The Egyptian Natural Gas Company

Prepared By:

EG-GIZA North Power Project - Natural Gas Lines to Additional Power Plants in Egypt

Dahshour – ElWasta Natural Gas Pipeline

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

December 2016

Final Report

Executive Summary

Introduction

The proposed project is considered as part of Egypt's strategy which aims to expand the use of natural gas as a clean source of energy, a goal that will be achieved through delivering natural gas to houses, industrial facilities and power plants. In this regard, the EG-Giza North Power Project was undertaken by the Egyptian Government. The project consists of three main components:

- Component 1: The Power Plant Component, which is the construction of 2250 MW Combined Cycle Gas Turbine power plant;
- Component 2: The Construction of transmission lines to connect the power plant to the national grid
- Component 3: The construction of gas pipeline to strengthen the gas supply network to ensure supply gas to power plant.

Component 3 of the project, which involves gas pipeline construction to provide natural gas to North Giza power station, is implemented by the Egyptian Company for Natural Gas (GASCO) with the assistance of the World Bank. This component was 96% concluded by the end of 2015.

After conclusion of the procurement of the Bank financed packages, there were still financial savings from the project that can be utilized by the Government of Egypt. In this regard, the World Bank received formal request from the government of Egypt to utilize these savings to procure pipelines required for upgrading the natural gas network and connecting to new and existing power plants.

As the objective of the new gas pipelines is introducing new connections to the existing and new power stations is to improve the security and efficiency of electricity supply, the proposed additional scope by the Egyptian government is considered to be fully in-line with the original project objectives.

The proposed pipelines will also be implemented by GASCO and are composed of 9 pipelines, namely:

1. New Capital - Dahshour gas pipeline (70 km)
2. Dahshour – El Wasta gas pipeline (65 km)
3. El Wasta – BeniSuef gas pipeline (65 km) + gas decompression station (in BeniSuef Power Station)
4. Sixth of October Power Station (400 meters) + gas decompression station (in 6th of October power station)
5. El Gamel – Damietta gas pipeline (50 km)

6. El Suez Power Station (3 km) + gas decomposition station (in Suez Thermal Power Station)
7. Sumed import gas pipeline (4 km)
8. El Mahmoudiya Power Station (27 km + 17 km + 7 km) + gas decompression station (in Mahmoudiya Power Station)
9. Damanhour Power Station (2.5 km) + gas decompression station (in Damanhour Power Station)

Approach to Study

The preparation of the Environmental and Social Impact Assessment is done according to the following approach:

- Reviewing the available information and documents regarding the project;
- Reviewing national and international legislations and regulations relevant to the project, including the required governmental permits.
- Conducting site visits to the project site, to collect the baseline data regarding the current environmental and social situation;
- Holding a Scoping Session (first public consultation) to engage the community and different stakeholders in the process of identifying the expected impacts;
- Assessing the potential environmental and social impacts associated with proposed project activities;
- Developing an outline for the environmental and social management plan for the mitigation of the expected negative impacts and the monitoring activities to ensure compliance with the relevant environmental laws;
- Holding a Public Consultation Session based on the updated ESIA and RAP studies;
- Finalizing and submitting the ESIA and RAP studies for the pipeline.

Project Description

Pipeline Route

The pipeline will pass through three governorates, starting at the south of El Giza governorate, a small part in Fayoum governorate and Beni Suef governorate. The pipeline route starts at the pressure compression station in Dahshour and extends towards the south parallel to the Cairo – Fayoum road up to a distance of 8 km. The line then continues to the South East direction parallel to the Western Cairo- Asyut road, on its eastern side up to a distance of 57 km till it reaches an existing valve room on the Dahshour –Koraymt gas pipe line (one of the national grid gas pipe lines) with a total length of 65 km..

Construction Phase

The project will be carried out by a contractor under GASCO's supervision and control. It is expected that the engineering, procurement and construction phases will collectively take about 27 month, during which the following activities will be conducted in the construction phase:

- Right of Way activities.
- Pipe transportation and storage.
- Trenching.
- Horizontal Directional Drilling (HDD) or boring for the road crossings
- Welding and inspection.
- Coating and inspection
- Wrapping of joints.
- Ditching.
- Installation of valves.
- Tie-ins
- Laying fiber-optic cables
- Backfilling.
- Pigging.
- Hydrostatic test.
- Dewatering.
- Purging& commissioning.
- Manufacturing and fittings for valves rooms (including civil, mechanical, and electric components).

Operation Phase

The operation phase is normally functioned through the central control unit through the SCADA system. Normal maintenance and monitoring work will be performed including patrolling to leakages and potential hazards detection. In case of leak detection, or damage in parts of the pipeline, the damaged part will be isolated and the necessary action will be taken according to the emergency response plan of GASCO.

Project Alternatives

The main target of the proposed project is to increase the natural gas supply to Beni Suef Power Plant, in order to help meet the growing national demand. In case of having "No Action", liquid fuels(Mazout (heavy fuel oil) or Diesel) can be used to compensate this shortage despite that there will be more polluting air emissions in case of transporting it through vehicles, and even during its burning. In addition, since there is a local shortage in supplying liquid fuels, it will be mainly imported, and accordingly increase the load on

the national budget especially regarding the current foreign currency problems. Hence, the "No Action" alternative is not accepted.

From the environmental and social point of view, the best pipeline route is the one which minimizes the change in the land use, the interruption of the ecological nature, the intersection with residential areas and areas with special nature such as religious buildings and historical areas. This point of view intersects with GASCO's strategy which aims to choose a route away from the residential areas, and in locations already containing other infrastructure pipelines/cables to minimize disturbance in new areas. GASCO has an unwritten strategy that avoids passing through any construction buildings including: houses, religious buildings and historical areas.

The route starts from the valves room following the Dahshour compression station, and extends towards the south parallel to the Cairo – Fayoum road up to a distance of 8 km. The line then continues to the South East direction parallel to the Western Cairo- Asyut road, on its eastern side, up to a distance of 57 km till it reaches an existing valve room on the Dahshour –Koraymt gas pipe line (one of the national grid gas pipe lines) with a total length of 65 km. The chosen pipeline path moves parallel to existing roads to facilitate the patrolling and maintenance activities when needed.

The chosen pipeline route achieves the environmental and social targets, and at the same time aligns with GASCO's strategy which aims at choosing routes already containing existing infrastructure pipelines to minimize disturbance in new areas.

Positive Environmental and Social Impacts

Implementation of the proposed project is expected to lead to a number of positive social and economic benefits, for example:

- The project is expected to result in the creation of job opportunities in the construction phase, both directly and indirectly;
- Support the expansion of power generation projects;
- Expanding power generation will dramatically enhance the national electricity grid;
- Expanding the natural gas network will positively provide an energy source to local industries which will indirectly create job opportunities;
- Expanding the natural gas network will enhance the national plans to increase the number of natural gas household connections.
- Variation of the energy mix in order to reduce the dependency on imported fuel.

Environmental Impact Rating Summary

Table 1 - Environmental Impact Rating Summary

Phase	Impact category	Impact Rating		
		Low	Medium	High
Construction	Air Quality			X
	Aquatic Environment			X
	Noise		X	
	Ecological systems	X		
	Land use	X		
	Soil	X		
	Traffic		X	
	Archaeological Sites	X		
	Natural disasters		X	
	Hazards		X	
	Waste disposal			X
	Public health	X		
	Health and safety		X	
	Existing infrastructure		X	
	Temporary land acquisition		X	
	Permanent land acquisition		X	
	Waste accumulation hindering traffic	X		
Operation	Air Quality	X		
	Aquatic Environment	X		
	Noise	X		
	Ecological systems	X		
	Land use	X		
	Soil	X		
	Traffic	X		
	Archaeological Sites	X		
	Natural disasters			X
	Hazards			X
	Waste disposal	X		
	Public health	X		
	Health and safety	X		
	Existing infrastructure	X		
	Easement of the RoW	X		
	Crop damage during maintenance	X		

Main Construction Impacts

The main impacts expected during the project construction are as follows:

1. Dust emissions during the construction phase due to the on-site activities (site preparation, excavation, etc)
2. The aquatic environment can be impacted in case of improper disposal of construction wastes or debris in the waterways, and in case of improper disposal of sanitary wastewater and water resulting from hydrostatic testing
3. Increase in noise level resulting from the construction equipment, and other excavation and construction works.
4. The possibility of affecting the existing infrastructure such as water and wastewater networks pipes, telephone connections.. etc. during the construction activities
5. Management of the different types of waste including domestic, hazardous and construction waste, such as Soil, Concrete, Welding belts, used oils, starting from their storage onsite until the final disposal.
6. Occupational Health and Safety aspects
7. Natural disasters that might lead to delays in the work schedule
8. Traffic impacts due to the increase in the number of trucks transporting construction materials and equipment to the site and possible routes re-routing.

Main Operation Impacts

While the main impacts expected during operation are:

1. In case of pipeline failure due to maintenance activities, accidents sabotage or trespass, this may lead to the release of a significant amount of natural gas which will cause major risks and to the surrounding communities and the environment.
2. Natural disasters might lead to pipeline failure and accordingly the release of natural gas, which will cause major risks to the surrounding communities and the environment.

