrated system used to control the national natural gas pipeline network. The SCADA system performs remote controlling of the valve rooms to adjust the operating pressure, and if necessary change the flow of natural gas by bypassing the main route. The SCADA system can also detect natural gas leakage if a pressure drop was observed in certain pipeline. The SCADA system is connected with the fiber optics system installed in the pipelines

## **2.5.2 Operation of the PRS**

Operation of the PRS involves operation of the various components outlined in the construction phase. Risks associated with those activities are further addressed separately in a Quantitative Risk Assessment (QRA) (Refer to Annex 9 Quantitative Risk Assessment)

### *2.5.2.1 Inlet ball Valves*

The inlet valve includes an insulation joint to completely isolate the PRS inlet from the cathodic system applied to the feeding steel. Insulation joints isolate the PRS as measure of protection during strikes and current.

### *2.5.2.2 Filtration unit*

The filtration unit consists of two main stages, a liquid filtration stage and a solid filtration stage. The aim of the filtration unit is to remove dust, rust, solid contaminants and liquid traces before entering into the reduction stage. Two filters and two separators are installed in parallel each filter-separator operates with the full capacity of the PRS to separate condensates and liquid traces. The solid filtration unit is designed to separate particulate matter larger than 5 microns. Filter-separator lines are equipped with safety devices such as differential pressure gauges, relief valves, liquid indicators, etc.

### *2.5.2.3 Heating unit/Water Bath Heater*

This unit ensures that inlet gas to the reduction unit enters with a suitable temperature (the temperature of gas flow entering the station should be 15°C; and to avoid the formation of natural gas water hydrates in the line downstream of the choke or regulator (due to Joule Thompson effect). Temperature increases by heat exchange between gas pipeline pass through the heating unit filled with hot water. The unit was designed to be heated to 60°C; while the heating temperatures for the outlet flow gas ranges between 35°C and 45°C.

The heating unit comprises of the following components:

- Heater body/shell
- Process gas inlet/outlet
- Water Expansion tank
- Burner , Gas Train & BMS Panel
- Removable Fire tube
- Exhaust stack
- Heating medium( Water Bath)

### *2.5.2.4 Reduction*

The PRS includes two reduction lines in parallel (one of them being on standby in case of emergencies). The lines are equipped with safety gauges, indicators and transmitters to





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maintain safe operating conditions. According to the IGEM standards, the reduction unit should be installed in a well-ventilated closed area or, alternatively, in an open protected area.

#### 2.5.2.5 *Active and Monitor Regulators*

The active regulator controls the outlet pressure while the monitor regulator assumes control in the event of failure of the active device.

#### 2.5.2.6 *Slam Shut Valve*

The purpose of the Slam shut valve is to totally, automatically and rapidly cut off gas flow when the outlet pressure exceeds or drops below the setting pressure. The valve has to be installed to protect the system. The safety valve has to be sized for the maximum gas flow with the highest pressure that could be provided to the pressure reducing valve.

#### 2.5.2.7 *Measuring Unit*

After adjusting the outlet pressure, gas flow and cumulative consumption are then measured to monitor NG consumption from the PRS and to adjust the dosage of the odorant indicated in the subsection below.

#### 2.5.2.8 *Odorizing Unit*

Natural gas is generally odorless. The objective of odorizing is to enable the detection of gas leaks at low concentration, before gas concentration becomes hazardous. The odorant is composed of Tertiobutylmercaptan (80%), Isopropylmercaptan (16%), and n-Propylmercaptan (4%). The normal dosing rate of the odorant is 16 mg/cm<sup>3</sup>. The odorant system consists of a stainless steel storage tank, which receives the odorant from 200-liter drums, injection pumps, and associated safety devices.

#### 2.5.2.9 *Outlet unit*

The outlet unit includes an outlet valve gauge, temperature indicators, pressure and temperature transmitters and non-return valves. The outlet pipes are also, like inlet pipes, isolated from the cathodic protection by an isolating joint.

### 2.5.3 **Hotline**

A 24-7 Hotline (**129**) is available for customers and the public to report leaks, damage, emergencies, and/or incidents related to gas connections, components, infrastructure, and activities (inside or outside households) and to request repairs/emergency response/assistance.

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## 2.6 **Resources Consumption**

### 2.6.1 **During Construction (Decommissioning and Commissioning Phase)**

#### 2.6.1.1 *Water*

Water is mainly used during the construction phase in domestic uses by the workers and engineers. There is a permanent source of water from the Egyptian Holding Company for Drinking Water and Sanitation with a meter for consumption in both the storage area and the existing PRS.

#### 2.6.1.2 *Fuel*

Diesel fuel will be mainly used for:



- Diesel generators to supply electricity to the construction activities including welding.
- Trucks fuel.

The fuel will be supplied from the nearest petrol station to the PRS.

## 2.6.2 During Operation

### 2.6.2.1 Water

Water is mainly used during the operation phase in the firefighting storage tank as well as for domestic use by workers in the PRS and drinking water.

The PRS is already connected to the public water network.

### 2.6.2.2 Electricity

There is a source of electricity from the Egyptian Electricity Holding Company in both the PRS and the storage.

Electricity consumption during the operation phase is expected to be around 1200-1500KW/ month.

## 2.7 Waste Generation

All solid wastes generating during the commissioning and decommissioning phase will be managed and disposed in accordance with applicable regulations and established best management practices. All generated wastes will be reused and/or recycled to the maximum extent possible.

### 2.7.1 During construction (Commissioning and Decommissioning)

#### 2.7.1.1 Solid Waste

Solid waste during construction phase will comprise domestic waste, construction waste and some hazardous wastes from the activities. The waste is expected to include the following waste streams:

Waste type	Hazardous/Non-hazardous	Treatment and Disposition
Domestic Waste (food waste, packing)	Non Hazardous	Disposed to an approved solid waste facility
Wood – Scrap	Non-hazardous	Sold to specialized companies in a public auction
Tires		
Cardboards		
Containers		
Paints containers	Hazardous	Transported by TownGas for final disposal is Nasreya
Batteries	Hazardous	Resold to the supplier
Used oil waste (vehicles and machines)	Hazardous	Transported by TownGas for final disposal to UNICO



### 2.7.1.2 *Wastewater*

During the construction phase, liquid waste will comprise domestic wastewater, vehicles/equipment wash down water. Domestic water is the only continuous source during construction. Workers during construction phase will use the bathrooms existing in the current PRS and the wastewater will be collected in a septic tank and disposed of at an authorized wastewater treatment facility.

## **2.7.2 During operation**

The operation of the PRS is expected to generate minimal solid waste, which will be limited to domestic waste and will be collected regularly by trucks.

Hazardous waste- mainly empty odor containers- will be treated on-site, transported (using certified hazardous waste vehicles and personnel) to Nasreya hazardous waste facility in Alexandria

### 2.7.2.1 *Wastewater*

During operation, the only wastewater source is domestic wastewater. The wastewater is not connected to the public sewage system. Wastewater will be collected in a septic tank. The septic tank will be emptied by trucks and disposed of at an authorized wastewater treatment facility. There is a possibility that the site be connected to the municipal sanitary network in the future.



## 3 Legislative and Regulatory Framework

### 3.1 Applicable Environmental and Social Legislations and guidelines in Egypt

- Law 217/1980 for Natural Gas
- Law 4 for Year 1994 for the environmental protection , amended by Law 9/2009 and law 105 for the year 2015
  - Executive Regulation(ER) No 338 for Year 1995 and the amended regulation No 1741 for Year 2005, amended with ministerial decree No 1095/2011, ministerial decree No 710/2012, ministerial decree No 964/2015, and ministerial decree No 26/2016
    - EEAA guidelines on ESIA's preparation
    - EGAS HSE guidelines. LDCs comply with EGAS HSE Guidelines on PRS construction and operation(provided in Annex 2 from the report).
- The PRS site was obtained from state owned lands in according to transfer of ownership ministerial decree number 2835 of year 2015. (see Annex 3)
- Law 38/1967 for General Cleanliness
- Law 93/1962 for Wastewater
- Law 117/1983 for Protection of Antiquities
- Traffic planning and diversions
  - Traffic Law 66/1973, amended by Law 121/2008 traffic planning during
  - Law 140/1956 on the utilization and blockage of public roads
  - Law 84/1968 concerning public roads
- Work environment and operational health and safety
  - Articles 43 – 45 of Law 4/1994, air quality, noise, heat stress, and worker protection
  - Law 12/2003 on Labor and Workforce Safety

### 3.2 World Bank Safeguard Policies

Three policies are triggered for the project as a whole: Environmental Assessment (OP/BP 4.01), Physical Cultural Resources (OP/BP 4.11), and Involuntary Resettlement (OP/BP 4.12). However, OP/BP4.11 will not be applicable in Qantra Shark. In case of finding any objects of cultural value OP 4.11 will be applicable.

OP/BP 4.12 will not be applicable to the land obtained in Qantra Shark as the process of obtaining the land for the pressure reduction station was based on a transfer of ownership decree number 2835 of year 2015. The off take is inside the current PRS.

### 3.3 World Bank Group General Environmental, Health, and Safety Guidelines & WBG Environmental, Health and Safety Guidelines for Gas Distribution Systems

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. These industry



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sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. For complex projects, use of multiple industry-sector guidelines may be necessary.<sup>2</sup>

Gaps between requirements outlined by WBG guidelines and actions detailed by the ESIA have been analyzed. There are no significant differences between the requirements outlined by the WBG EHS GUIDELINE on GAS DISTRIBUTION SYSTEMS and the management and monitoring actions outlined by the ESIA.

### **3.4 International Finance Corporation (IFC) Guidelines**

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The IFC Environmental Health and Safety (EHS) Guidelines describes pollution prevention and abatement measures and emission levels that are normally acceptable to the Bank. However, taking into account borrower country legislation and local conditions.

In 2007, IFC Environmental, Health, and Safety (EHS) Guidelines were released which replace World Bank Guidelines previously published in Part III of the Pollution Prevention and Abatement Handbook.

The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, which provide guidance to users on EHS issues in specific industry sectors.

### **3.5 Permits Required**

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- \_ Environmental permit: according to Egyptian Law for the Environment, Law 4/1994 amended by Law 9/2009. EEAA approval on ESIA is considered the environmental permit.
- \_ Army force permits to construct the PRS
- \_ Construction permits to be obtained from the Local Governmental Unit in Qantra Shark City.
- \_ Utility installation permission to the PRS
- \_ PRS land selling contracts

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<sup>2</sup> [www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelin](http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelin)



## 4 Environmental and Social Baseline

### 4.1 Description of the Environment

Ismailia Governorate is one of the 27 Egyptian governorates, situated in the north-eastern part of Egypt. The capital city of this governorate is Ismailia; Fayed, Tel-el-Kabeer and El-Qantra Shark are the other major cities of this Egyptian governorate. This governorate covers an area of 1,442 Km<sup>2</sup>, with a population of over 1 million.

Qantra Shark District is located north east of Ismailia city on the eastern side of the Suez Canal, 160 kilometers northeast of Cairo and 50 kilometers south of Port Said.