Social Impacts

During Construction

- *Permanent acquisition of land (willing seller – willing buyer approach):* for the establishment of the valve rooms. In such cases, the common rule of GASCO is to provide full replacement cost for purchasing the land as per the market price under satisfactory, agreeable and appropriate agreement. It might be roughly suggested that each of the land plots (25m x 45 m) for each of the valve rooms. The line will require the establishment of 5 new valve rooms.
- *Temporary acquisition of land:* The project construction phase will necessitate temporary expropriation of about 1,300,000m^2 mostly of desert areas (only limited plots of newly reclaimed land will be impacted) during the construction. A Resettlement

Action Plan (RAP) was prepared guided by the WB Resettlement Policy OP 4.12. The RAP involves a full inventory survey for the PAPs and valuation for the compensation that should be paid.

- Potential temporary inconvenience as result of the construction activities. This could be in the form of accumulation of wastes (both construction and domestic waste in the construction areas, associated odor, air emissions, especially dust as a result of excavation. These impacts are of temporary nature and will be of very limited level of severity, particularly since the construction activities will be in semi-desert areas and not populated areas.

During Operation

- The possibility of a gas leakage or the occurrence of fires, which could affect the residents in the area, is a concern.
- Impacts related to the easement of the RoW: potential expansion of the residential area close to the pipe line routes. The land cannot be used for construction as an urban area after that. This is considered a negative impact to the land owners.
- Additional crop damage as a result of maintenance or surveillance activities is also a possibility

Environmental and social management plan (ESMP)

The following Tables show the ESMP outline for the proposed pipeline during the construction and operation phases.

The general implementation and supervision cost for all the proposed mitigation measures will be approximately 13,000 EGP/month. Additional costs will be stated for some mitigation measures.

Table 2 - Mitigation Measures and supervision responsibility during construction phases

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
Air emissions	• Implementation of regular maintenance schedule for machinery • Ensuring that vehicles and equipment will not be left running unnecessarily to reduce gaseous and exhaust emissions from diesel engines	Contractor	GASCO HSE site supervisor	General Implementation/supervision cost: 13000 EGP/month
Dust Emissions	• Water spraying before excavation, filling, loading and unloading	Contractor	GASCO HSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	• Spraying of stockpiles, storage in covered areas • Using paved routes to access the site wherever possible. • Sheeting of Lorries transporting friable construction materials • Ensuring transportation of construction waste by a licensed contractor • Minimizing drop heights for material transfer activities such as unloading of friable materials			
Risk of damaging existing infrastructure	• Consult maps before excavation work • Use of trial pits	Contractor	GASCO HSE site supervisor	• General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	• Analysis of accidents logs • If a line break occurs, the nearest police department and the corresponding authority shall be informed to repair the damaged line			• Cost of infrastructure damage will vary according to the type of damage. The cost will be charged on the contractor.
Solid, Construction and hazardous waste generation	• Identification and use of approved nearby disposal sites through local authority • On-site segregation of wastes according to their types • Designation and use of appropriate stockpiling locations on site • Covering waste stockpiles to avoid	Contractor	GASCO HSE site supervisor	• Hazardous Waste Disposal: 3500 EGP/ton + transportation cost • General Implementation/supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	ambient air pollution • Daily hauling of waste to disposal site in covered trucks • Activities involving fueling, lubricating or adding chemicals will not take place on-site (unless it is necessary) to avoid soil pollution and generation of additional hazardous wastes • Containers of used chemicals and oil will be collected and disposed in an approved hazardous wastes facility • The hazardous liquid waste will be			

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	collected in specific drums and transferred by authorized companies			
Noise	• Minimize the time of exposure of workers to noise • Ensuring the use of ear plugs in the field • Training all the workers before the commencement of construction activities about this hazard and how to avoid it • Construction activities will be minimized during night so as not to disturb the surroundings • All machines and	Contractor	GASCO HSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	vehicles should be shut-off when not used			
Traffic Congestion	• Using signs for drivers before the commencement of any construction activities to inform drivers and ensure the safety of the roads • Planning alternative routes when roads are obstructed • Choosing a location for temporary storage of construction materials, equipment, tools, wastes and machinery before construction so as not to cause further	Contractor	GASCO HSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	traffic disruptions • Avoiding construction work at the traffic peak times whenever possible • Prohibiting uncontrolled off road driving			
Water bodies/Wastewater generation	• Acquire discharge permits from sewage/irrigation authority • liquid waste generated such as chemicals and sewage should be collected in suitable tanks • The water resulting from the hydrostatic test of the pipeline should be tested before being	Contractor	GASCO HSE site supervisor	• General Implementation/ supervision cost • Sampling cost: 6500 EGP/ sample

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	discharged in a water body or be transported directly to the nearest water treatment plant. Prior coordination with the Ministry of Water Resources and Irrigation (MWRI) and the Holding Company for Water and Wastewater is necessary • Sanitary waste water will be collected in temporary storage tanks and sent to a waste water treatment plant via certified contractors.			
Hazards and Accidents	• An emergency preparedness	GASCO HSE department	GASCO Headquarters	GASCO management cost (General Implementation/

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	response plan, which is already prepared by GASCO, will be in place to give instructions about the identification of the potential occurrence of accidents and emergency situations that may occur during the pipeline construction and how to respond to them to reduce the risks and impacts that may be associated with these emergency situations • Gasco's spill oil contingency plan			supervision cost)

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	will be applied in case of any accidental spills and releases			
Land Use	• Restoring the land to its original condition at the end of the construction phase. • Hazardous liquids have to be handled carefully in order to avoid the spilling or leaks to the ground	Contractor	GASCO Headquarters	General Implementation/ supervision cost
Occupational Health and Safety	• Ensure the adequate implementation of occupational health and safety provisions on-site such as providing the personal protective equipment (PPE) to the workers. • The site should be	Contractor	GASCOHSE site supervisor	• Training Cost: 6000 EGP/training program • General Implementation/supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	provided by all the protective and safety requirements stipulated by labor laws and occupational health.			
Temporary land acquisition and crop damage	RAP document prepared Providing fair compensation to the land owners for the loss of crops.	GASCO Compensation Committee GASCO Social Development Officer	GASCO Environmental Department	Estimated amount for crop compensation according to the RAP study
Permanent land acquisition for valve rooms (willing seller – willing buyer approach)	Ensuring Providing fair market value to the land owners for purchasing the land for the valve rooms	GASCO Compensation Committee	GASCO Social Development Officer	GASCO will purchase the land under willing buyer – willing seller scheme
Archaeological, Historic and Cultural Heritage	Chance-find procedure will be applied in case of any artifacts were found	Contractor	GASCO Headquarters	No Cost
During operation				
Hazards and Accidents	• Scheduled	HSE department at	HSE department at	GASCO management cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	patrolling activities, inspection and preventive maintenance activities • Inspection will include any activities that could potentially lead to damage in the pipeline • In case of emergency, the source of the leak will be isolated until the maintenance team performs the required maintenance • Signs will be posted over the pipeline path showing the	GASCO (on-site section)	GASCO (central unit and administration)	

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	numbers to be called in case of emergency			

Table 3- Monitoring indicators and responsibility during construction and operation phases

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
During construction							
Air emissions	Inspection of vehicle and machinery maintenance schedule	Contractor	GASCO Environmental Officer	Quarterly	Documentation office	Review of schedule	13000 EGP/month for General implementation and supervision cost
	Exhaust emissions concentrations from diesel	Contractor (via third party)	GASCO Environmental Officer	Once before construction commencement, then	Vehicle maintenance site	Sampling of exhaust emissions	10000 EGP/ sample

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	generators			quarterly for each vehicle			
Dust Emissions	Inspection of the construction activities	Contractor	GASCO Environmental Officer	Daily	Construction site	Site observation	General implementation and supervision cost
Risk of damaging existing infrastructure	Frequency and location of damage incidents	Contractor	GASCO Environmental Officer	Monthly	Documentation office	Documentation in the monthly HSE reports and accidents logs	• General Implementation / supervision cost • Cost of infrastructure damage will vary according to the type of damage. The cost will be charged on the contractor.

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
Solid, Construction and hazardous waste generation	Use of on-site allocated stockpile locations	Contractor	GASCO Environmental Officer	Weekly	Construction site	Site observation	General implementation/ supervision cost
	On-site segregation of hazardous waste components from construction wastes and other non-hazardous wastes	Contractor	GASCO Environmental Officer	Daily	Construction site	Site observation	General Implementation / supervision cost
	Quantities and types of waste generated	Contractor	GASCO Environmental Officer	Daily	Construction site	Recording of daily transportation statistics and records from the	hazardous waste disposal: 3500 EGP/ton +transportation cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
						waste disposal sites	
Noise	Sound intensity levels and exposure durations	Contractor (via third party)	GASCO Environmental Officer	Quarterly, at least one measurement per contractor/sub-contractor	Construction site	Noise recording, reporting in monthly reports	• General Implementation/ supervision cost • Sampling Cost: 5000 EGP/ sample
	Complaints from neighboring residents	Contractor	GASCO Environmental Officer	Weekly	Construction site	Assessment of the filed complaints	General Implementation / supervision cost
	Use of earmuffs by Construction workers	Contractor	GASCO Environmental Officer	Weekly	Construction site	Site observation	General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
Traffic Congestion	Traffic congestions	Contractor	GASCO Environmental Officer	Weekly	Construction site	Obstructed roads observation	General Implementation / supervision cost
	Complaints from neighboring/ affected residents	Contractor	GASCO Environmental Officer	Weekly	Construction site	Assessment of the filed complaints	General Implementation / supervision cost
	Appropriate implementation of the mitigations measures agreed upon with the contractor	Contractor	GASCO Environmental Officer	Monthly	Construction site	Site observation	General Implementation / supervision cost
	Restoring the dug trench-line to its original	Contractor	GASCO Environmental	At the end of the construction	Construction site	Site observation	General Implementation / supervision

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	condition at the end of the construction phase		Officer	phase			cost
Water bodies/Waste water generation	Oily appearance or smell of wastewater streams Samples to test wastewater which will be discharged (pH odour, TSS, COD, BOD, Oil & Grease…etc)	Contractor (via third party)	GASCO Environmental Officer	Continuous during construction and hydrostatic testing	Construction site	Site observation and Chemical Analysis	• 6500 EGP/sample General Implementation / supervision cost
	Wastewater analysis after hydrostatic	Contractor (via third party)	GASCO Environmental Officer	Before wastewater discharge	Construction site	Chemical analysis	• 6500 EGP/sample

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	testing Samples to test wastewater which will be discharged (pH odour, TSS, COD, BOD, Oil & Grease…etc)						General Implementation / supervision cost
Soil/Land Use	Recording any spills or leakages incidents and periodically analyzing these data.	Contractor	GASCO Environmental Officer	Upon detection of any spillage or leakage incidence	Construction site	Site observation	General Implementation / supervision cost
	Surveying of structural status of buildings and	Contractor (via third party)	GASCO Environmental Officer	Yearly, if necessary	Structural consultancy firm for the affected site (if any)	Structural consultancy firm	General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	performing soil investigations						
	The pipeline route should be revisited and investigated at the end of the construction phase to ensure that the land has been restored to its original conditions before the project	Contractor	GASCO Environmental Officer	After end of construction	Construction site	Site investigation	General Implementation / supervision cost
Occupational Health and Safety	PPEs, first aid kits, emergency plans, fire-fighting	Contractor	GASCO Environmental Officer	Daily	Construction site	Observation	• General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	equipment, ….etc.						• Training Cost: 6000 EGP/training program
Temporary land acquisition and crop damage	Complaints and grievances from PAPs about fair compensation and procedures	GASCO Social Development Officer Compensation Committee	GASCO Environmental Officer	Monthly	Project Site Documentation offices	Review list of PAPs, meetings with the PAPs, compensation receipts, grievances, and follow up forms	General implementation/ supervision cost
Permanent land acquisition for valve rooms	Complaints and grievances from PAPs about fair	GASCO Social Development Officer	GASCO Environmental Officer	Monthly	Project Site Documentation	Review list of PAPs, contracts, grievances,	General implementation /supervision

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
(willing seller – willing buyer approach)	compensation and procedures	Compensation Committee			offices	and follow up forms	cost
During operation							
Hazards and Accidents	Patrolling reports for the pipeline	GASCO inspection Department in the pipeline's area	GASCO inspection Department in the head office	2 weeks, 1 month or 6 months (According to pipeline Class Table 2-3)	Pipeline route	Patrolling schedule	GASCO Management cost
	Regular inspection and maintenance	GASCO maintenance Department in the pipeline's area	GASCO maintenance Department in the head office	Quarterly (According to the inspection and maintenance time plan)	Pipeline route	Inspection and maintenance time plan	GASCO Management cost
	Leakage survey and pipeline pressure	GASCO inspection department/	GASCO inspection department/	2 weeks, 1 month or 6 months	Pipeline route and documentation	Leakage Survey Schedule/	GASCO Management

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	parameters (through SCADA system)	GASCO operation department in the pipeline's area	GASCO operation department in the head office	(According to the leakage survey schedule)/ continuous monitoring	office	operational log	cost

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AADT	Average Annual Daily Traffic
ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
BP	Bank Procedure
CAA	Competent Administrative Authority
dB	Decibel
EEAA	Egyptian Environmental Affairs Agency
EGAS	Egyptian Natural Gas Holding Company
EGPC	Egyptian General Petroleum Corporation
EHS	Environmental Health and Safety
EM	Environmental Management
EMS	Environmental Management System
EMU	Environmental Management Unit
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GARBLT	General Authority for Roads, Bridges and Land Transport
GASCO	The Egyptian Natural Gas Company
GRM	Grievance Redress Mechanism
HC	Hydrocarbons

HDD	Horizontal Directional Drilling
HSE	Health and Safety Environment
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
ILO	International Labor Organization
ISO	International Organization for Standardization
IUCN	International Union for the Conservation of Nature
LAeq	Equivalent noise level; the average acoustic pressure at the level of measurement
LCpeak	Peak sound pressure level
LPG	Liquefied Petroleum Gas
MMSCMD	Million Metric Standard Cubic Meters per Day
NGO	Non-governmental Organization
OP	Operational Policy
OSH	Occupational Safety and Health
OHSAS	Occupational Health and Safety Management Systems
PM	Particulate Matter
PPE	Personal Protective Equipment
QRA	Quantitative Risk Assessment
RAP	Resettlement Action Plan
R.O.W	Right of Way
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition System
TSP	Total Suspended Particles

UNESCO	United Nations Educational, Scientific and Cultural Organization
WB	World Bank

1 Introduction

1.1 Background

The current Egyptian strategy aims to increase the amount of electricity generation in power plants to meet the increasing energy demand in the residential and industrial sector. Most of the power plants operate using fossil fuels, and it is the country's role to determine the type and source of fuel to be used.

Compared to other fossil fuel types, Natural Gas is considered a cleaner fossil fuel. Additionally, after the new successful gas explorations in the Mediterranean, Egypt is expecting the abundance of natural gas to be used for the different sectors including power generation. Therefore, Natural Gas was selected as the main fuel source for most of the power plants throughout the country.

The main entity responsible for the management of the natural gas in Egypt is the Ministry of Petroleum. The Ministry's responsibility starts with the excavation projects for new fields and continues with the discovery, processing, transportation and delivery of gas to the different users (residential, industrial and power production sectors) with the aim of satisfying the local requirements of natural gas. The Egyptian Natural Gas Company (GASCO) was established in March 1997 with its main mission is natural gas transmission & Distribution according to the plan of the Ministry of Petroleum.

One of the projects implemented to support the generation of electricity in Egypt is the EG-Giza North Power Project, which is an existing project financed by the World Bank. The aim of the project is to contribute towards improving the security and efficiency of electricity supply to the different users by adding new generation capacity based on the most efficient thermal power generation capacity. To achieve this objective, the project has three main components:

- **Component 1:** The Power Plant Component, which is the construction of 2250 MW Combined Cycle Gas Turbine power plant;
- **Component 2:** The Construction of transmission lines to connect the power plant to the national grid
- **Component 3:** The construction of gas pipeline to strengthen the gas supply network to ensure gas supply to the power plant.

After the completion of the procurement of all the packages financed by the Bank, there were financial savings available as part of the project to be utilized by the Government of Egypt.

The World Bank received formal request from the Government of Egypt to utilize the savings from the Giza North Power Plant project to procure pipelines required for

upgrading the Natural Gas pipeline network in order to enable the connection to new and existing power plants. The proposed pipelines will also be implemented by GASCO and are composed of 9 pipelines, namely:

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9. Damanhour Power Station (2.5 km) + gas decompression station (in Damanhour Power Station)

GASCO has prepared an updated ESIA for the gas pipeline which addressed the general impacts which are expected from the construction and operation of all the gas pipelines. The updated ESIA required that a site specific ESIA including a site specific ESMP should be prepared to provide detailed assessment, mitigation measures and monitoring activities along the subject route. The updated ESIA was disclosed in Egypt and internationally on the World Bank infoshop on February 2016.This ESIA is studying the environmental and social impacts of the –Dahshour – El Wasta gas pipeline.

1.2 **Project Overview**

The focus of this study is the Dahshour - El Wasta Natural Gas pipeline which is one of the 10 pipelines proposed to be implemented by GASCO. The pipeline will start from the already existing compression station located in Dahshour, with the aim of supplying natural gas to the Beni Suef Power plant.

The planned path will mainly pass through three governorates; Giza, Fayoum and Beni Suef, as well as three main crossings, one with the regional ring road which is the main road crossing and two railway tracks, therefore, the pipeline may potentially cause disruptions to sites of general cultural or ecological importance along the path.

The construction and laying down of the pipeline is usually done through digging trenches, except in areas of intersections with major waterways and roads, where the

Horizontal Directional Drilling (HDD) technology will be used. The project will also include valve rooms.

EcoConServ has been awarded the consultancy service for the preparation of an Environmental and Social Impact Assessment (ESIA) including a Resettlement Action Plan (RAP) for the project of Dahshour – El Wasta pipeline. The ESIA examines the potential environmental and social impacts expected from the proposed project activities on the surrounding areas, and the proposed mitigation and monitoring measures to ensure the elimination or reduction of any possible adverse effects.

1.3 Study Approach and Methodology

1.3.1 Approach to the Study

The ESIA is prepared in accordance with the requirements of the Egyptian Environmental Affairs Agency (EEAA) for the Environmental Impact Assessment studies for the oil and gas sector projects, and the relevant World Bank (WB) Environmental and Social Safeguard operational policies and the Environmental Health and Safety guidelines.