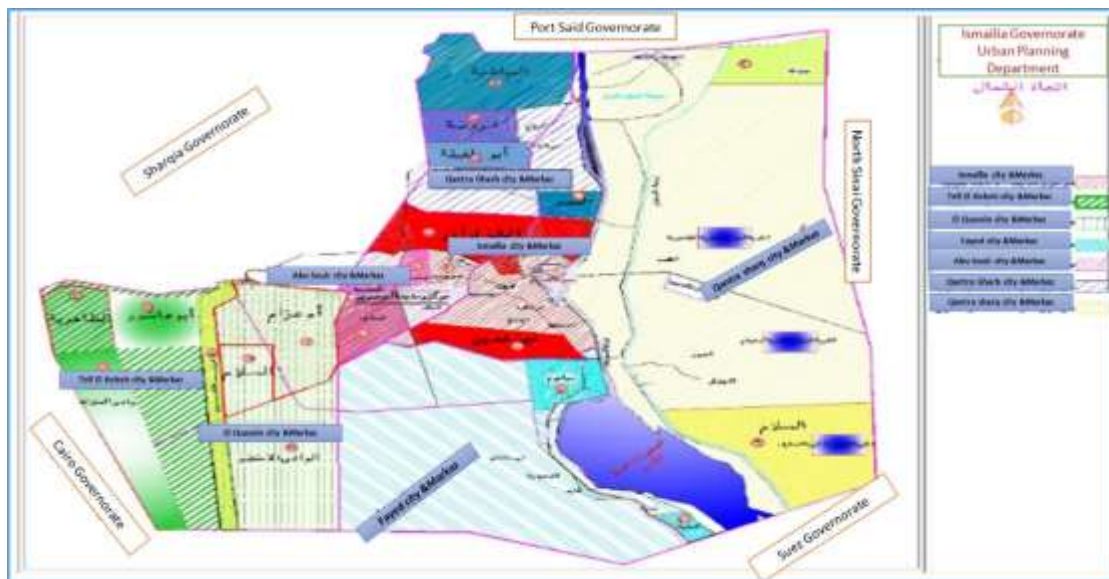


Figure 4-1: Map of Ismailia Governorate



Figure 4-2: Qantra Shark District



Figure 4-3: Location of Qantra Shark relative to the Suez Canal

#### 4.1.1 Climatology and Air Quality

##### 4.1.1.1 Climate



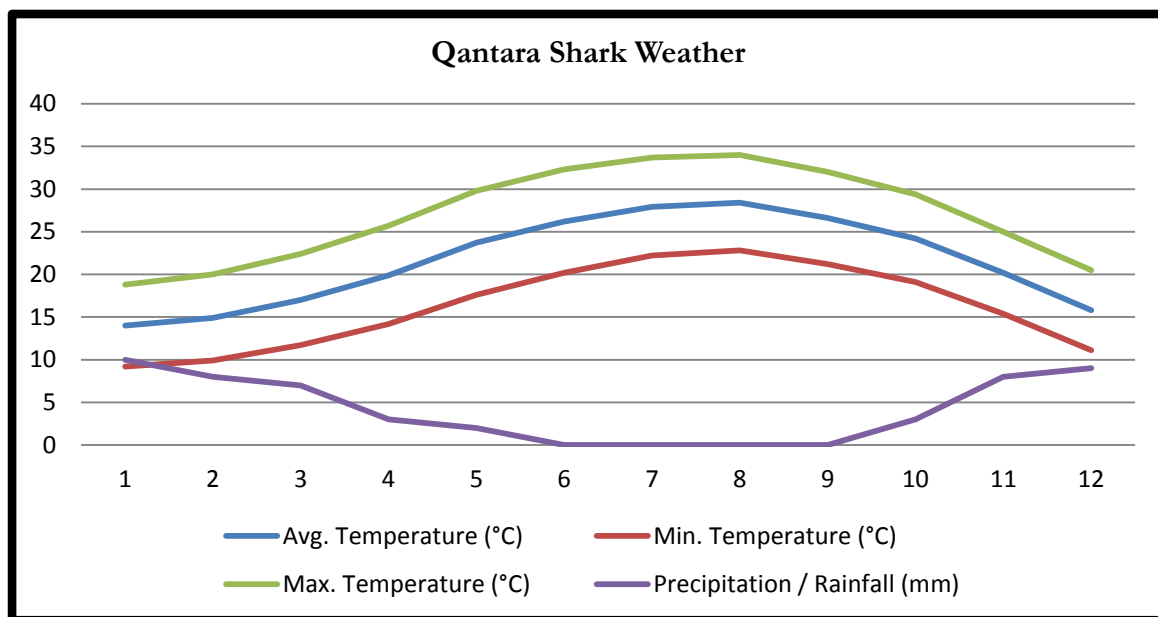
The climate in Qantra Shark is classified as a desert climate. There is virtually no rainfall all year long in Qantra Shark. This location is classified as BWh by Köppen and Geiger. In Qantra Shark, the average annual temperature is 21.6 °C. Precipitation here averages 50 mm.

Between the driest and wettest months, the difference in precipitation is 10 mm. The variation in annual temperature is around 14.4 °C.

**Table 4-1: Qantra Shark Historical Weather Data**

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Avg. Temperature (°C)	14	15	17	20	23.6	26.2	27.9	28.4	26.5	24.2	20.2	15.7
Min. Temperature (°C)	9.2	10	11.8	14.3	17.6	20.3	22.2	22.8	21.2	19.2	15.5	11.1
Max. Temperature (°C)	18.8	20	22.3	25.7	29.7	32.2	33.7	34	31.9	29.3	25	20.4
Precipitation / Rainfall (mm)	10	8	7	3	2	0	0	0	0	3	8	9

Source: <https://en.climate-data.org/location/477737/>



**Figure 4-4: Qantra Shark Historical Weather Data**

Source: <https://en.climate-data.org/location/477737/>

#### 4.1.1.2 Air and Noise Quality Measurement

- *Site Specific Ambient Air Quality*

The selection of the active air measurement location is based on the nature of the surrounding activities, the location of the nearest sensitive receptors<sup>3</sup> (such hospitals, schools, protectorates, ... ect.) with respect to the project plots, prevailing wind direction, site topography and the future layout of the proposed project components. Moreover, the

<sup>3</sup> Non were observed during the site visit.





selection is based on the guidelines stated in the American Society for Testing Materials (ASTM) reference method.

Accordingly, environmental measurements have been taken at the PRS location as a benchmark to be able to assess the impacts of the PRS construction and operation activities on air quality and noise intensity.

8-hour average measurements were conducted for pollutants of primary concerns, namely, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), Total Suspended Particulates (T.S.P) and particulate matter (PM<sub>10</sub>).

**Table 4-2: Location of Air and Noise measurements**

Location	Latitude	Longitude
PRS site	30°52'35.05"N	32°22'45.07"E

**Methodology, instrumentation, and results of Air Quality measurements are detailed in Annex 4.**

The concentrations of measured air pollutants are below national and WB guidelines. All the measurements for the gaseous pollutants were complying with the maximum allowable limits according to law 4/1994 for Environment protection and its amendments by law No.9/2009 and the executive regulation issued in 1995 and its amendments no. 710 in 2012 and 964 in April 2015”.

Construction engines are certified, i.e., exhaust is below permissible levels. Ambient concentrations of gaseous pollutants, NO<sub>x</sub>, SO<sub>x</sub> and CO are unlikely to surpass permissible levels due to operation of construction equipment. Management and mitigation plans for ambient air pollution are further addressed in chapters 5 and 7.

**Table 4-3: Average ambient air pollutants’ concentrations (µg/m3)**

Measurements	NO (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>x</sub> (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	T.S.P (µg/m <sup>3</sup> )
<b>Average</b>	18.675	29.3875	48.45	14.4875	3.1625	112	132.2
<b>National</b>	150	200	150	350 (1 h) 150 (24hrs)	30 (mg/m <sup>3</sup> )	70 (24hrs)	230 (24hrs)
<b>WB limits</b>	NA	200	150 <sup>a</sup> mg/Nm <sup>3</sup> 50 <sup>b</sup> mg/Nm <sup>3</sup>	75 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>	10 mg/Nm <sup>3</sup>	60-90 long term 150-230 (24 hrs)

- The 150 mg/NM3 NO<sub>x</sub> value is applicable to facilities with a total heat input capacity of up to 300 MWth.
- The 50 mg/NM3 NO<sub>x</sub> value is applicable to facilities with a total heat input capacity greater than 300 MWth.



During the construction phase, there will be no excavation and rehabilitation activities that cause dust levels to surpass permissible levels in construction areas.

- *Site specific noise measurements*

Noise level measurements were conducted in the same location of the ambient air quality measurements. The duration of the measurements is 8 hours with one hour averaging intervals.

**Methodology, instrumentation, and results of Noise measurements are detailed in Annex 4.**

### Results of Noise measurements

Typically due to noise from passing traffic on the road near the measurement locations, baseline ambient noise levels are marginally higher than the national (Sensitive Area: Rural Area for PRS), World Bank permissible limits and higher than national permissible limits for sensitive receptors..

Management and mitigation plans for noise levels beyond permissible levels are further addressed in chapters 5 and 7.

**Table 4-4: Ambient noise level measurements**

Sound Level Equivalent & Percentile Recordings in dBA for 8 Hours					Permissible Limits	
LAeq	LA10	LA50	LA90	LA95	LAeq (dBA)	
					National	International
65.93	50.15	43.25	36.77	35.71	70	60

### 4.1.2 Geology and Soil

Soil composition in Ismailia varies from clayey soil to sandy soil . The topography in the study area is nearly flat with ripple marks. It is covered by extensive sedimentary clastic and nonclastic accumulation, alluvial deposits ranging from Oligocene to Quaternary age.

The surrounding area of the PRS is characterized as desert and Sabkha (saltmarshes).

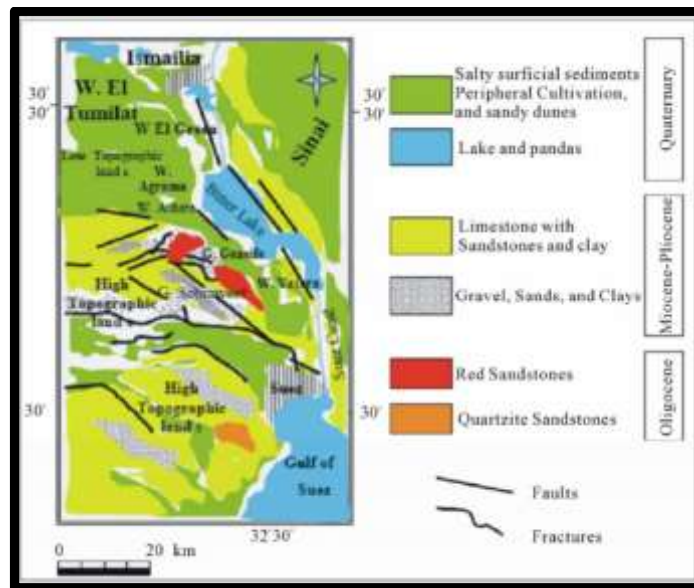


Figure 4-5: Type of Soil in Ismailia

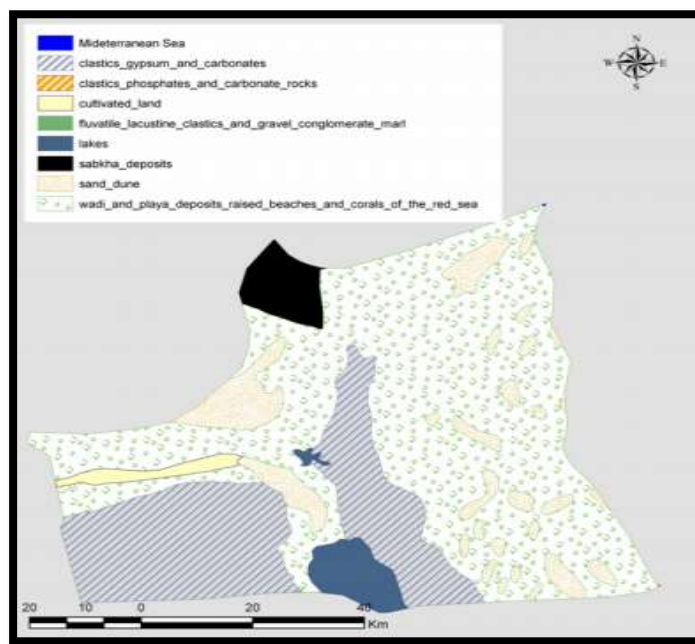


Figure 4-6 : Geological Map of the area  
Source: EEAA Environmental Profile 2007

#### 4.1.3 Water Resources

- *Surface water*

Ismailia governorate depends on Ismailia fresh water canal as a main water source for irrigation and drinking.

There are no canals or drainages in the surroundings of Qantra Shark's PRS



- **Groundwater**

There are no wells of underground fresh water in Ismailia governorate, but there are 354 wells used in irrigation of agriculture lands according to the information of General Department of Irrigation in Ismailia.

**No site specific data is available on groundwater in Qantra Shark**

#### 4.1.4 Terrestrial Environment

Qantra Shark is located in arid coastal zone of Sinai Desert. Present, scarce water resources are rainfall (below 100 mm/year) and groundwater. Groundwater is available in limited quantities in shallow and deep aquifers and is often saline (2000-8000 ppm). The flow of the shallow aquifer is towards the north in the direction of Lake Bardawil and the coast.

##### 4.1.4.1 Flora

With respect to significance flora, none were encountered in the project areas, where the PRS will be installed. Typical urban areas are free of significant vegetation. Planned off-take from national grid to the PRS shall not come into contact with palm trees alongside the road.

##### 4.1.4.2 Fauna

The PRS area was surveyed using walkover methodology, few avifauna species were recorded during the survey closed to the Sebkha area, the PRS site is surrounded by desert and Sebkha with very limited biodiversity species, but there are no evidence for resident mammal species in the area.

Very confined species have been recorded in the project site area in Qantra Shark. Bubulcus ibis (white erget bird) were recorded in moderate numbers in the project site area.



Figure 4-7: Avifauna Species Recorded in Qantra Shark

Cats (*Felis domestica*) were been noted in the project area, living among garbage dumps in the area. Also, some number of dogs (*Canis sp*) cats (*Felis domestica*), Raven Black Desert: (*Corvus sp.*) and Hoopoes (*Upupa epops*) in very little numbers were been recorded.

**No endangered or vulnerable species were observed in the project area.**

#### 4.1.5 Nearest natural protected Areas

The nearest Important Bird Area (IBA) and protected area to the Qantra Shark is Ashtum El-Gamil protected area 39 km north-west of Qantra Shark. Zaranik, a nationally declared



protected area is located approximately 96 km to the north-east of Qanatar Shark. Zaranik is a part of Lake Bardawil, an IBA.



Figure 4-8: Nearest Protectorates in Ismailia

#### ***Ashtoom El-Gamil and Tennis Island Protected Area in Port Said Governorate***

The protected area includes the bays of El Gamil and Ashtoom El Gamil and Al Manzala lagoon. Tennis island is located in El Manzala lagoon, the largest among the Delta lagoons with various environmental systems. El Manzala lagoon area was a rich agricultural land that fell down due to an earthquake that occurred in the late sixth century, the sea water overflowed the sand dunes which used to separate the sea from the agricultural land. The water gradually covered the land year after year except the renowned Tennis. It was a large city with great buildings and markets. It had palm trees, grapes and farms. It had high water channels pouring water in the sea currently known as Ashtoom. It was called Tennis after Tennis the son of Ham, the son of Noah.

#### ***Zaraniq Protected Area and El Bardawael Marsh in the North Sinai Governorate***

Zaraniq protected Area and El Bardawael Marsh are key points for bird migration in the world since it is the first pit stop for birds after the long migration trip from Europe and Asia during the fall. Other birds call this area home permanently. Over 270 species of birds have been recorded in the area. They represent 14 classes. The most important birds recorded are: Pelicans, herons storks, crestet lark, quail, white stork, lark, avocet, Hem Harrier Rail and falcon.

#### **4.1.6 Physical cultural resources**

There are no significant physical cultural resources that exist in Qantra Shark, except for mosques and churches.

No archeological sites or sites that bear any significant historical or cultural value were identified in the project area of Qantra Shark. However, in case of any unanticipated



archeological discoveries; Annex 5, titled 'Chance Find Procedures,' outlines the set of measures and procedures to be followed in such cases.



Figure 4-9: Mosque and Church in QS

#### 4.1.7 Physical structures

There are no physical structure in the vicinity of the PRS project in Qantra Shark city.

#### 4.1.8 Road distribution network and traffic

The project is located on Ras Sedr Qantra Shark road. The figure below shows the roads surrounding the PRS. Ras Sedr -Qantra Shark road contains one lane.



Figure 4-10: Road Network in QS



Figure 4-11: Ras Sedr- Qantra Shark Road adjacent to the PRS

#### 4.1.9 Waste management

Solid waste management in Qantra Shark is planned, operated and monitored by the local municipality. Primary waste collection is handled using old trucks and tools. There is a remarkable gap in waste collection efficiency as the allocated resources are limited.

The local units in the governorate collect the solid waste in small containers in the streets and there are also manual tools and some modern equipment such as tractors and trailers. The collected solid waste is transferred into other trucks and transported to the public landfill in the desert near Ismailia city.



There is no information about the volume of wastes in the project site. However, the study team anticipated the waste volume at 18 ton/day. The majority of waste generated is mainly organic wastes.



Figure 4-12: Waste collection



Figure 4-13: Collection point in Qantra Shark

Municipal solid waste collection points, used as open transfer systems, exist in residential areas in the capital cities of Ismailia Governorate.

## 4.2 Socioeconomic Baseline

### 4.2.1 Administrative affiliation

Qantra Shark City lies within the jurisdiction of the Qantra Shark Markaz. It is subdivided into three cities: the old city, the middle region and the new city. The total area of Qantra Shark city is 197.75 km<sup>2</sup>, according to the Information Center in Qantra Shark Markaz.

### 4.2.2 Urbanization trends

Qantra Shark city is considered as a semi-urbanized area. According to CAPMAS Poverty Mapping data from 2013, the percentage of individuals living in apartments is 95.3%, while individuals living in rural houses represent 0.43%. The remaining percentage 4.3% reside in other types of houses i.e. one room or two in one apartment or huts. There are few villages surrounding the City, according to the findings of the field research team.

### 4.2.3 Demographic characteristics

- *Total Population*

According to CAPMAS poverty mapping data 2013, the total population of Qantra Shark City is 24193 people.

- *Rate of Natural Increase*

According to 'Governorates' Description by Information 2010,' the birth rate in Ismailia is 32 births per 1000 persons, while mortality rate stands at 6 per 1000 persons. That gives a natural growth rate which of 26 per thousand persons in Ismailia.



The 'Governorates' Description by Information 2010' reported figures from 2010 that the neonatal mortality rate 8.70 per 1000, while infant mortality is 16.2 per thousand live births. Infant mortality rate below five years old stood at 21.90 per 1000.

#### 4.2.4 Living Conditions

- *Household Size and Density*

A household is defined as “Family (and non-family) members who share residence and livelihood, and operate as one social and economic unit”. The average family size in Ismailia Governorate is about 4.17 individuals, according to 'Governorates' Description by Information 2010.'

According to CAPMAS figures, the average size of households in Qantra Shark city stands around 4.43 individuals.

- *Dwelling characteristics*

As mentioned above, the predominant majority of the people of Qantra Shark live in urban houses (apartments). The conditions and characteristics of urban houses are in compliance with the bases and preconditions for connecting NG. Almost all of urban houses are built with concrete and red bricks. The tallest building in Qantra Shark city is five-story high.

With regard to the legal status of buildings; all buildings and neighborhoods are mostly legal, and no illegal or unplanned neighborhoods were documented by the research team.

Regarding the condition of the streets in Qantra Shark City, the average width of main streets range between (2 to 3) lanes wide, and side streets range between (1 to 2) lanes wide. Despite the modest conditions and maintenance of the asphalt, they are mostly paved out and convenient for NG installations. According to Ismailia governorate's website, Since 2014, the governorate embarked on infrastructure upgrade, which included roads and streets, sanitary and sewage systems, and restoring main squares.



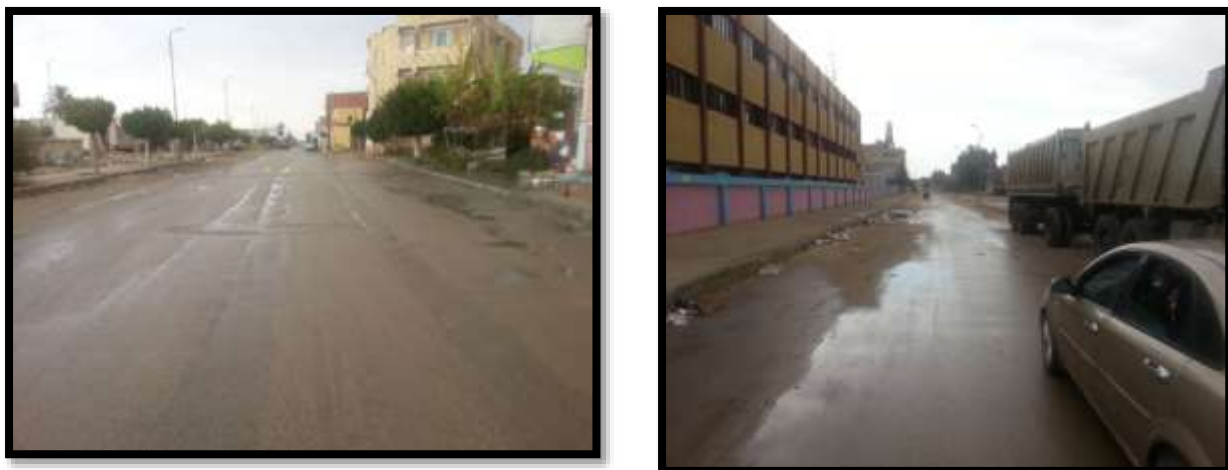


Figure 4-14: Two lanes street in Qantra Shark City

#### 4.2.5 Access to Basic Services

- *Access to Electricity*

The number of subscribers in Ismailia Governorate is 381.83. The total consumption of electricity stood at 1091.10 k.w/h annually, which include lighting usage (954.10 k.w/h) and industrial usage (137.00 k.w./h).

According to CAPMAS poverty mapping data of 2013, 100% of Qantra Shark City's residents have access to electricity.

- *Access to potable water and sanitary system*

Accessibility to water network is widespread in Qantra Shark city, as 100% of individuals have access to the public water network, and have also tap water inside their houses, according to CAPMAS poverty mapping data of 2013.

However, the coverage of the public sanitation network stands at 24.71 %, according to CAPMAS poverty mapping 2013.

#### 4.2.6 Human development profile

- *Education*

According to CAPMAS Poverty Mapping data of 2013, 16% of individuals have finalized their basic education, while only 12% have university degrees. Currently, there are 97.55% of individuals, between the age (6 to 18) years old, are enrolled at schools; while the percentage of drop-outs stands at 0.9%.

In the same respect, the percentage of females with basic education stands at 14.12. The percentage of females having university degrees is 8.84%. The percentage of females between the age of 6 to 18 years old enrolled at schools is 98%.

The illiteracy rate in Qantra Shark city stands at 24.5%, while the illiteracy rate among females stands higher at 31.72%.



- *Unemployment and Work Status*

The percentage of manpower which joined labor force at the age of 15 years old and above is 50.55%. Manpower at the age of 24 years old and above is 55%. The percentage of agriculture workers from total employed persons is 7.76%. The unemployment rate in Qantra Shark city stands high at 18%. The following table illustrates the distribution of manpower among different sectors:

**Table 4-5 Employment in Qantra Shark City**

Self-employed	Government/public sector	Private sector	Permanent jobs	Temporary jobs	Wage workers	Unpaid worker
5.34%	56.75%	22.5%	65.28%	35.44%	73.9%	0.11%

Source: CAPMAS poverty mapping, 2013

In the same respect, female employment figures show female unemployment rate at 31.5%. The percentage of female workers who joined labor force at the age of 15 years old and above is 25.19%. The following table display more figures related to type of work, taken up by females in Qantra Shark city:

**Table 4-6 Female employment in Qantra Shark City**

Self-employed females/total employed females	Female wage workers/ total employed females	Female agriculture workers/total employed females	Females working in temporary jobs	Unpaid females
0.23%	67.77%	4.52%	4.52%	0

Source: CAPMAS poverty mapping data

The formal Statistics obtained from the Poverty Mapping Data 2013 regarding manpower reflected that the age of starting work is 15 years old.<sup>4</sup> Both the Child Law and the Labor Law state that children shall not be employed before they complete 14 years old, nor shall they be provided with training before they reach 12 years old; however children between 12 and 14 years old are permitted to work as trainees.

According to focus group discussions, most of the people work as government employees, professionals, service workers, and laborers. There are a number of startups and new projects such as the 'Technology Valley,' which is part of the Suez Canal Axis Development Project.

#### 4.2.7 Health Facilities

Qantra Shark markaz has one public and central hospital; in addition to one urban medical unit, 5 rural medical units, and 6 ambulance centers.

<sup>4</sup> Based on Labor law number 12 of year 2003 and The Child Law (No. 12, 1996). There are certain critical obligations to recruit children below 15 years old. Article 98-103 of Labor law put limitations related to age, type of occupation, hazards work...etc



#### **4.2.8 Poverty index**

According to poverty mapping developed by CAPMAS in 2013, the number of poor people in Qantra Shark city is 3760 individuals, representing 15.54%. The Gini Coefficient, which indicates income inequality, stands at a critical 0.24. The percentage of female-headed households is 13%.

Male and female participants of the focus group discussions grumbled about the recent bulge in electricity bills which range between 100 to 300 pounds. More importantly, the cost of their consumption of LPG cylinders is very high, ranging from 35 to 70 pound per cylinder.

According to CAPMAS poverty mapping of 2013, the per capita consumption in Qantra Shark city is 6677.26 EGP/annually. Focus group discussions revealed that the average family expenditures range between 2000 to 6000 pounds.

#### **4.2.9 Human activities in the project areas**

As noted above, the size of agriculture activities are very slim; as it encompasses only 7.76% of total employed individuals living inside Qantra Shark city. There are a number of maintenance workshops and small businesses in the city. Focus group discussions revealed that the majority of the people work as employees; and the remainder work as drivers, or work involved in small commercial activities. The majority of employees work for the government/public sector at 56.75%, while 22.5% work for the private sector. The work force in Qantra Shark city is divided into government employees, professionals, service workers, and laborers. The city is considered as underdeveloped; however, it lies within the government vision of Suez Canal Axis Development plan.



## 5 Environmental and Social Impacts

The environmental impact assessment (ESIA) is a process used to identify and evaluate the significance of potential impacts on various environmental and social receptors as a result of planned activities during (construction and operation) phases of the Project. Furthermore, the analysis of environmental and social impacts is important to detail an effective management and monitoring plan which will minimize negative impacts and maximize positives. The evaluation of the potential impacts on various receptors is based on a significance ranking process described in the following subsection. Details are presented in annex 6.

### 5.1 Impact Assessment Methodology

The impact assessment methodology adopted for this ESIA is a semi-quantitative “cause-effect” matrix modified from Leopold and Buroz’s Relevant Integrated Criteria. The Leopold matrix is two-dimensional, where the stages of the project (activities) are assessed in relation to the existing environmental characteristics and conditions that may be affected during the execution of those actions. The impact of each activity on each receptor was assessed according to magnitude on a scale of -10 to 10, where negative values indicate a negative influence on the receptor, and importance on a scale of 0 to 10, which encompasses the probability of occurrence, frequency of the impact etc. The numbering system is used as a relative measure, where more negative numbers correspond to impacts having a higher negative magnitude. Susceptible receptors and corresponding activity are deduced if magnitude and importance are of minor severity. Then the importance of each impact by activity is determined based on the Buroz relevant integrated criteria. The importance of each impact by activity is assessed by assigning a score for intensity, extension, momentum, persistence, reversibility, recoverability, synergy, accumulation, effect and frequency of the impact. The importance, I, is determined according to  $I = \pm (3IN + 2EX + MO + PE + RV + SI + AC + EF + PR + MC)$ . Details including definitions of each assessment criterion and corresponding score scale for the Buroz Relevant Integrated Criteria are presented in **Annex 6**.