1.3.2 Study Methodology

The study preparation is done according the following methodology:

- Obtaining the information and documents available regarding the project and familiarization with the project objectives.
- Conduct site visits to the project site, to collect the baseline data regarding the current environmental and social situation.
- Holding a Scoping Session (first public consultation) to engage the community and different stakeholders in the process of the identification of the environmental and social aspects that should be taken into consideration during the study preparation.
- Reviewing the relevant national and international legislation and regulations relevant to the scope of the project.
- Assess the potential environmental and social impacts associated with proposed project activities.
- Develop a screening criteria for the characterization of the potential impacts and identifying the most important environmental and social impacts

- Analyzing the project alternatives with the potential of minimizing the environmental health and safety risks.
- Proposing mitigation measures for the expected environmental and social impacts of the project.
- Preparing an environmental and social management plan for the mitigation of the potential negative impacts and monitoring the compliance with the relevant environmental laws.
- Holding the Second and final public consultation session to present the findings of the study to the community and stakeholders, and assess their perception of the project and any concerns or issues raised during the session.
- Production of comprehensive ESIA

1.3.3 **Data Collection Methodology**

1.3.3.1 Data concerning the path and surrounding areas

The data required for the report preparation were gathered through meetings with GASCO detailing the route path and crossings, in addition to the engineering details of the pipeline lines, construction and operation activities, and governmental approvals. Other project-specific data were gathered from the site visit conducted to inspect the land use in the areas surrounding the pipeline route. The site visit was conducted in a way to cover as much area as possible along the pipeline path designed by GASCO, through moving on the roads adjacent to the path whenever possible.

A preliminary desk review and study of the maps with the designed pipeline path was carried out to identify the potential sensitive receptors around the project site, and during the visit, the sensitive receptors were confirmed and the baseline measurements (Air quality and noise) were conducted. Also, during the site visits, the study team had several stops to photograph areas of importance around the proposed pipeline locations and identify the different flora and fauna species which will potentially be affected by the project implantation.

Data concerning the meteorological conditions, soil topography and geology as well as surface water availability and quality were collected through desk review of recent studies conducted in the area of the path.

1.3.3.2 Social Project-related Data

EcoConServ has adopted a multistage analysis strategy, several data collection methods and tools were applied using the Participatory Rapid Appraisal approach. This approach ensures that local community groups participated to the study. Data was collected in coordination with relevant stakeholders including local administration units (district and village levels) and the local NGO's.

The consultant has also reviewed relevant secondary data sources such as: studies, reports and previous literature. The research team has conducted several field visits to assess the baseline conditions.

A number of qualitative data collection tools were applied to ensure different community groups participated to the study. The applied methodology in the social impact assessment can be summarized as follows:

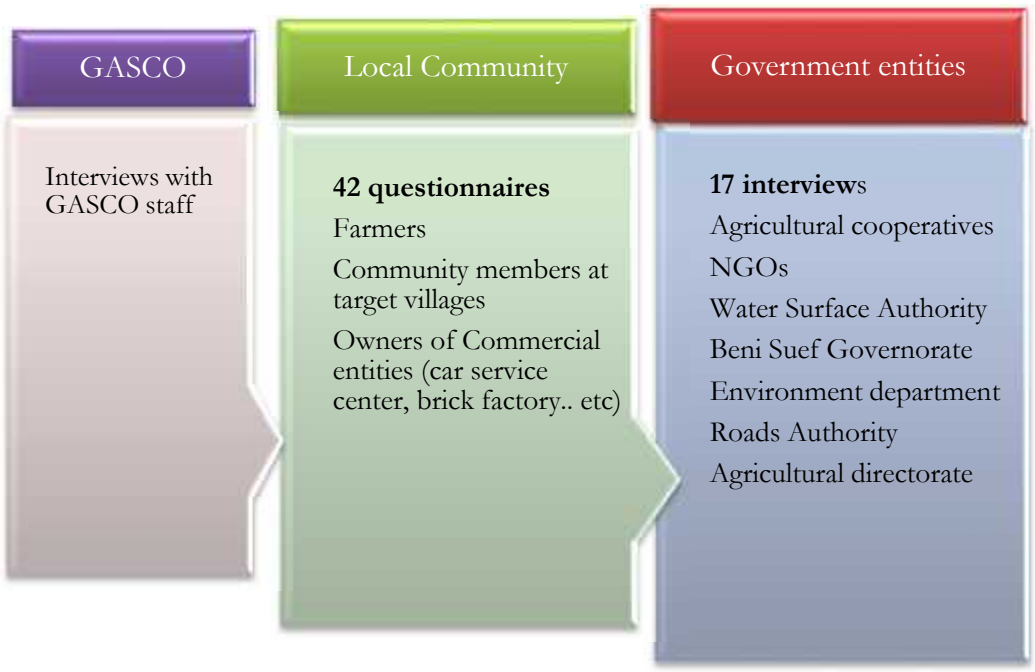

Figure 1-1 - Methodology for Description of the Social Baseline

1.3.4 Stakeholders' Consultations

Stakeholder's analysis is one of the tools that helped the consultant identify relevant groups of stakeholders and their interest in the project as which may facilitate different project activities. Stakeholder's analysis is an important tool at the initial stages of the project which might contribute to define and mitigate several negative impacts at an early stage. Stakeholder's can help enhance the social benefits related to the project at the local community level.

Table 1-1 - Stakeholder's Analysis of the project

Stakeholders group	Roles

GASCO	Is the owner of the project, the main government authority concerned with supervising the project activities and implementation of the project.
EEAA	Is the authority responsible for approving the ESIA study as part of the implementation requirements.
EEAA regional office in North Upper Egypt region	Environment department is responsible for monitoring the implementation of ESMP.
Local Governmental Units at main and satellite villages	Are responsible for providing and financing infrastructure services at local areas. They are also able to coordinate among different development projects and initiatives.
Natural leaders at the local community	The main stakeholders, they have the experience and the knowledge and they have a strong impact on the local community especially at rural areas.
Beneficiaries (Power Stations)	Are the main beneficiaries from the project, may be subject to some positive/negative impacts. They play a significant role in project success and sustainability.
NGO's	Participating in providing capacity building activities and supporting the local community finding alternative livelihood opportunities during construction. They can also play a role in disclosure of the compensation procedures.
Agricultural cooperatives	They are responsible for providing the prices of the crops during the valuation process as well as provide data about the land owners and rent during the census survey.

2 Project Description

2.1 Project Background

The proposed project is as an integral part of the country's energy strategy which calls for greater use of natural gas. This initiative will contribute to achieving the government plan for extending natural gas usage to help meet the increasing demand in the residential and power sectors. This project will have a significant role in delivering the natural gas to Beni Suef governorate.

2.2 Project Components

2.2.1 Pipeline Route

The pipeline will pass through three governorates, starting at the south of El Giza governorate, a small part in Fayoum governorate and Beni Suef governorate. The pipeline route starts at the existing pressure compression station in Dahshour and extends towards the south parallel to the Cairo – Fayoum road up to a distance of 8 km. The line then continues to the South East direction parallel to the Western Cairo- Asyut road, on its eastern side, up to a distance of 57 km till it reaches an existing valve room on the Dahshour –Koraymt gas pipe line (one of the national grid gas pipe lines) with a total length of 65 km. The figure below shows the pipeline location and route. In total, there are three main crossings, one with the regional ring road which is the main road crossing and two railway tracks. Along the whole route, the pipeline will be located underground, and will pass through desert areas with minimum or no significant use. The technical details of the pipeline, valve rooms will be presented in the following sub-sections.

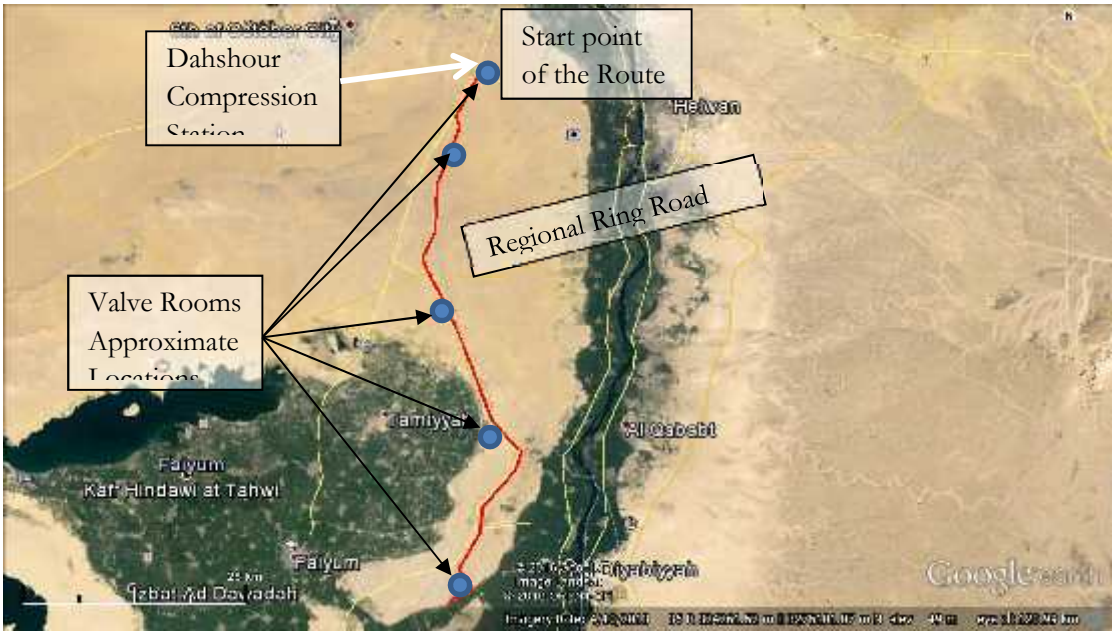

Figure 2-1 - Dahshour – El Wasta pipeline location and route

2.2.2 Pipeline Specifications

- Length: 65 km
- Diameter: 36”
- Pipe Thickness:
  - Class 2: 0.562”
  - Class 3: 0.625”
  - Class 4: 0.812”
- Material: APL 5L X 60
- Maximum operating pressure: 70 bar
- Minimum operating pressure: 30 bar
- Pipeline capacity: 20.7 MMSCMD

2.2.3 Sensitive Receptors

The following figures present the main landmarks observed during the site visits conducted by the study team. In addition, the main sensitive receptors in the pipeline route were highlighted during the site visits, and also presented in the figures below.