For both methods, the severity of the impact is defined as either of no significance , minor, medium, or major. Results from both methods are summarized and presented according to the following scheme:

Impact rating	Color
<b>None</b> or of no significance (no impact);	
<b>Minor</b> severity (minimal impact; restricted to the work site and immediate surroundings)	
<b>Medium</b> severity (larger scale impacts: local or regional; appropriate mitigation measures readily available);	
<b>Major</b> severity (Severe/long-term local/regional/global impacts; for negative impacts mitigation significant).	

**Detailed impact assessments results are presented in two tables in Annex 6.**



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## 5.2 Potential Positive impacts

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### 5.2.1 Positive impacts during construction (Commissioning and Decommissioning phase)

#### 5.2.1.1 *Impacts related to employment*

The project will result in positive impacts through the provision of job opportunities.

##### 5.2.1.1.1 **Provide direct job opportunities to skilled and semi-skilled laborers**

The construction of Qantra Shark's PRS is expected to result in the creation of job opportunities, both directly and indirectly. Based on similar projects implemented recently by EGAS and the local distribution company, the daily average number of workers during the peak time will be about 12 workers. Including engineers, technicians and guards.

##### 5.2.1.1.2 **Create indirect opportunities**

As part of the construction stage, a lot of indirect benefits are expected to be sensed in the targeted areas due to the need for more supporting services to the workers and contractors who will be working in the various locations. This could include, but will not be limited to accommodation, food supply, transport, trade, security, manufacturing, etc.

### 5.2.2 Positive impacts during operation

#### 5.2.2.1 *Impacts related to employment*

The project will result in positive impacts through the provision of job opportunities.

##### 5.2.2.1.1 **Provide direct job opportunities to skilled and semi-skilled laborers**

The operation of Qantra Shark is expected to result in the creation of job opportunities, both directly and indirectly. The average number of workers during operation of the PRS will be about 17 workers from the permanent workers of the LDC. They are segregated as follows 6 technicians, 2 foremen, 2 maintenance (one engineer and one engineer's assistance) and 3 security. With regards to health and safety, one person will be assigned from the staff of Sinai Gas. All above mentioned workers are already working in the PRS now. Therefore, there is no probability to add any additional staff. However, such opportunities are enabled for the permanent staff.

##### 5.2.2.1.2 **Create indirect opportunities**

As part of the operation stage, minor indirect benefits are expected to be sensed in the targeted areas due to the need for more supporting services to the workers and contractors who will be working in the various locations. This could include, but will not be limited to provision of waste disposal services and septic tanks evacuation.



### 5.3 Potential Negative Impacts

Various impacts were assessed in accordance to the impact assessment methodology. The impacts related to soil, ecology, labor influx, and community health and safety during construction were ranked as of no significance . During operation, soil, traffic, community health and safety, labor influx and ecology were also of no significance . Therefore, they were excluded from the impact table below.

With regards to lands allocated for Qantra Shark PRS, it is already in place. No land is needed to extend the PRS. With regards to the storage areas, Sinai Gas managed to obtain a lease contract in one of the industrial zones where they can store their materials.

#### 5.3.1 Negative Impacts during Construction (Decommissioning and Commissioning Phase)

##### 5.3.1.1 Impact on soil

There are no excavation activities as the PRS already exists. Potential soil contamination may take place as a result of spillage or leaks from the activity of moving the equipment

Soil Pollution Impacts are expected to be **of no significance**

##### 5.3.1.2 Air Emission

WB requirements and Law 4/1994 (modified by laws 9/2009 & 105/2015) stipulates strict air quality standards. Air emissions (gases and particulates) during construction shall arise from:

- Exhaust from trucks containing SO, NO<sub>x</sub>, CO, VOCs, etc.

The impacts of the gas emissions due to those activities are expected to be temporary and of no significance for the following reasons:

- Quantities of air pollutants emitted from the machines while moving the components of the PRS are temporary (during the working activities) and low.
- The intensity of work activities and the number of vehicles travelling onsite would be relatively low.

Air Emission impacts expected during the construction phase are **of no significance**

##### 5.3.1.3 Noise emissions

As mentioned previously that there are no construction activities in the PRS. The only construction noise during the movement of the processors of the PRS will be the noise from the trucks' operation. The WB/IFC guidelines and Law 4/1994-9/2009-105/2015 have defined standards for noise intensity and exposure periods in the work place, in addition to certain limits for ambient noise levels for different types of urban and rural areas.

Noise impacts expected during the construction phase are **of no significance**

##### 5.3.1.4 Impact on worker health and safety

Potential safety and health impacts to workers during construction /upgrading of the Ismailia PRS, in general, are the same as those associated with any construction project



involving use of large equipment, transportation of overweight and oversized materials, and construction and installation of facilities. In addition, health and safety issues include working in trenches.

General risks associated with the construction sites include slips and falls; moving trucks and machinery; exposure to chemicals and other hazardous materials; exposure to electric shock and burns; weather related impacts, exposure to high noise intensity levels. If the workers are reluctant to use Personal Protective Equipment (such as helmets, ear muffs, and masks), risks can be higher.

Faulty equipment or exposed cables can cause risks of electrocution.

Chemical hazards are associated with the installation and connection of the odorizing unit. Inadequate handling or compromised integrity of the connections can result in leaks/released hazardous material (tertiobutylmercaptin and methylsulphide), to which workers will get exposed resulting in a health hazard.

The occupational health and safety impacts is assessed as medium

#### 5.3.1.5 Risk pertaining to child labor

As mentioned in the baseline, child labor is a common practice in the project communities in Ismailia. Children below 18 work almost in all developmental projects as they receive low salaries and they are less demanding. This risk should be carefully handled in the ESMP and restrict obligations and monitoring should be applied in the contractor and subcontractors obligations. Rigid penalties should also be applied to the contractor and subcontractors in case of breaching child labor restrictions.

Impacts pertaining to child labor during construction is ranked as of low-medium

#### 5.3.1.6 Hazardous material and waste generation

Human or domestic wastes generated by construction labor are mainly sewage and garbage. Disposal of sewage and garbage generated from construction labor, if not transported to adequate sites, will affect the sanitation situation and will negatively affect the environment. This type of waste has to be transported outside the site.

Solid hazardous wastes generated includes empty containers, spent welding materials, solvents, paints or adhesives, and other hazardous wastes resulting from operation and maintenance of the equipment and vehicles, i.e. spent oils, spent lube, waste oil filters, batteries, etc. Among the hazardous wastes also are the wastes of faulted materials.

According to the information given by SinaGas, the upgrade of the existing PRS will require only 6 technicians so the amount of domestic wastes generated will be minimal

Waste generation impacts are of minor severity

#### 5.3.1.7 Traffic impact

#### Environmental impacts



The greatest potential for traffic impacts to occur arises during the period of moving the existing components in the PRS and bringing the new ones. The traffic flow that will be created during this period will be temporary and will not have significant impacts on the road

#### *Socioeconomic impacts*

The project will not result in inconvenience and disturbance to local communities and business in the main roads in the vicinity of Qantra Shark PRS. Moving the PRS equipment might result short term disturbance to the community.

Therefore the impact on traffic flow is of minor severity

#### *5.3.1.8 Ecological impact*

As mentioned in baseline section, project site is not characterized by the presence of endangered species (fauna or flora). Only some non-significant exotic species such as grasses recorded at project area. For fauna Very confined species had been recorded in the project site area.

Therefore the impact is considered as of no significance

#### *5.3.1.9 Community health and safety*

During the construction phase, since the proposed project is at a close distance from the industrial area, the temporary impacts due to exhaust gas emission, dust and noise that could affect the health of the population if it is not managed is expected to be significant. However, as the exhaust gas emission is temporary and short term and actually minimal due to the type of activities used in upgrading the PRS, These impacts are considered of no significance

Impacts due to construction activities on community health and safety are of no significance

#### *5.3.1.10 Land related impact*

##### *Socioeconomic impacts*

Qantra Shark PRS is already in place. No land is needed to extend the PRS. With regards to the storage areas, Sinai Gas managed to obtain a lease contract in one of the industrial zones where they can store their materials. The off take is located inside the current PRS. Consequently, no lands are needed for the off take.

There was no kind of encroachment in all lands allocated for the project. Additionally, obtaining the land have not resulted in any kind of economic displacement. Based on the meeting conducted in the site, no one of the consulted community stated that there were any kinds of customary or formal land use.

Impact related to the visual intrusion during the construction phase is of no significance

#### *5.3.1.11 Visual intrusion and landscaping*

During the replacement of the PRS there is a probability to result in visual intrusion due to moving construction materials and vehicles inside the agriculture lands. Given the fact that





the PRS land is fenced, the probability of this impact tends to be of no significance in Qantra Shark .

Impact related to the visual intrusion during the construction phase is **of no significance**

#### 5.3.1.12 Labor influx

There is a probability to face a labor influx impact that might originate from the migration of laborers to the work site. Additionally, some people might follow workers to provide services (the followers). Generally speaking, such impact is viable in remote areas when thousands of workers invade rural areas causing real disturbance to the surrounding community and absorb their resources. In Qantra Shark PRS, about 6 unskilled workers will be recruited from Qantra Shark and only 6 workers will come from outside Qantra Shark. Such number can't cause any labor influx impacts, particularly, as Sinai Gas staff is fully acquainted of norms and traditions of the surrounding communities.

Impact related to the labor influx during the construction phase is **of no significance**

### 5.3.2 Negative impacts during operation

#### 5.3.2.1 Occupational health and safety

Possible impacts to health and safety during operation include exposure to odorant release, gas leak, fire, noise. And accidental injury to workers during operation and maintenance activities. In addition; health and safety issues include working around energized equipment, and possible contact with natural hazards. However, during the operation and maintenance phase, if there is any incident or emergency situation, this will negatively endanger the surrounding community and establishment.

Odorant handling is part of the operation of the PRS and will be addressed in a Quantitative Risk Assessment (Annex 9) as a separate study. An odorant is added to the NG in order to enable detection upon leakage. The odorant containing Tertiobutylmercaptin (80%) and Methylehlysulphide (20%) is classified as a hazardous substance. The MSDS of the odorant identifies the following hazardous properties: Highly flammable, flammable and toxic products upon thermal decomposition, irritant, and toxic to aquatic flora and fauna. In case of emergency, the risk resulting from odorant release or gas leak will be managed by Qantra Shark PRS's emergency response plan.

Occupational health and safety impacts are considered of medium severity

#### 5.3.2.2 Risk pertaining to child labor

Given the permanent nature of job opportunities during operation phase, children below 18 are not allowed to work in the PRS. Consequently, this risk is not valid in the operation phase .

Child labor risk is assessed as of no significance

#### 5.3.2.3 Hazardous and non-hazardous waste management

During operation and maintenance of the PRS, industrial hazardous (odorant containers), non-hazardous waste and small quantity of domestic wastes (solid and liquid waste) will be



generated. Industrial hazardous wastes are generated during routine operations (e.g., lubricating oils, odorant containers, chemical containers). According to EEAA regulations, these wastes are stored, and transported by a licensed contractor to an appropriate permitted off-site disposal facility as a standard practice. Poor waste management practices may also have a significant impact on environment (soil, subsurface water, visual, and health and safety). However, it is expected that the waste will be managed properly and all the mitigation and management procedures will be presented in the next chapter of the report.

Waste generation and management is considered of medium severity

#### 5.3.2.4 Noise impact

The pressure reducers normally cause noise generated from the reducers' pipes. Maximum noise level expected from the reducers is 80db. The generated noise is constant (not intermittent). Assuming ambient noise levels are complying with WB/IFC requirements and Law 4/1994-9/2009- 105/2015 standards for low noise residential areas and a 20-meter buffer distance kept between the reducers and the PRS fences, therefore minimum noise will propagate through the PRS borders. Additionally, the PRS is located parallel to Qantra Shark- Ras Sedr road where the noise level is relatively high.

Impacts of noise during operation is considered of minor severity

#### 5.3.2.5 Air emission

No gaseous emissions are expected to occur during the operation phase except for the potential natural gas leak or in case of accidents (odorant handling or storage) and during maintenance activities.

Impact related to air emission during the operation phase is of no significance

#### 5.3.2.6 Soil impact

The normal operation of PRS doesn't has any impact on soil; however risk of soil contamination is only associated with the possible spillage or leakage.

Impact related to soil during the operation phase is of no significance

#### 5.3.2.7 Ecological impact

The normal operation will not have any impact on flora and fauna.

Impact related to ecology during the operation phase is of no significance

#### 5.3.2.8 Traffic impact

During the operation and maintenance of the PRS, there will be no expected impact. There will be only small number of staff vehicles moving in and out from the PRS. And trucks to transport odorant and spare parts to the PRS. As already mentioned, the PRS is located parallel to Qantra Shark- Ras Sedr road .The additional number of vehicles will not affect the existing traffic road.