Figure 2-2 - One of the existing valve rooms

Figure 2-3 - The line extends along the Assuit West road at mainly desert areas

2.2.4 Pipeline Design Considerations

The pipeline shall be designed, constructed and tested in general accordance with ASME B31.8 along with the other relevant codes and standards adopted by GASCO in its designs in addition to any other additional local regulations. Thus, it will be free from significant defects. The following standards will be followed:

- The pipeline should be protected against rust and corrosion.
- The pipeline should be protected against external trespass.
- The pipeline should not be adversely influenced by ground movement, as a result of natural or human activities.
- Modification, maintenance and repair of the pipeline should be carried out in such a way that doesn't negatively affect its safety measures.

In addition, the following codes and standards will be followed for the design of the different pipeline components

- API 5L for line pipes
- API 6D for valves
- ANSI B 16.9 and MSS SP 75 for fittings
- ANSI B 16.5 and MSS SP 44 for flanges
- ASME B 31.8 and GASCO local regulations for construction and pipeline design.

Moreover, the pipeline design takes into consideration the location class of the pipelines according to the population density along the pipeline route as shown later in this chapter. The location class is also used to determine the patrolling activity to be conducted on the site.

2.2.5 Pressure Compression Station

The pressure compression station already exists and operating for the national grid, therefore it is not considered as part of the new added pipeline; however as the starting point of the pipeline path, it is briefly discussed. The station is located 15 km away from 6th of October city in a desert area, away from any residential or industrial activities. The station covers an area of 11.5 feddans.

The station has the function to recompress the natural gas at an intermediate point to enable the movement in the rest of the route. The pressure compression station usually raises the pressure from 25 bar to 70 bar. The pressure compression station currently receives natural gas from the natural gas network (Amereyah – Dahshour 32" pipeline and Nubariyah-Dahsour 42" pipeline) with pressures starting at 25 bar to raise their pressures to 70 bar through Dahshour – Kurayemat 36" pipeline to reach Kurayemat – BeniSuef 30" pipeline then to BeniSuef – Sohag 32" pipeline and finally to reach Suhag –

Aswan 30" pipeline to maintain the pressure of natural gas at 25 bar by the time it reaches Aswan/Upper Egypt.

The station is designed to pump around 27.5 million cubic meters of natural gas per day through the three main compressors in service and a fourth compressor as a backup. The station's capacity is anticipated to reach 40 million cubic meters after the installation of two new compressors.

The station can be divided into 4 main blocks, briefly described as follows:

- Block (A): comprises the main gate of the station, the control building, the substation building, warehouses and workshops building and emergency generator building;
- Block (B): comprises the main operational areas, the fuel station and 4 compressor units with their components;
- Block (C): comprises the auxiliary units to the station (air compressors unit, water pumps unit for firefighting…etc)
- Block (D): comprises the firefighting water tanks and pumps, stacks, condensates tank in addition to a temporary storage unit for ENPPI.

The compression station is supplied with electricity through 2 main feeding points of 22 kV: the first point from AlMahsoura at a distance of 2 km away from the station, and the second point from AlSheikh Zayed power station at a distance of 20 km away from the station.

Additionally, the vital activities at the station are connected with a backup diesel generator of 650 kW capacity.

Moreover, there is an additional backup energy source at the station consisting of batteries of 1200 amp / h distributed over 4 racks.

2.2.6 **Valve Rooms**

Valve rooms will be constructed so as to control the flow of the natural gas through the pipeline. Such control can be applied by changing the percentage opening of the valves, or by changing the path of the natural gas by operating the bypass valves. The main technical data of the valve rooms are:

- Number of Valve Rooms: 5
- Room Area:
  - Room (1): 30 m * 45 m
  - Rooms (2,3,4): 45 m * 25 m (There will be extensions in these rooms)
  - Room (5): 50 m * 50 m
- Operation conditions: temperature varies between 33°C-43°C

2.3 Activities of Construction Phase

Construction will be carried out by qualified and approved contractors under the supervisions and monitoring of ***GASCO***. The work will broadly be split into the following phases:

- Right of Way activities.
- Pipe transportation and storage.
- Trenching.
- Horizontal Directional Drilling (HDD) or boring for the road crossings
- Welding and inspection.
- Coating and inspection
- Wrapping of joints.
- Ditching.
- Installation of valves.
- Tie-ins
- Laying fiber-optic cables
- Backfilling.
- Pigging.
- Hydrostatic test.
- Dewatering.
- Purging& commissioning.
- Manufacturing and fittings for valves rooms (including civil, mechanical, and electric components).

The following table shows the types of equipment to be used in the construction phase. The exact number of equipment used will be specified by the contractor during the construction phase.

Table 2-1 - List of equipment that shall be used during construction

Equipment
Double Cabin Car
Double Cabin Car 4*4
Pick Up
Bus (26 Persons)

Equipment
Puller
Generator 200-250 K.V
Crane 50 Ton.
Side Boom D8
Pipe welder
Pipe Carrier
Welding Machine
Low Bed
Water Tank Car
Solar Tank Car
Agriculture Excavator
Truck
Excavator
Loader
Bulldozer D8
Trailer
Compressor
Sand Plaster
Cement Mixer
Boom Excavator
Ambulance
Equipment carrier

2.3.1 **Right of Way Activities**

GASCO will manage its access for the Right of Way (R.O.W) through governmental permits from the relevant ministries/organizations. Annex 2 presents a copy of some of the local permits obtained so far. The contractor will then implement the R.O.W activities to clear any obstacles that may interrupt the excavation activities. The contractor will be keen to avoid unnecessary damage to crops or neighbor buildings during R.O.W, and he will be responsible for compensating any damages. The Contractor shall also use warning signs in the work area to protect persons, automotive vehicles…etc. **No impacts are anticipated after the pipeline is constructed and is under operation**. Although some restrictions are normally applied on the land uses of the RoW (2*2 m in urban areas and 6*2 meters in rural areas from the center of the pipeline).

2.3.2 **Ditching**

Before any excavation activities, the contractor shall coordinate with the different authorities to determine the existing infrastructure in the project's area (e.g. water lines, sewage lines, electrical cables and telecommunication lines)so as to avoid any undue damage. In case of lacking sufficient information on the available infrastructure, the contractor will carefully excavate a trial pit.

In case of the asphalt roads, an excavator will be used to remove the asphalt layers. The contractor shall excavate the trench in which the pipeline is to be laid with the following dimensions with a possibility of having 10% excess where required by works in some areas

- Depth to the pipe top elevation below the general ground level
  - 1 m for all land types other than rocky lands
  - 0.7 m for rocky lands.
- Width of trench
  - Pipe outside diameter "with coating" + 0.4 m
- Angle of trench
  - Rocky area- vertically cut
  - Compacted soil - 40° to vertical
  - Running soil - 70° to vertical

The following figure illustrates how to dig trenches for various types of soils. The ditch bottom shall be uniformly and carefully graded and be free from coarse rocks solid objects which could negatively affect the pipeline coating. Due to its criticality, quality control checks will be applied from GASCO and the contractor for this issue.

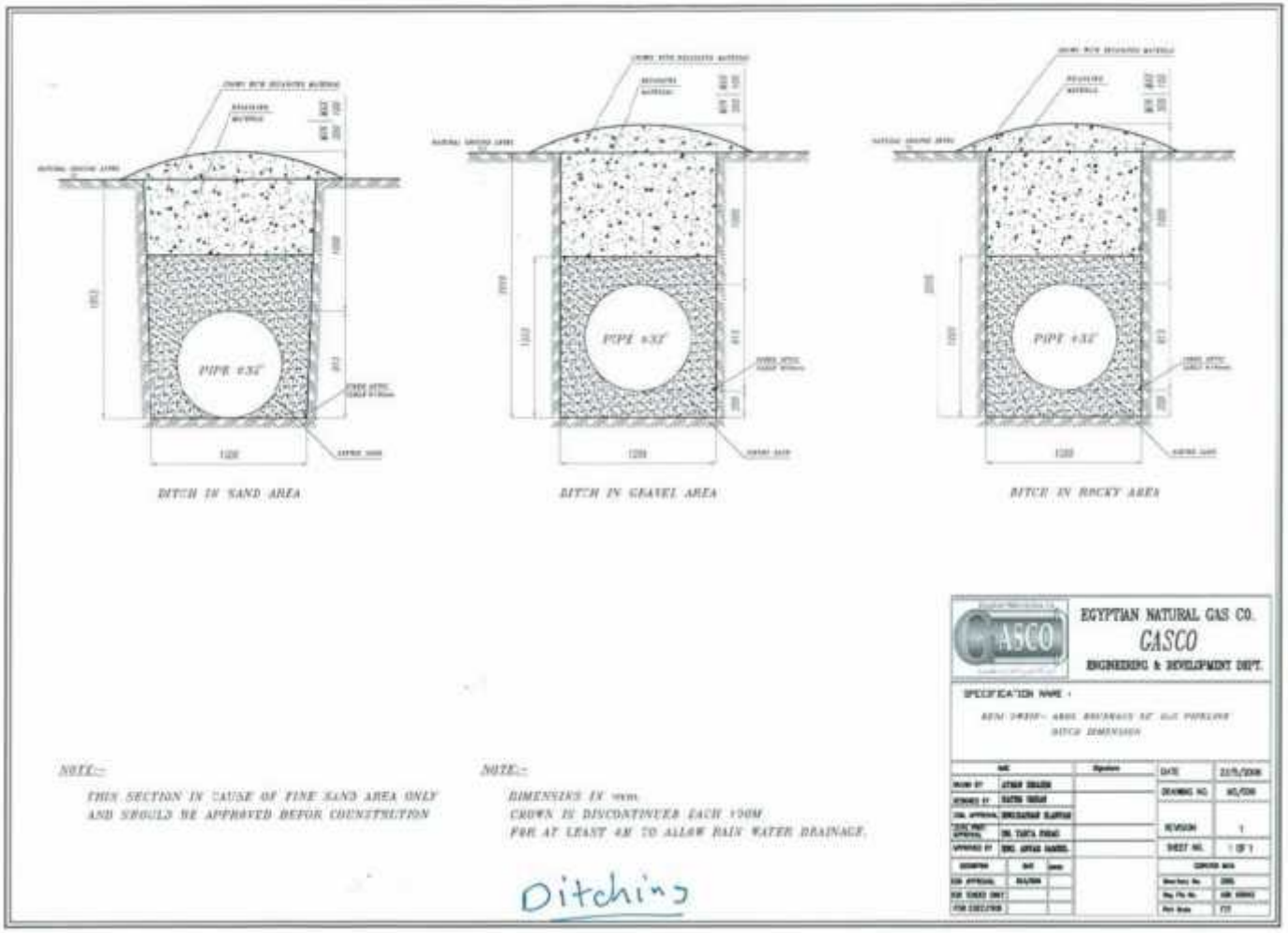

Figure 2-4 - Ditching in various types of soils

At locations with irregular ground elevations, additional excavation may be applied to avoid undue bending of the pipe. In addition, and in case of having crossing with other underground infrastructure lines/cables, the trench shall be deepened so that the pipeline be installed below or above the existing lines/cables in accordance with the following figures.

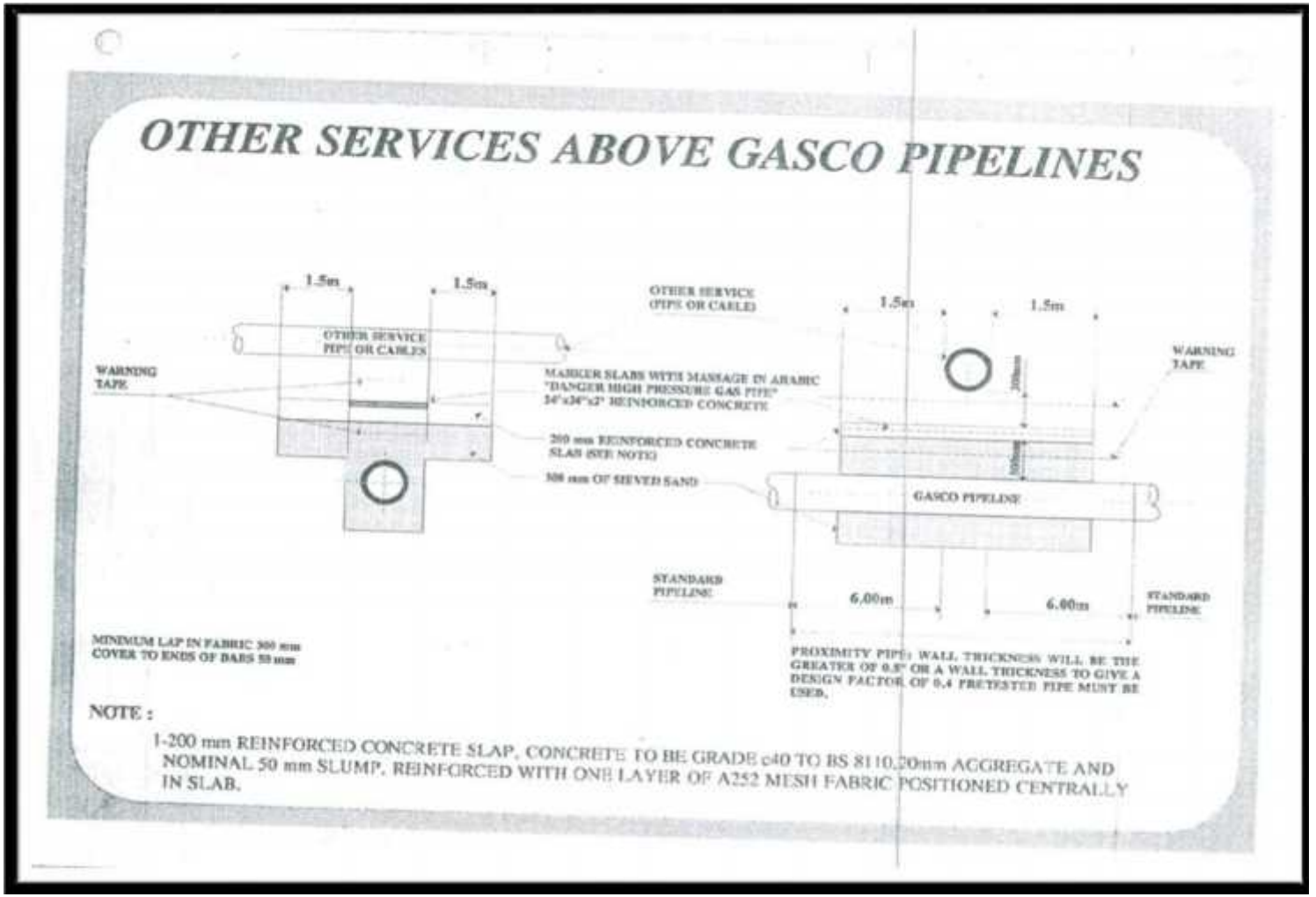

Figure 2-5 - Excavation required in case of having other infrastructure line/cable above the proposed NG pipeline