Traffic Impact during operation is of no significance

#### 5.3.2.9 Labor influx

The Qantra Shark PRS will assign approximately 17 workers, and therefore labor influx during operation is of no significance.

Impact related to the labor influx during the operation phase is of no significance



#### 5.4 Impacts during Accidental Events (Operation Phase)

Regarding to the Quantitative Risk Assessment Study (QRA), which demonstrate on the following hazards:

- Gas Release
- Fires (Heat Radiation)
- Explosion (Overpressure Waves)
- Suffocation (Odorant Leak)

And referring to the risk calculations determined in Qantra Shark QRA study, the individual risk level to the exposed workers / public based on the risk tolerability criterion have been identified in ALARP (Below the Upper Tolerability Limit<sup>(5)</sup>) region. So there are some points (Study Recommendations) need to be considered to keep the risk tolerability, and this will be describe under item (7.7) (for more details refer to the QRA Study under Annex-9)

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<sup>5</sup> ***Below the Upper Tolerability Limit***

*The risk is only tolerable if it is ALARP. This means that all practicable risk reduction measures must be identified and those that are reasonably practicable implemented. The term reasonably practicable indicates a narrower range than all physically possible risk reduction measures. If the cost of a risk reduction measure, whether in terms of money, time or trouble, can be demonstrated to be grossly disproportionate to the risk reduction gained from the measure, taking account of the likelihood and degree of harm presented by the hazard, then implementation of the measure may not be required.*

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## 5.5 Summary of impacts

Table 5-1 Summary of Impacts

Receptor	Impact Description	Type	Impact Significance
<b>During Construction</b>			
Soil	There are no excavation activities as the PRS already exists. Potential soil contamination may take place as a result of spillage or leaks from the activity of moving the equipment	Negative	Of no significance
Air emission	The impacts of the gas emissions due to those activities are expected to be temporary and of no significance for the following reasons: <ul style="list-style-type: none"> <li>- Quantities of air pollutants emitted from the machines while moving the components of the PRS are temporary (during the working activities) and low.</li> <li>- The intensity of work activities and the number of vehicles travelling onsite would be relatively low.</li> </ul>	Negative	Of no significance
Noise	As mentioned previously that there are no construction activities in the PRS. The only construction noise during the movement of the processors of the PRS will be the noise from the trucks' operation. The WB/IFC guidelines and Law 4/1994-9/2009-105/2015 have defined standards for noise intensity and exposure periods in the work place, in addition to certain limits for ambient noise levels for different types of urban and rural areas.	Negative	Of no significance
Occupational health and safety	Potential safety and health impacts to workers during construction /upgrading of the Ismailia PRS, in general, are the same as those associated with any construction project involving use of large equipment, transportation of overweight and oversized materials, and construction and installation of facilities. In addition, health and safety issues include working in trenches.	Negative	Medium
Risk pertaining to child labor	As mentioned in the baseline, child labor is a common practice in the project communities in Ismailia. Children below 18 work almost in all projects as they receive low salaries and they are less demanding. This risk should be carefully handled in the ESMP and restrict obligations and monitoring should be applied in the contractor and subcontractor obligations	Negative impact	Low to medium
Solid and Hazardous waste impacts	Inappropriate waste disposal and improper management of construction waste materials which could lead to spillage and soil contamination. Excavated soil and concrete/bricks waste are inert materials. Improper disposal of such wastes will only have aesthetic effects on the disposal site. The legal standards of Law 4/1994-9/2009-105/2015 for the Environment and Law 38/1967 stipulate that these wastes should be disposed of in licensed sites by the local authority, which minimizes any aesthetic effects of such waste. Hazardous and non-hazardous materials available onsite during construction activities are likely to include fuel, engine oil, paints, Poor handling of those materials and their inappropriate storage may result in poor containment of induced leaks.	Negative	Minor
Traffic	The greatest potential for traffic impacts to occur arises during the period of moving the existing components in the PRS and bringing the new ones. The traffic flow that will be created during this period will be temporary and will not have significant impacts on the road  The project will not result in inconvenience and disturbance to local communities and business in the main roads in the vicinity of Qantra Shark PRS. Moving the PRS equipment might result short term disturbance to the community.	Negative	Minor
Ecological impact	As mentioned in baseline section, project site is not characterized by the presence of endangered species (fauna or flora). Only some non-significant exotic species such as grasses recorded at project area. For fauna Very confined species had been recorded in the project site area.	Negative	Of no significance
Community health and safety	During the construction phase, since the proposed project is at a close distance from the industrial area, the temporary impacts due to exhaust gas emission, dust and noise that could affect the health of the population if it is not managed is expected to be significant. However, as the exhaust gas	Negative	Of no significance



Receptor	Impact Description	Type	Impact Significance
	emission is temporary and short term and actually minimal due to the type of activities used in upgrading the PRS, These impacts are considered of no significance		
Impacts related to lands	Qantra Shark PRS is already in place. No land is needed to extend the PRS. With regards to the storage areas, Sinai Gas managed to obtain a lease contract in one of the industrial zones where they can store their materials. The off take is located inside the current PRS. Consequently, no lands are needed for the off take.  There was no kind of encroachment in all lands allocated for the project. Additionally, obtaining the land have not resulted in any kind of economic displacement. Based on the meeting conducted in the site, no one of the consulted community stated that there were any kinds of customary or formal land use.	Negative	Of no significance
Visual intrusion and landscaping	During the replacement of the PRS there is a probability to result in visual intrusion due to moving construction materials and vehicles inside the agriculture lands. Given the fact that the PRS land is fenced, the probability of this impact tends to be of no significance in Qantra Shark .	Negative	Of no significance
Labor influx	In Qantra Shark PRS, about 6 unskilled workers will be recruited from Qantra Shark and only 6 workers will come from outside Qantra Shark . Such number can't cause any labor influx impacts, particularly, as Sinai Gas staff is fully acquainted of norms and traditions of the surrounding communities.	Negative	Of no significance
<b>During operation</b>			
Occupational health and safety	Inhalation of air pollutants (odorant or natural gas leak), exposure to noise levels, injuries and potential death as a result of operating equipment with high pressure tools and handling hazardous materials. In case of emergency / accidents, resultant risks are studied in details in the attached Quantitative Risk Assessment, that recommended some mitigation measures to be implemented during operation	Negative	Medium
Risk pertaining to child labor	Given the permanent nature of job opportunities during operation phase, children below 18 are not allowed to work in the PRS. Consequently, this risk is not valid in the operation phase .	Negative	Of no significance
Hazardous material and waste management	<b>Hazardous material</b> Odorant leak can result from improper handling of the odorant includes: Storage in unsafe conditions, in terms of occupational health and safety. According to Qantra Shark QRA study, modeling the vapour release will be limited inside the PRS boundary, and Sinai Gas QS ERP will cover this point. <b>Hazardous waste</b> Discharge of remaining odorants in containers, after use, in land or sewers; Disposal of used containers with domestic waste, or by open disposal	Negative	Medium
Noise	The pressure reducers normally cause noise generated from the reducers' pipes. Maximum noise level expected from the reducers is 80db. The generated noise is constant (not intermittent). Assuming ambient noise levels are complying with WB/IFC requirements and Law 4/1994-9/2009-105/2015 standards for low noise residential areas and a 20-meter buffer distance kept between the reducers and the PRS fences therefore minimum noise will propagate through the PRS borders.	Negative	Minor
Air emissions	No gaseous emissions are expected to occur during the operation phase except for the potential natural gas leak or in case of accidents (odorant handling or storage) and during maintenance activities.	Negative	Of no significance
Soil	The normal operation of PRS doesn't has any impact on soil; however risk of soil contamination is only associated with the possible spillage or leakage.	Negative	Of no significance
Ecological	The normal operation will not have any impact on flora and fauna.	Negative	Of no significance
Traffic	During the operation and maintenance of the PRS, there will be no expected impact. There will be only small number of staff vehicles moving in and out from the PRS. And trucks to transport odorant and spare parts to the PRS. As already mentioned, the PRS is located parallel to Qantra Shark- Ras Sedr road .The additional number of vehicles will not affect the existing traffic road.	Negative	Of no significance
Labor influx	There is a probability to face a labor influx impact that might originate from the migration of laborers to the work site. Additionally, some people	Negative	Of no significance



Receptor	Impact Description	Type	Impact Significance
	might follow workers to provide services (the followers). Generally speaking, such impact is viable in remote areas where thousands of workers invade rural areas causing real disturbance to the surrounding community and absorb their resources. In Qantra Shark PRS, only 6 workers will come from outside Qantra Shark . Such number can't cause any labor influx impacts.		
Impacts during accidental events	In case of accidental gas leakage and subsequently emissions of the odorant is in the air, if it reaches the residential area it will be already dispersed and of very low concentration. In addition, it is not a harmful substance to inhale in a gaseous form especially with such low concentrations. It is only hazardous when it is in the liquid chemical form	Negative	Low



## 6 Analysis of Alternatives

### 6.1 Technology Alternatives

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#### 6.1.1 Outlet Pressure

The PRS reduces the pressure from a high transportation pressure 30-70 bar to a lower pressure 4 or 7 bar suitable for distribution or use in domestic or industrial applications. QS PRS will produce 4:7 bar outlet pressure for the local distribution network (intermediate pressure). The LDC choose to produce 4:7 Bar instead of 2:4 bar due to high consumption rate excepted at Qantra Shark city and it is designed for future extension to the distribution network (intermediate pressure) will feed other city and/ or village in the district.

#### 6.1.2 Environment and Safety

Environmental and safety control considerations and measures are integrated into the selected technology design. For example, in order to reduce emissions from the Odorant unit, the Odorants unit will be automatically added not manually wise or by using plunger pump. Automatically and sophisticated unit management systems ensure safe and easy operation and can encompass complete remote operation of the units.



## 7 Environmental and Social Management & Monitoring Plan

### 7.1 ESMMP Definition

The Environmental and Social Management and Monitoring Plan (ESMMP) consists of a set of mitigation, management and monitoring measures to be taken during implementation of the project to avoid, reduce, mitigate, or compensate or offset any adverse social and environmental impacts analyzed in the previous chapter. The ESMMP distinguishes between mitigation measures and monitoring that should be implemented during the construction and operation of the project.

The Environmental and Social Management and Monitoring Plan (ESMMP) consists of a set of mitigation, management and monitoring measures to be taken during implementation of the project to avoid, reduce, mitigate, or compensate or offset any adverse social and environmental impacts analyzed at the previous chapter. This ESMMP was based on the requirements of Environmental, Health, and Safety Guidelines for Natural Gas Processing.

The objective of the Environmental and Social Management and Monitoring Plan (ESMMP), is to outline actions for minimizing or eliminating potential negative impacts and for monitoring the application and performance of mitigation measures. The ESMMP identifies certain roles and responsibilities for different stakeholders for implementing, supervising and monitoring the environmental and social performance of the project during its life cycle. Roles and responsibilities for implementing the ESMMP during the construction and operation phases have been proposed. During construction EGAS/LDC will assign supervision staff who will undertake supervision over the contractor to make sure that the mitigation measures specified in the design/tender document are implemented on field.

During the operation phase, the PRS shall have at least one permanent staff member for health, environment and safety.

Wherever applicable, the ESMMP is designed to accommodate alternative context-specific mitigations and monitoring measures.

**Overall, the following Environmental and Social measures are complementary to and do not substitute compliance to the detailed HSE guidelines, procedures, and actions adopted by EGAS and its subsidiary (LDC).**

In the following Management and monitoring measures the term LDC refers to the gas company in charge of project implementation: **Sinai Gas.**

### 7.2 Management of Grievance

EGAS and the LDCs are committed to preventing, limiting and, if necessary, remedying any adverse impacts caused by its activities on local populations and their social and physical environment. Identifying, preventing and managing unanticipated impacts are facilitated by a grievance redress mechanism (GRM). As the World Bank's governance and anticorruption





(GAC) agenda moves forward, grievance redress mechanisms (GRMs) are likely to play an increasingly prominent role in Bank-supported projects.

Anyone will be eligible to submit a grievance to the Project if they believe a practice is having an adverse impact on the community, the environment, or on their quality of life. They may also submit comments and suggestions to the GRM.

The GRM was designed in order to handle all grievances during the construction and operation phases. The aggrieved person has the full right to lodge his complaint anonymously. However, this might cause a challenge to inform him about any corrective procedures. Additionally, if the complaint is related to service seeking, the aggrieved person should provide full information about himself and about his residential unit.

**Objectives:** The objective of a grievance procedure is to ensure that all comments and complaints from any project stakeholder are considered and addressed in an appropriate and timely manner. This will manage to build trust and detect any weak signal. The process will reduce risk of litigation and conflicts with the community

**Disclosure of the GRM:** The Community people will be fully informed about the Grievance procedures in simple language. Information about grievance mechanism will be tailored according to the community. All information about GRM will be made available on the contracting offices during the construction phase and on customer services offices during the operation phase.