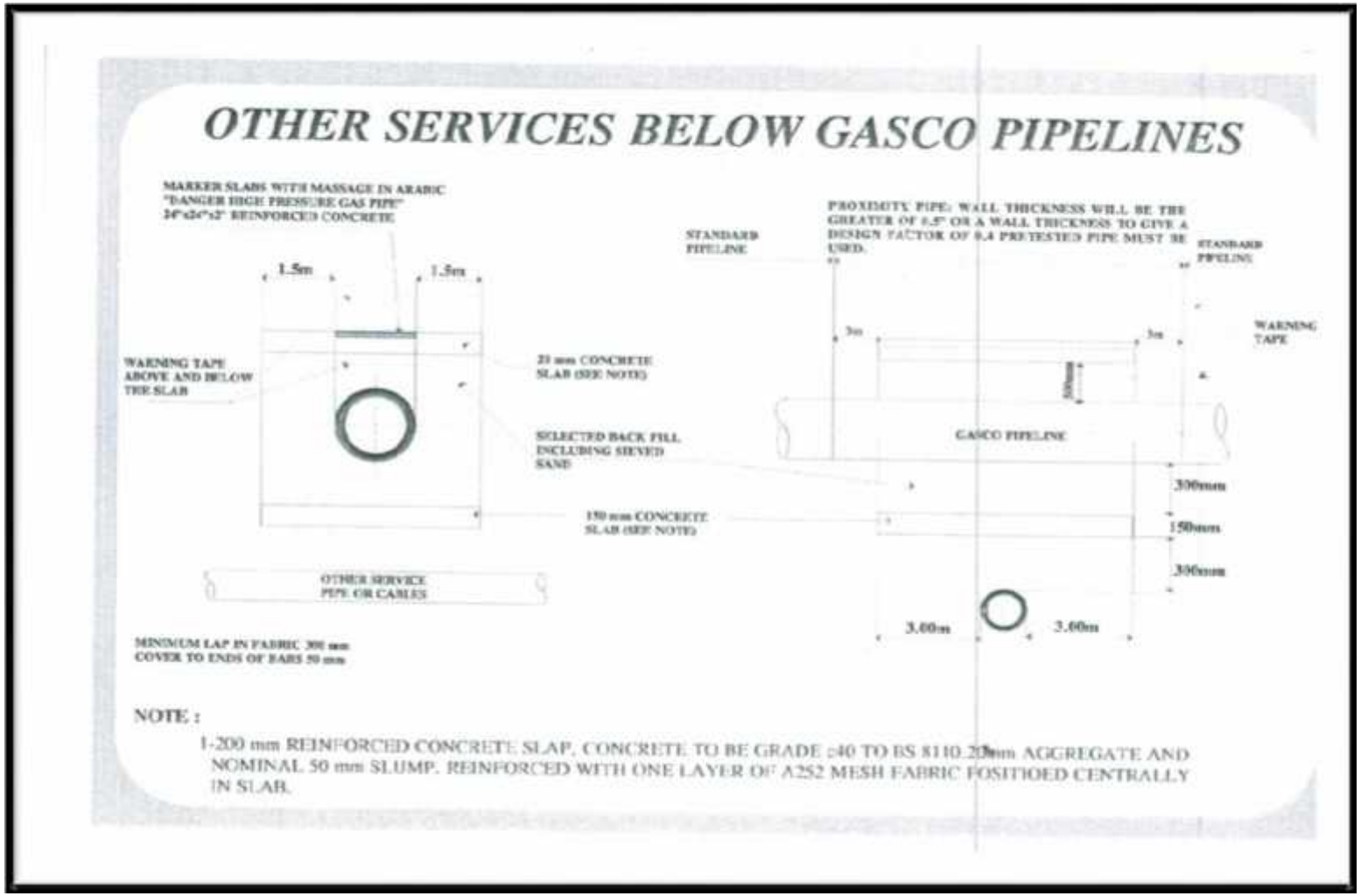

Figure 2-6 - Excavation required in case of having other infrastructure line/cable below the proposed NG pipeline

2.3.3 Pipe Laying and Trench Backfilling

After ditching, the pipes can be laid in the trench. The pipes "originally coated with polyethylene" are generally stored and stacked in a devoted area in a way that ensures their protection from any effects that may damage the pipes or their coatings. In addition, the contractor will set quality control procedures during the transportation and handling of pipes for the same reason. The pipes are welded together, and a quality control test using x-rays will be applied to ensure the welding effectiveness. In addition, the uncoated parts of the pipes (at the end parts to be welded) are coated on site, and the coating layer is tested using a "holiday test" before starting the pipeline laying. Such tests will be implemented by the contractor and re-checked by GASCO.

As discussed above, the bottom of the trench is cleaned of any rocks or solid objects which may damage the pipeline. In addition, the trench shall be laid on a fine sieved sand layer of a minimum depth of 20 cm. Wide nonabrasive belts will be used while laying the pipeline to the trench, and the contractor will carefully remove the belts from around the coated pipes. In case of any damage caused to the pipes' coating during the lowering operation, the contractor will repair such damage before laying the pipe in the ditch. The pipeline lowering shall be undertaken in the presence of GASCO representatives.

The trench shall be backfilled within 48 hours after lowering the pipeline. As was the case with the layer below the pipeline, the initial backfill will be to a minimum height 20 cm. of fine sieved sand to protect the pipeline. The backfill will be then compacted by wet sand layers of 15 cm thickness, so that the total height is not less than 20 cm above the adjacent ground level.

On the other hand, and in case of the trenches being dug in roads, backfilling shall be carried out immediately after the pipeline has been laid in the same technique shown above. The main difference is that the finished backfilling level will be the same as the road level. After that, the contractor will work on restoring the road surface to its original status. In all cases, cathodic protection system will be applied to the pipeline and valves. Appropriate signage and community safety measures will be in place in addition to covering or safeguarding any open trenches that are not promptly filled.

2.3.4 Hydrostatic Testing

To ensure that the pipeline can withstand pressures high than the operating natural gas pipeline, the natural gas flow will not be started before applying the hydrostatic pressure test. The test is conducted by introducing pressurized water into the pipeline (150% of operating pressure) for 24 hours and checking whether there are any pressure losses. This will be detected by the pressure recording instrument connected to the pipeline during the test.

The water used in the test shall be clean fresh water and free from any substance which may be harmful to pipe material (including high levels of salinity). The water to be used in the hydrostatic test of this project will be sourced from water trucks, a filter of sufficient capacity shall be

accordingly installed between the water source and the suction side of the pump side of the pump. Hydrostatic testing must be followed by dewatering and gauging.

Before introducing the water, a 'bi-directional pig' is placed in the beginning of the pipeline. Then the pipeline is filled with fresh clean water, where the 'bi-directional pig' will be is moving in the entering water direction, and comes out from the other side guaranteeing that there are no air pockets inside the pipeline. After raising the water's pressure, and ensuring the test's success, another 'bi-directional pig' is introduced to discharge the water as shown in the following section.

2.3.5 **Dewatering**

The 'bi-directional pig' used will be based on foam or rubber. Pigs will continue operation until there is no evidence of having water in the pipeline as determined by the tests. Such tests shall include either the calculation of the gain in weight of the pig or measuring of the dew point of the compressed air entering and exiting the pipe line.

2.3.6 **Magnetic Cleaning and Geometric Pigging**

To ensure that the pipeline is free of any solid materials which may cause erosion to the pipeline, pipeline cleaning should be conducted using 'pigging' technique. A series of magnetic cleaning pigs will be run until the pipeline is judged by the company to be free of magnetic debris. After that, the contractor will run a geometric pig. After a successful run by the geometric pig, the pipeline will be left with positive pressure of at least 2 bar using either dry air or dry nitrogen as determined by the company so as to discharge any metallic components still present. The resulting solid waste from the pigging operation will be disposed by applying GASCO's specific solid waste management procedure.

2.3.7 **Purging and Commissioning**

Before starting the flow of Natural gas, the pipeline will be purged by flushing with dry nitrogen at ambient temperature to ensure that no operational problems arise from air or water left in the pipeline. The pressure of Nitrogen is gradually increased till it reaches the operating pressure, and then the operation starts by replacing the Nitrogen with Natural gas.

2.3.8 **Pipeline Crossings**

To install a natural gas pipeline beneath the ground level, this can either be done by digging a trench or using trenchless technologies. Trenchless technologies can be further classified as guided methods and non-guided methods. In this analysis, the most famous technology in each category (which are generally employed by GASCO) will be considered; namely, horizontal directional drilling (HDD) representing the guided trenchless technology, auger boring representing the non-guided trenchless technology, and the open-cut representing the trench technology.

The open cut method is usually used in small internal roads, where normal excavation takes place. It can be also applied in case of having long agricultural or desert roads where auger boring and HDD are not possible. This is a simple technique which usually takes between 1 and 2 days, and require

road narrowing or diverting. For bigger branched roads, auger boring excavation technique is usually applied. This technique requires more excavation depths (about 5-6 meters). This is a bit more complex technique compared to the open-cut technology; however, it also takes between 1 and 2 days, and may require road narrowing or diverting. On the other hand, where the pipelines cross main roads, or huge water bodies, HDD is usually applied. HDD is a trenchless methodology that use high excavation depths (about 30-40 meters) and can be used for high pipeline length. HDD provides a number of benefits compared to the other traditional technologies. These benefits include having very little disruption to traffic as road narrowing or diverting are not required, in addition to the smaller work area requirements. However, HDD suffer from two main disadvantages which are the long time required (about 2 weeks), and the high cost compared to the conventional technologies. HDD pipeline installations have been widely used in the previous period in GASCO projects, and it is considered the fastest growing trenchless construction method today

The following sub-sections present a technical background about the auger boring and HDD technologies.

2.3.8.1 Auger Boring

The horizontal auger boring trenchless technique involves equipment like auger boring machine, auger, and cutting head. This technique also requires the excavation of a drilling pit and a receiving pit. The process starts by lowering the auger boring machine into the drilling pit, and then the augers installed inside the casing pipe are lowered into the pit and connected to the auger boring machine. The boring operation then starts by rotating the augers and the cutting head, and pushing the casing pipe gradually forward. This process continues till the casing pipe emerges from the receiving pit side. The boring process results in cuttings (spoil) which is carried through the augers and extracted from the entry side of the boring machine.

The process is mainly unguided, and accordingly operator skill is critical. The degree of controlling the horizontal alignment is usually low. Enough working space is required both in the drilling and receiving pits for the equipment and the crew movement. The technique is suitable for wide range of soils; however, non-cohesive soils and boulders cause some difficulties.

Figure 2-7 - Auger Boring

2.3.8.2 Horizontal Directional Drilling

As shown in Figure 2-8, Figure 2-9, and Figure 2-10, the HDD technique can be classified to three stages as follows:

Stage 1: Pilot hole drilling

Stage 2: Pre-Reaming

Stage 3: Pipeline Pullback

Before starting the drilling activities, a topographic survey is conducted to the proposed excavation site. This survey aims to determine the soil conditions at the different depths, and accordingly determine a drill path including the entry and exit points. After that, the first stage starts by drilling a pilot hole through the studied drill path centerline. The drilling machine usually sets on the surface, and the drill string enters the ground at an angle between 5 and 20 degrees. The bore path is usually adjusted to be of gradual curvature to match with the allowable bend radius of the pipeline and minimize friction. The bore path is monitored by devices mounted to the drill string. Signals are directed to the operators on the surface so as to direct the drill path accordingly. Usually, a drilling slurry is pumped in the bore path so as to lubricate, clean and cool the cutting heads, transport the cuttings to the surface, and stabilize the hole against collapse. The slurries are usually bentonite

based, and the slurry associated with cuttings is pumped to a settling pit where the slurry is separated from the cuttings and recycled.