**Mode and channels of Grievance:** The Company will accept all comments and complaints associated with the project from any stakeholder. Comments can be made via email, post, fax, on the telephone or in person. The comments and complaints will be summarized and listed in a Complaints/Comments Log Book, containing the name/group of commenter/complainant, date the comment was received, brief description of issues, information on proposed corrective actions to be implemented (if appropriate) and the date of response sent to the commenter/complainant.

The proposed mechanism is built on three tiers of grievances:

- The foreman working on the ground in **PRS site in Qantra Shark**
- The project manager in **PRS site in Qantra Shark**,
- The regional department of **Sinai Gas in Ismailia** Governorate

The aggrieved person has the full right to immediately use tier 2 or 3 upon his convenience and there is no need to exhaust the first tier. Additionally, he can resort to any other governmental entities i.e. Ministry of Petroleum. He/ She also have the full right to bring a lawsuit without resorting to any of the grievances tiers.

#### **Grievance channels:**

##### **1. During construction phase:**

- a) Foremen act as the main channel for complaints. They are always available on the construction sites. However, complaints raised to him/her are mostly verbal. Thus, s/he should document all received grievances in writing form



using a fixed serial number that the complainant should be informed about to be able to follow up on the complaint

- b) Hotline: 129 is the hotline in Egypt Gas.
- c) The SDO within the LDC and EGAS
- d) Email. info@*Sinai Gas*.com.eg

## 2. During construction phase:

- a) Customer service office
- b) Hotline: 129 is the hotline in Egypt Gas.
- c) The SDO within the LDC and EGAS
- d) Email. info@ *Sinai Gas*.com.eg

**Response to grievances:** All comments and complaints will be responded to either verbally or in writing, in accordance to preferred method of communication specified by the complainant. Comments will be reviewed and taken into account in the project preparation; however they may not receive an individual response unless requested.

**Registration of GRM:** All grievances will be registered and acknowledged within 5 business days and responded to between to 15- 30 business days (depending on the nature of grievance). The project management will keep a grievance log and report on grievance management, as part of annual project progress reports, which will be available on the LDC and EGAS.

**Confidentiality:** Individuals who submit their comments or grievances have the right to request that their name be kept confidential, though this may mean that the LDC is unable to provide feedback on how the grievance is to be addressed.

**Management of GRM:** During construction and operation phases, grievances in relation to construction activities will be managed by the LDC and the construction contractor(s). The LDC will provide contact information to project areas

A separate grievance mechanism is available in the same manner for workers, including employees of both the LDC-employed and contractors.

**Grievance Cycle:** The grievance received via any of communication channels and tiers will follow the following cycle. The aggrieved person has the full right to submit his grievance to any of the assigned tiers. The aggrieved person also has the full right to submit his grievance to any entity he prefers i.e the Minister of Petroleum, the Governorate ...etc. It is essential to mention that the acknowledgement of grievance should not exceed two working days.

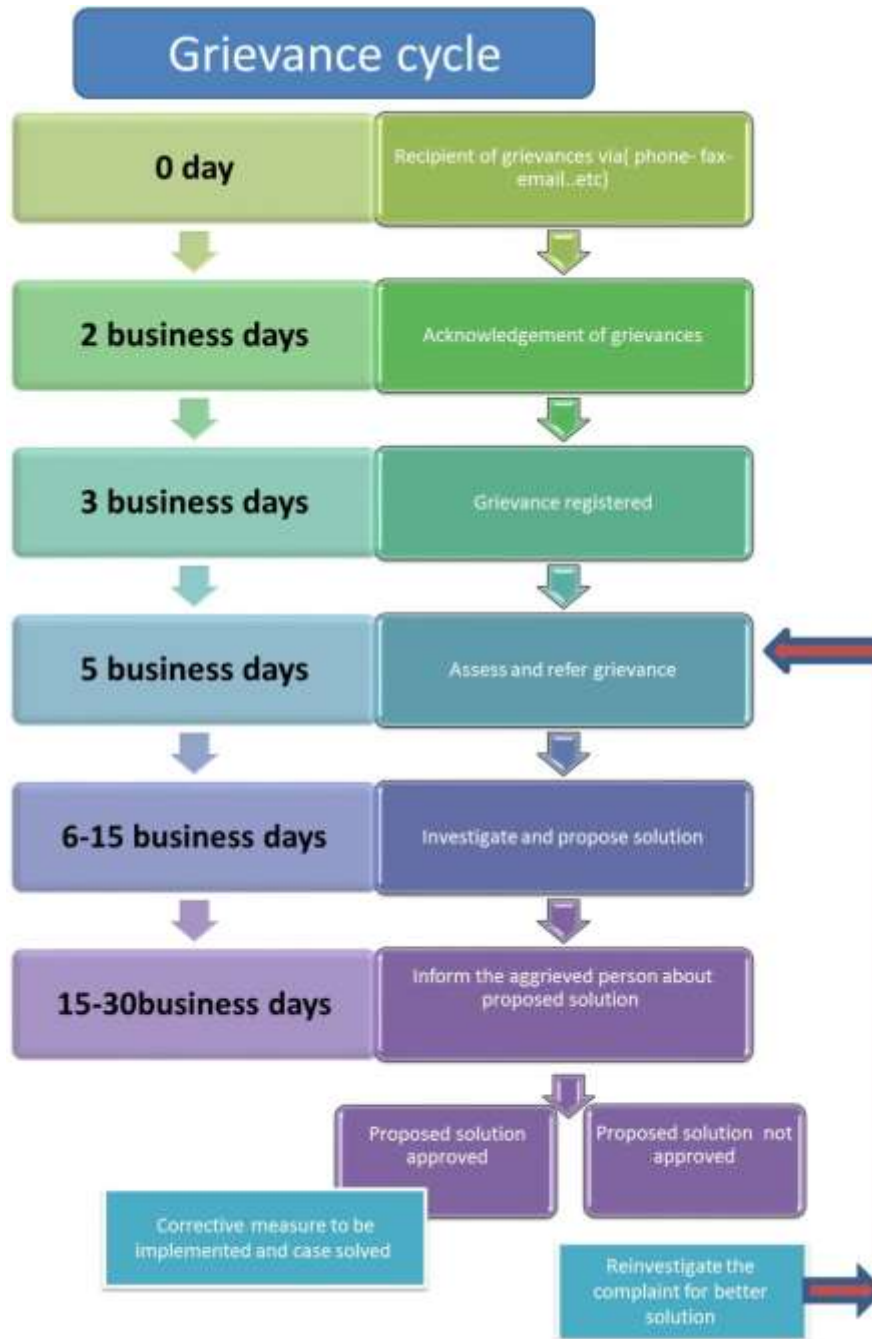


Figure7-1: Grievance cycles

**Monitoring of grievances:** All grievances activities should be monitored in order to verify the process. The monitoring process should be implemented on the level of EGAS and the LDC (both in the site and in the headquarter). For more information about GRM please see Annex 7.



### 7.3 Environmental and Social Management Matrix during CONSTRUCTION

Table 7-1: Environmental and Social Management Matrix during CONSTRUCTION

Receptor	Impact	Mitigation measures	Residual impact	Institutional Responsibility for Implementation		Means of Supervision	Estimated Cost of mitigation / supervision
				Mitigation	Supervision		
Social receptor (health and safety)	Occupational health and safety	<p>The project will hire a qualified sub-contractor adopting proper health and safety standards. In addition, the ToR for the contractor and the ESIA will provide the provision of the health, safety and precaution of the environmental impacts and its mitigation measures to be followed during construction.</p> <p>Standard protection by placing clear project signs.</p> <p>Time management for vehicles movement; especially avoiding the peak hours</p> <p>Regular inspection of workers compliance to the H&amp;S guidelines</p> <p>Training and licensing industrial vehicle operators of specialized vehicles.</p> <p>As per QRA:</p> <ul style="list-style-type: none"> <li>- Cooperation should be done with the concerned parties before planning for housing projects around the PRS area. LDC Projects Dpt. Daily during construction Construction site Supervision &amp; reporting LDC management costs</li> <li>- Provide a suitable tool for wind direction (Windsock) to be installed in a suitable place to determine the wind direction. LDC HSE and Projects Dpt. Daily during construction Construction site Supervision &amp; reporting LDC management costs</li> </ul>	Minor	LDC Excavation Contractor	LDC-HSE department	Field supervision and review of HSE report+ Field supervision (audits)	Contractor costs LDC management costs
	Risk pertaining to child labor	<p>The project will hire a qualified contractor/ sub-contractor with the high occupational standards. Special attention will be given to add a contract term prohibiting all child labor activities</p> <p>Rigid obligations and penalties will be added to the contractor ToR in order to warrantee no child labor is occurred in the project. In case of breaching these obligations, financial penalties will be applied</p> <p>The ToR also will oblige the contractor/subcontractor to keep a copy of IDs of laborers in order to monitor the hired staff, especially, those below 18 years old</p> <p>The contractor also will be obliged to maintain daily attendance sheets in order to verify the attendance of workers in case of accidents and provide the injured persons with proper health insurance</p>	Minor	LDC Excavation Contractor/ subcontractor	LDC-HSE department	Field supervision and review of HSE report+ Field supervision (audits)	Contractor costs LDC management costs
Physical Receptor	Solid and Hazardous waste management	<p>Safe handling using PPE and safety precautions</p> <p>If hazardous waste quantities generated are too small for</p>	Minor	LDC Excavation	LDC-HSE department	Field supervision and review of	Indicative cost items included in contractor bid:



Receptor	Impact	Mitigation measures	Residual impact	Institutional Responsibility for Implementation		Means of Supervision	Estimated Cost of mitigation / supervision
				Mitigation	Supervision		
		<p>isolated transport to the Nassreya landfill, a temporary storage site can be created. Coordination with waste authority will be imperative to secure a location and implement adequate procedures for storage depending on quantities and type of wastes until collection and shipping to Nassreya landfill.</p> <p>Hand-over selected oils and lubricants and their containers to Petrotrade for recycling</p>		Contractor		certified waste handling, transportation, and disposal chain of custody	<p>Chemical analysis of hazardous waste</p> <p>Trucks from licensed handler</p> <p>Pre-treatment (if needed)</p> <p>Disposal cost at Nasreya</p> <p>Approximate cost of the above (to be revised upon project execution): 8,000-10,000 LE per ton</p>
Community	Traffic	<p>Time management for transporting the materials, equipment, debris, etc.</p> <p>Coordination with traffic department (ministry of interior) for vehicles route and movement.</p> <p>Vehicle speed restrictions should be applied across the project site,</p>	Minor	Contractor	LDC + Traffic department	Contractor with a valid conditional permit + Field supervision	<p>Contractor costs</p> <p>LDC management costs</p>
	Grievance and redress mechanism	<p>The detailed grievance mechanism (GRM) is presented in Annex (7) is to be shared with the community beneficiaries. The GRM presented various tiers of complaints, time to respond to the aggrieved person and reporting requirement for grievances. It is crucial to notify that time frame allocated for responding to a complaint will not exceed 15 business days.</p>		Contractor	LDC –HSE department	Contractual clauses + Field supervision	<p>Contractor costs</p> <p>LDC management costs</p>



## 7.4 Environmental and Social Monitoring Matrix during CONSTRUCTION

Table 7-2: Environmental and Social Monitoring Matrix during CONSTRUCTION

Receptor	Impact	Monitoring indicators	Responsibility of monitoring	Frequency of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
Local traffic and accessibility	Reduction of traffic flow and accessibility to local community	Comments and notifications from Traffic Department	LDC HSE	Monthly during construction.	Construction site	Documentation in HSE monthly reports Complaints log	LDC management costs
Physical receptor (soil, subsurface water, visual)	Waste generation	Observation of accumulated waste piles	LDC HSE	During construction. Monthly reports	Construction site	Observation and documentation	LDC management costs
		Observation of soil accumulations resulting from excavation (if encountered)	LDC HSE	During construction. Monthly reports	Around construction site	Observation and documentation	LDC management costs
		Chain-of-custody and implementation of waste management plans	LDC HSE	Zonal reports	Construction site and document examination	Site inspection and document inspection	LDC management costs
		Chain-of-custody and implementation of domestic wastewater (sewage) management	LDC HSE	During construction. Monthly reports	Construction site	Site inspection and document inspection	LDC management costs
Labor conditions	Occupational Health and Safety	Total number of complaints raised by workers Periodic Health report - Periodic safety inspection report	LDC HSE	Biannual for PRS	Construction site	- Safety supervisor should follow the commitment of workers to use the protective equipment - Inspection and recording of the performance -Reports about the workers and complaints	LDC management costs
		presence a suitable tool for wind direction (Windsock) to be installed in a suitable place to determine the wind direction.	LDC HSE and Projects Dpt.	Daily during construction	Construction site	Supervision & reporting	LDC management costs
		Cooperation reports with the concerned parties	LDC Projects Dpt.	When necessary	Construction site	Supervision & reporting	LDC management costs
Labor conditions	Child labor	Attendees lists with workers IDs - Complaints and accidents reports	LDC HSE	Biannual for PRS	Construction site	- Safety supervisor observe the laborers Random checkup for laborers IDs	LDC management costs
Local community	Threat to Safety of users and houses (due to limited level of awareness and misconceptions)	- Number of awareness raising implemented - Number of participants in information dissemination	LDC, EGAS	Quarterly monitoring	Office	Reports Photos Lists of participants	No cost



## 7.5 Environmental and Social Management Matrix during OPERATION

Table 7-3: Environmental and Social Management Matrix during OPERATION

Receptor	Impact	Mitigation measures	Residual impact	Institutional Responsibility for		Means of Supervision	Estimated Cost of mitigation / supervision
				Mitigation	Supervision		
Physical receptor	Noise	<ul style="list-style-type: none"> <li>- Locate noisy pressure reducers away from PRS borders in residential areas</li> <li>- Location of reducers should be at least 20 meters away from the PRS fences.</li> <li>- The reducers should be either in a well-ventilated closed area, or in a protected open area according to IGEM standards. If the reducers are in an open area there should be wall barriers to dissipate the noise from the PRS staff offices and the neighboring areas.</li> </ul>	Minor	LDC Design Department	LDC HSE	Review of PRS layout	LDC management costs & PRS cost
Social receptor (health and safety)	Occupational health and safety	<ul style="list-style-type: none"> <li>- Remote actuation of isolation and slam-shut valves by LDC for PRS and pipelines</li> <li>- Produce Hazardous Area Classification drawings</li> <li>- Control room exit design.</li> <li>- Preventive maintenance policy and station manual</li> <li>- Provision of self-contained breathing apparatus (2 pieces for each station) for handling odorant leaks</li> <li>- Apply jet fire rated passive fire protection system to all critical safety shutdown valves ESDVs or Solenoid valves (As applicable)</li> <li>- Place signs in Arabic and English "Do Not Dig" and "High Pressure Pipeline Underneath"</li> <li>- Install an elevated wind sock and provision of portable gas detectors</li> <li>- The design should fully comply with IGE TD/3 code requirements</li> <li>- As per QRA: <ul style="list-style-type: none"> <li>- Review the emergency response plan and update the plan to include all scenarios in this study and other needs including: <ul style="list-style-type: none"> <li>- Firefighting brigades, mutual aids, emergency communications and fire detection / protection systems.</li> <li>- Coordination with the Excavators Company existing camp in case of emergency.</li> <li>- First aid including dealing with the odorant according to the MSDS for it, with respect of means of water supply for emergency showers, eye washers and cleaning.</li> <li>- Safe exits in building according to the modeling in this study.</li> <li>- Provide the site with SCBA "Self-Contained Breathing Apparatus" (at least two sets) and arrange training programs for operators.</li> </ul> </li> </ul> </li> </ul> <p>All operation is according to standard operating procedure for the PRS</p>	Minor	-LDC project department -Designer	-LDC project department -engineering dep. -HSE dept. - EGAS	<ul style="list-style-type: none"> <li>- Drawing and design Document Review</li> <li>- Policy and manual review</li> <li>- Inspection by operators</li> <li>- Signage inspection and site visits</li> </ul>	Included in PRS cost



		<p>operations and training programs in-place for operators.</p> <p>Inspection and maintenance plans and programs are according to the manufacturers guidelines to keep all facility parts in a good condition.</p> <p>Emergency shutdown detailed procedure including emergency gas isolation points at the PRMS and valves room in place.</p> <p>Cooperation should be done with the concerned parties before planning for housing projects around the PRS area.</p>						
Physical receptor(air, soil, water)	Solid and Hazardous waste management	<ul style="list-style-type: none"> <li>- Strict use of chemical-resistant suits and PPE when handling odorant barrels, tanks, or spills</li> <li>- Evacuation of odorant from barrels into holding tank with utmost care and full PPE</li> <li>- Covering possible odorant spills immediately with sand and treatment with sodium hypochlorite as per EGAS and LDC practices</li> <li>- On-site treatment of empty containers with sodium hypochlorite and detergent as Per EGAS and LDC practice</li> <li>- Ship empty containers to a certified hazardous waste facility via company depot using certified handling and transportation contractors</li> <li>- Ensure full and empty (treated) odorant containers are accompanied by a trained HSE specialist during transportation to and from the depot and to/from the hazardous waste disposal facility (UNICO and/or Nasreya)</li> </ul> <p>In order to minimize risk of spillage of hazardous odorant, the following general precautions should be taken:</p> <ul style="list-style-type: none"> <li>- Pre-Plan the anticipated amounts of odorants to be used in order to minimize leftovers and residuals.</li> <li>- Handle with extreme care and always perform visual checks on the integrity of the odorant container</li> <li>- Avoid rough handling rolling or dropping of odorant containers</li> <li>- Avoid exposure to direct sunlight during storage or transportation</li> <li>- Ensure odorant containers are always sealed properly and secured from tipping/falling/damage during transportation and storage (temporary and long-term)</li> <li>- Always have sufficient amounts of sand, sodium hypochlorite and detergent on standby during usage of odorant</li> <li>- ALWAYS handle containers or spills with care and ensure PPE compliance</li> <li>- Never release or empty residual odorant from its container to any receptor or for any reason other than filling the odorant tank at the PRS</li> <li>- NEVER use empty odorant containers for any other purpose</li> </ul>	Minor		PRS staff	LDC HSE	Quarterly auditing for the PRS	Cost to be included in PRS running budget:





		<p>In case of odorant spillage:</p> <ul style="list-style-type: none"><li>- avoid inhalation and sources of ignition</li><li>- immediately cover and mix with sufficient amounts of sand and sodium hypochlorite using necessary PPE and tools</li><li>- collect contaminated sand in clearly marked secure containers/bags</li></ul> <p>Add sand to inventory of hazardous waste</p>					
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## 7.6 Environmental and Social Monitoring Matrix during OPERATION

Table 7-4: Environmental and Social Monitoring Matrix during OPERATION

Receptor	Impact	Monitoring indicators	Responsibility of monitoring	Monitoring Frequency	Location of monitoring	Methods of monitoring	Monitoring Estimated Cost
<b>Ambient air quality</b>	Improper management of odorant during operation	- Log of spillage incidents - Number of treated containers - Odorant delivery forms	LDC HSE	Quarterly for the PRS	PRSs	- Compare Environmental Register with odorant delivery forms, observation of site	LDC management costs
<b>Ambient noise levels</b>	Noise of PRS operation	- Noise intensity	LDC HSE	Quarterly for the PRS	PRSs	- Noise meter	LDC management costs
<b>Labor conditions</b>	Occupational Health and Safety	the updated emergency response plan to include the main detailed elements for ERP according to the QRA recommendation	LDC HSE (ERP document)	Yearly (ERP doc.)	PRS location	HSE annual audit	LDC management costs



## 7.7 Qantra Shark Quantitative Risk Assessment Study Recommendations

It is worth mentioning that according to the initial layout a QRA was conducted in February 2017 which showed, the risk to public is in the Unacceptable region, and the risk for the workers is in High ALARP region. The study recommended the Coordination with the neighbouring Excavators Company to remove the offices that existed at the South East of the PRS to the South East side of the camp in order to reduce risk. Upon coordination and agreement between Sinai Gas and the excavator company to change the location of their offices (refer to annex 9 ), the QRA was updated in October 2018 showed that the risk to workers and public are in the ALARP region. Other points need to be considered to maintain the risk tolerability in its region and this will be describe in the following recommendations.

Regarding to the risk calculations the risk to workers and public which is in ALARP, so there are some points need to be considered to maintain the risk tolerability in its region and this will be describe in the following recommendations:

Recommendation	Timeline Phases
All facility specifications referred to the national and international codes and standards.	Design Phase
The office and security buildings designed according to the accepted standard technical specifications.	Design Phase
Considering that all electrical equipment, facilities and connections are according to the hazardous area classification for natural gas facilities.	Design Phase
Emergency shutdown detailed procedure including emergency gas isolation points at the PRS and GASCO valves room in place.	Design Phase
Surface drainage system is suitable for containment of any odorant spills.	Design Phase
Provide a suitable tool for wind direction (Windsock) to be installed in a suitable place to determine the wind direction.	Construction Phase
Review and update the emergency response plan to include the main detailed elements for ERP and all scenarios in this study and other needs including:	Operation Phase
<ul style="list-style-type: none"> <li>• Firefighting brigades, mutual aids, emergency communications and fire detection / protection systems.</li> </ul>	Operation Phase
<ul style="list-style-type: none"> <li>• Coordination with the Excavators Company existing camp in case of emergency.</li> </ul>	Operation Phase
<ul style="list-style-type: none"> <li>• First aid including dealing with the odorant according to the MSDS for it, with respect of means of water supply for emergency showers, eye washers and cleaning.</li> </ul>	Operation Phase
<ul style="list-style-type: none"> <li>• Safe routs and exits for the control room and security office according to the modeling in this study.</li> </ul>	Operation Phase
Provide the site with SCBA “Self-Contained Breathing Apparatus” (at least two sets) and arrange training programs for operators.	Operation Phase



All operation is according to standard operating procedure for the PRS operations and training programs in-place for operators.	Operation Phase
Inspection and maintenance plans and programs are according to the manufacturers guidelines to keep all facility parts in a good condition.	Operation Phase
Cooperation should be done with the concerned parties before planning for housing projects around the PRS area.	The Three Phases

## 7.8 Reporting of Mitigation and Monitoring Activities

During construction and operation, environmental performance against targets is reviewed by the management on monthly basis and reported to the contractor and LDC. The plan is designed to record incidents and to ensure investigation, root cause analysis, corrective action and follow up. Records are kept of all incidents, investigations and actions.

Regulatory and HSE reporting systems will be brought together on a monthly basis to be used in LDC (Sinai Gas) reporting system to be submitted to EGAS Environment Department during the construction phase.

During operation, the reporting of any occurrence and /or the result will take the following path:

- Recording of the nature and scale of the occurrence;
- Reporting to the necessary competent/ responsible persons;
- Internal reporting and external regulatory notification.

### 7.8.1 During the construction phase

The reports should include as a minimum;

- Monthly report for the implementation of the ESMP submitted by the contractor to LDC HSE staff.
- Monthly report on incident and complaint from the surrounding establishments and residents nearby the construction site.
- Unusual traffic delays or accidents caused during construction, any complaints received, any comments or recommendations by the traffic department should be reported in the monthly report prepared by the construction contractor supervisor
- Monthly report should include any incidents of high dust emissions or smoke during the construction phase including the natural dust that might be encountered.
- There should be a form prepared by LDC HSE department for the contractor to keep records of quantities, types of wastes received and the wastes' location.
- The monthly report of HSE supervisor from LDC should include an evaluation of the contractor's compliance to the mitigation measures and any comments noticed by the HSE site supervisor about mismanagement of construction waste during the month.
- The HSE team from LDC observer should report on monthly basis the accidents or the worker's compliance.
- Reporting on monthly basis, the total number and the type of heavy equipment used during the construction phase.
- Monthly report on health and safety performance. This report will include any incident and complaint regarding health and safety measures performed by the contractor.



### 7.8.2 During the Operation phase

The reports should include as a minimum;

According to law 9-2009 and its executive regulation, each facility should prepare an environmental register. All the environmental procedure taken under the EMMP will be recorded at the Environmental Register so that they can be communicated effectively and clearly. It will include (monitoring plan, solid waste management plan, emergency plan, etc).

The Environmental Register shall contain:

- Any complaint related to the noise generated from the PRS
- Regular noise and air measurement reports.
- Record keeping of the admitted waste and their quantity and management (bills of waste transportation).
- Summary of the HSE monthly report.

According to Article 29-32 from law 9/2009 and its executive regulation, Hazardous material and waste register contains the handling and storage of hazardous material and waste in the facility (types, quantities, Material safety data sheet, type of storage and way of transportation) should be prepared for the PRS. In addition the register should contain contract and /or bills of the hazardous waste disposal.

### 7.9 Emergency Plan

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Sinai Gas (سيناء للغاز) will develop an updated Emergency Response Plan (ERP) which incorporates the QRA recommendations that relates to its operations for the PRS and for its intermediate and low-pressure distribution network. The purpose of this document is to outline emergency responsibilities, organizational arrangements, responses, and procedures to be followed by personnel based in the field in the event of an emergency.

EGAS PRSs emergency plan guidelines, kindly refer to **Annex-8** attached to this report.

**Emergency Levels are classified as Levels (Level 1, Level 2 and Level 3) as following:**

#### **The first level of Emergency:**

- Potential hazards to life, safety, property and the environment are limited, and do not exceed the emergency zone or the boundaries of the public site or facility.
- The personnel of the enterprise or the site possess adequate training, capacity, personal protection equipment and necessary tools to manage and control the situation, and there is no need for external assistance.
- Alarm bells are not required to warn those outside the site or facility.
- The situation does not require evacuation of the emergency zone.
- There is no possibility of losing control or escalating the situation.
- The accident management team is not used.

#### **The Second level of Emergency:**

- There is a serious risk to life, safety, property and the environment and may exceed the limits of the emergency zone, but do not exceed the limits of the public site or facility.
- There is a need to use the assistance of external parties to manage the emergency, or at least the presence of stand-by team in the presence of a potential escalation of the situation, but the situation does not extend its influence outside the facility or site.



- Members of the facility or site do not have sufficient capacity or resources to deal with the incident
- Requires evacuation and / or warnings to warn those outside the emergency zone
- Security breach or situation leading to constant threat to life and safety
- Accident management team intervenes

### **The Third level of Emergency:**

- There is a serious risk to life, safety, property and the environment and may exceed the limits of the emergency zone and the possibility of exceeding the limits of the public site or facility.
- There is a need to use the help of external parties to fight fire, rescue, dealing with hazardous materials, large number of injuries and deaths.
- Measures must be taken to protect units, nearby areas and / or communities and the environment beyond the boundaries of the public site or facility
- There is a potential risk that the reputation of the company, its business or its revenues will be affected
- Any incident involving the exit of the operating system beyond the limits of safe operation with the possibility of escalation
- There is a danger to the public
- There is a possibility to start or run the communication system for emergency reporting
- The accident management team is used.

**For full details about the PRS emergency plan, kindly refer to Annex 8A, &8B**

#### **7.9.1 Hotline**

Hotline (**129**) is available for customers 24 hours/7dys a week and the public to report leaks, damage, emergencies, and/or incidents related to gas connections, components, infrastructure, and activities (inside or outside households) and to request repairs/emergency response/assistance.



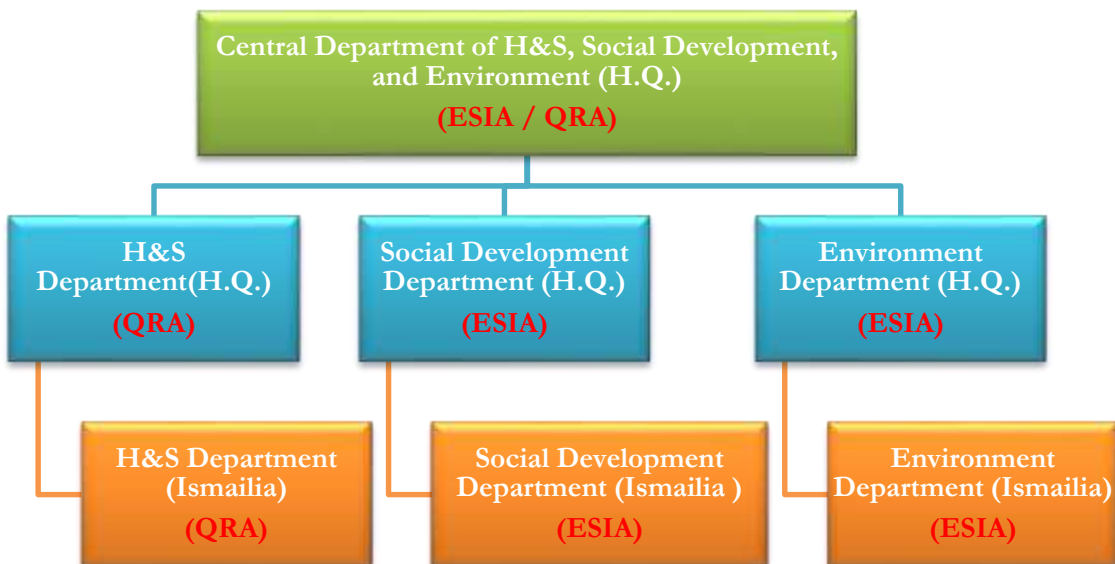
## 7.10 Institutional Framework for ESM&MP Implementation

### Environmental Management Structures

EGAS is the supervisory body. Sinai Gas is the implementing body. Below is the management structure of Sinai Gas.

Being the implementing body of the natural gas network in project areas, Sinai Gas has a direct involvement with the environmental management and monitoring of the natural gas network. Sinai Gas has limited environmental and social background. However, few number of them were ex- Egypt Gas and Town Gas. They have proper environmental experience. Yet, the majority of their staff will be in need to upgrade their capacity regarding the environmental and social aspects. EGAS will provide Sinai Gas staff with the needed information.

One of the standard tasks of the HSE Departments of Sinai Gas, supervised by EGAS, is to ensure that the Environmental and Social Management Plan of the project is implemented in all the phases of the Project, through establishing an Environmental Register for Pressure Reduction Stations, with frequent auditing of this register..





In the structure above, designated site engineers perform daily implementation, monitoring and reporting of activities as per the ESMP with special attention to:

1. Worker and contractor compliance to EGAS HSE manuals and procedures
2. Occurrence of HSE incidents and suggestions for incident avoidance. (Refer to item 7.7)
3. Management of broken asphalt (if any), unused backfill, solid waste, metal scrap
4. Management of paint cans, refueling & lubrication, soil contamination
5. Management of liquid waste such as leaked condensate hydrocarbons (if any) or chemicals used in heaters; and
6. Checking that handling of hazardous waste is done according to the requirements of the Environmental Law, where a permit for handling hazardous material and Hazardous wastes is issued from EGAS Environment Department
7. Using analyzers to measure noise, SO<sub>2</sub>, CO, CH<sub>4</sub> and NO<sub>2</sub> in ambient air, and detect possible natural gas leaks
8. Ensure and log compliant handling of odorant/odorant containers, odorant-contaminated-soils (in case of spillage)
9. Measure noise at different locations of the PRS
10. Other tasks as outlined in ESM&MP

Daily reports are to be compiled and sent to the governorate HSE officer for preparation of monthly summary reports.

Monthly reports are sent to HSE officer at Sinai Gas head office for compilation into quarterly reports to EGAS.





## 8 Stakeholder Engagement and Public Consultation

The public consultation chapter aims to highlight the key consultation and community engagement activities that took place as part of the preparation of the ESIA's and their outcomes.

Public consultation activities have been implemented during the preparation of the framework and the site-specific studies.

### 8.1 Legal framework for consultation

The consultation activities used multiple tools and mechanisms for the proposed 1.5 million household NG connections project in compliance with the following legislations:

- WB policies and directives related to disclosure and public consultation, namely,
  - o Directive and Procedure on Access to Information
  - o World Bank Operational Policy (OP 4.01)
- Egyptian regulations related to the public consultation
  - o Environmental law No 4/1994 modified by Law 9/2009 and 105/2015 and its executive regulation until the last amendment by ministerial decrees no. 1963/2017

### 8.2 Consultation objectives

The objective of the Stakeholder Engagement is to ensure safe and successful Project delivery by:

- Informing stakeholders, including persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively;
- listening to their comments, ideas and concerns and recording the same for follow up;
- Avoiding conflict by addressing impacts and issues raised by stakeholders promptly; particularly with the communities that will not be served by the project
- Ensuring that fears and anxieties about the nature, scale and impact of the operation have been properly considered in the development and management of the Project
- Accessing and making good use of existing local knowledge of the area;

Communicating and implementing a viable community feedback mechanism. The consultation outcomes will be used in:

- Define potential project stakeholders and suggest their possible project roles
- Identify the most effective outreach channels that support continuous dialogue with the community



Thereafter the results will provide proper documentation of stakeholder feedback and enhance the ESIA accordingly.

### 8.3 Consultation Methodology and Activities

The research team for this study has adopted multi-dimensional consultation activities using different tools as public meetings, Focus Group Discussion and Interviews that enable the marginalized, voiceless, youth and women to gain information about the project. As well as, gaining information about their concerns and worries regarding the project during various implementation phases. Following are the main consultation activities:

- 1- The study team visited the project area in order to define various stakeholders.
- 2- Community engagement was conducted through the following three phases:
  - **Phase I (Scoping) for the** Preparation of the framework study in 2013 in Ismailia Governorate building which was disclosed on EGAS website as per the following link <http://www.egas.com.eg/docs/RPF%20for%20NG%20connections%20project%20for%2011%20Governorates.pdf>
  - **Phase II(Data Collection for the preparation) of** site-specific studies in February, 2017
  - **Phase III (Consultation activities and final public consultation) in** April, 2017 which was conducted in Ismailia City
- 3- All activities conducted were documented with photos and lists of participants in order to warrantee appropriate level of transparency.

### 8.4 Defining the stakeholder

In order to ensure an inclusive and meaningful consultation process, a stakeholder's analysis was conducted to get better understanding of the various groups and their roles, interests and influence on the project and Gender inclusion was considered in consultation activities.

For the purpose of this site specific ESIA, a focused stakeholders' identification was conducted to identify the key groups of relevance to the project in this specific location. The main identified groups are very similar to those identified on the governorate level but on a smaller scale, (elaborated details on that are included in the Governorate level ESMP). In the meantime, local communities of both men and women of projects beneficiaries, local NGOs/CDAs were among the key stakeholders on the local level. The following is the key stakeholders that were engaged during the consultation process:

- Local community representatives
- Governmental Organizations and Authorities
- NGOs / CDAs
- Educational institutions and universities
- Environmental administrations
- Formal and informal LPG distributors.
- In addition to, Re Gas company.

#### **Stakeholders of Phase I:**

The consultation session was conducted on December 2013

- Consultants (EcoConServ environmental and social) attended session
- Representatives of EGAS and ReGas



- Representatives of EEAA accompanied the teams
- Governmental entities
- NGOs
- Media
- Community people
- Potential traders
- Females and vulnerable groups

**Stakeholders of Phase II:**

- Consultants (EcoConServ environmental and social) attended session
- NGOs cooperated in data collection
- Community people
- Potential traders
- Females and vulnerable groups
- Governmental entities
- Media

**Stakeholders of Phase III:**

The Consultation session was conducted in Ismailia Governorate on 10<sup>th</sup> of April 2017

- Consultants (EcoConServ environmental and social) attended the meeting
- Ismailia Governor
- Representatives of EGAS and ReGas
- Representatives of EEAA accompanied the teams
- Media
- Community people
- Governmental entities
- Potential traders



**Figure 8-1: Consulting with the PRS and Sinai Gas Staff**



**Figure 8-2: Storage area**



Figure 8-3: Meeting with the head of municipality and the deputy general secretary

Table 8-1: Summary of Consultation Activities in Qantra Shark

Participants		Number		Methods	Date
During the framework		Male	Female		
Potential beneficiaries and governmental bodies		16	8	FGD	December 2013
Potential beneficiaries		53	71	Structured questionnaire	
Potential beneficiaries, government officials, NGO representatives,		31	48	Public consultation	
<b>Total</b>		<b>100</b>	<b>127</b>		
During Site-Specific ESIA		Male	Female		
<b><i>During data collection and scoping meetings</i></b>					
Potential beneficiaries	Qantra Shark	6	6	FGD	February 2017
Government/public officials	Qantra Shark City	4	1	In-depth interview	
NGOs/CDAs representatives	Qantra Shark City	0	1	In-depth interviews	
<b>Total</b>		<b>10</b>	<b>8</b>		
<b><i>During final public consultation</i></b>					
Various stakeholders		39	18	Public consultation	10 <sup>th</sup> of April 2017
<b>Total during site specific ESIA</b>		<b>49</b>	<b>26</b>		

## 8.5 Consultation processes



It is worth to mention that the public consultation has covered both the PRS and all the Low pressures pipelines networks activities. All questions raised during the public consultation were related to the connection activities (Low pressures pipelines networks), where most of the people are not familiar of the PRS activities. So all questions, comments and responses were concentrated on the NG connection activities and have been addressed in the ESMP study for the Low pressure network.

**Final public consultation outcome (April, 2017):**

Table 8-2: Consultation Session 2017

Subject	Questions and comments	Responses	Addressed in the ESIA Study
Clear information about the project	Shouldn't the gas company distribute flyers or brochures with clear information about Gas?	The LDC adopts multi-level of information sharing. The first level through the contracting office. Posters are installed there to share information about the NG and contracting procedures. The second level is during the P& A survey where technicians share information about contracting and NG Additionally, there is a hotline that can share information with any of the targeted beneficiary	This comment is addressed in the mitigation and management section 7 <sup>6</sup>
Job opportunities	Can the PRS permanently employ our sons	The PRS requires limited number of crew to operate it. The available job opportunities do not exceed 12 jobs. This limited number can be recruited form Qnatra Shark community people. In case of not having the needed staff, a capacity building session will be applied. Additionally, the community people can support the project through provision of some supplies. This will work for the benefit of suppliers.	This comment is included in the positive impact of the project section 5.2.1.1.1 <a href="http://www.egas.com.eg/docs/ISMAILIA%20ESMP%20.pdf">http://www.egas.com.eg/docs/ISMAILIA%20ESMP%20.pdf</a>

**8.6 Summary of consultation outcomes**

Aside from various consultation activities conducted in the project site, there was no concerns or worries raised by the surrounding communities rather than the provision of job opportunities. Additionally, there were limited concerns about the level of information about the PRS.

**8.7 ESIA disclosure**

As soon as the ESIA gets clearance from the World Bank and approval from EEAA, a final report in English language will be published on the WB, EGAS and Egypt Gas websites. A copy of the ESIA report in English and a Summary in Arabic will be made available in the customer service office. Additionally, an Arabic summary will be made available in the contracting offices. An A3 poster will be

<sup>6</sup> <http://www.egas.com.eg/docs/ISMAILIA%20ESMP%20.pdf>



installed in the contracting office informing about the results of the ESIA and the website link for the full ESIA study.