After the plot hole drilling step, a back-reamer attached to the end of the drill string is pulled back through the path to enlarge the hole. This step can be repeated more than once till the hole diameter becomes about 50% larger than the required pipeline diameter to minimize friction or bending of the pipeline. As the reamer goes back and forth, this is called "pre-reaming. After that, the pipeline is connected to the back-reamer and pulled back through the drill path.

In general for the current project, the HDD is the recommended installation technology for the pipeline crossings with the railways and the regional ring road. Usually, the exact maximum depth that would be reached during drilling coordinated with the Authority managing the facility which the pipeline is passing under.

Based on the previous experience in similar projects, the depth below railway crossings is usually in the range of 8 -10 m at maximum depth, while under the roads the depth is usually 4 m. The standard followed in the case of passing under other infrastructure facilities is that the clearance between the N.G. pipeline surface and the bottom of the other facility is of 80 cm minimum clearance.

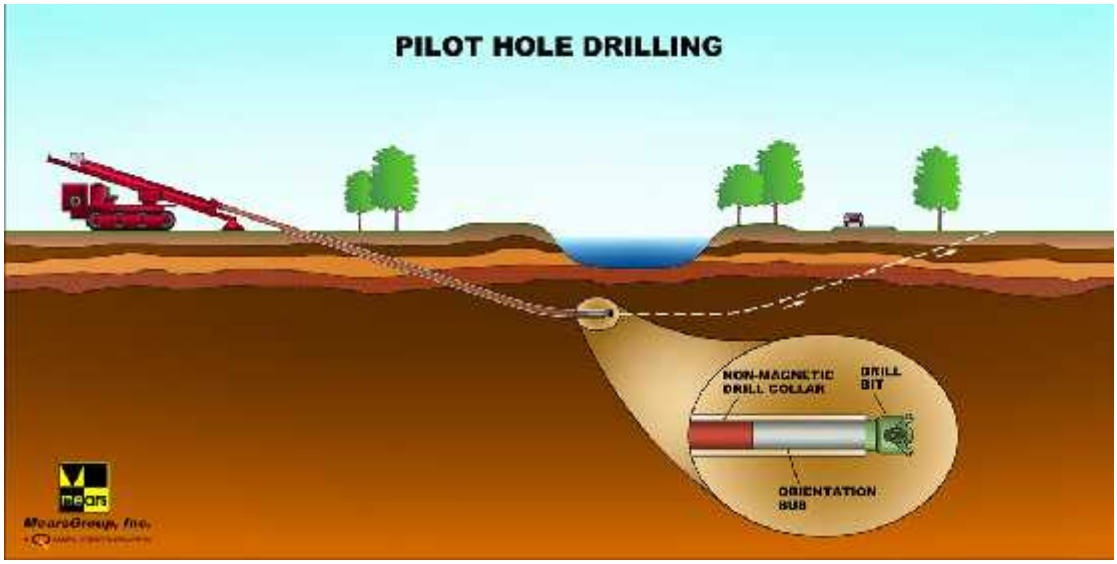

Figure 2-8 - Pilot hole drilling stage in HDD technique

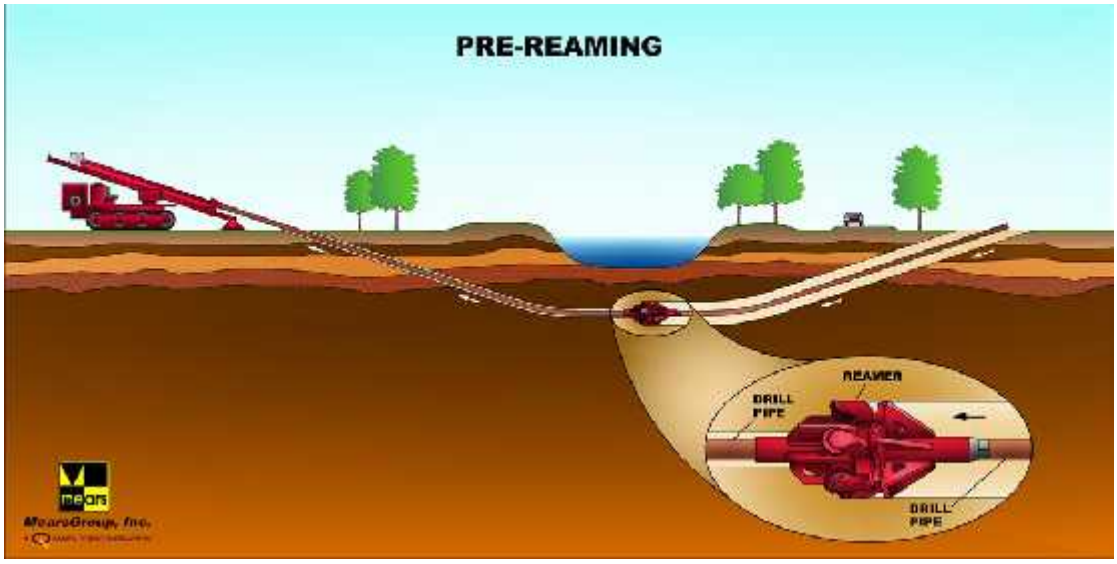

Figure 2-9 - Pre-Reaming stage in HDD technique

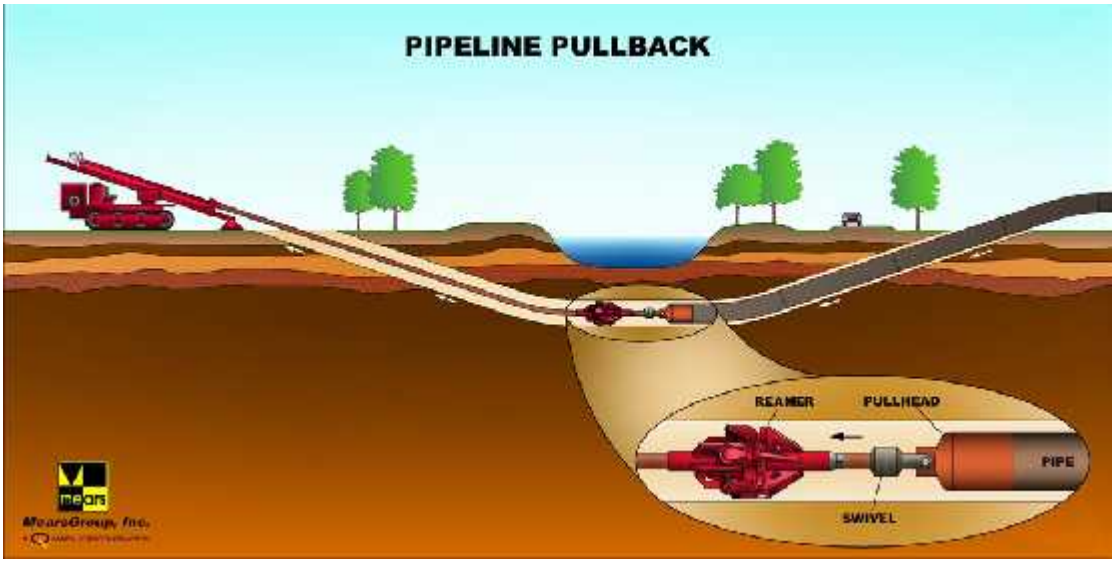

Figure 2-10 - Pipeline pullback stage in HDD technique

2.3.9 **Construction work in the valve room**

The construction of the valve room includes some structural work (reinforced concrete installation) in addition to the electromechanical components and the commissioning activities.

2.4 **Activities of Operational Phase**

Such kinds of projects do not include much operational activities while the natural gas flows through the pipeline. The following table presents the general natural gas composition of the national network. The main activities are the monitoring of the pipeline and the routine checking for the occurrence of gas leaks. The following sub-sections present more details about these activities.

Table 2-2 - General natural gas composition of the national network

Component/Properties	Maximum	Minimum	Unit
Nitrogen	0.6183	0.6653	Mole%
Methane	79.8207	88.0622	Mole%
Carbon Dioxide	5.8996	5.4793	Mole%
Ethane	8.5755	4.9468	Mole%
Propane	3.4219	0.6918	Mole%
Iso Butane	0.5244	0.0602	Mole%
N-Butane	0.7855	0.0758	Mole%
Neo Pentane	0	0	Mole%
Iso Pentane	0.144	0.0086	Mole%
N-Pentane	0.1138	0.0061	Mole%
Hexanes and Heavier	0.0963	0.0039	Mole%
Gross Heating Value At 60 F and 1 atm	1101.6298	999.5827	Btu/ft3

2.4.1 **Pipeline Patrolling**

Pipeline patrolling is carried out in order to identify activities (e.g. construction activities nearby) or actions (e.g. trespass) that could damage the pipeline, and accordingly cause safety problems that may reach to explosion. Patrolling also identifies areas of concern such as land slippage etc. in the general area of the pipeline that could cause subsequent problems. Written reports showing the results of the pipeline patrolling is reported to the sector office. Along the whole pipeline route, , 3 pipeline classes make up the path of the pipeline which are classes 2, 3, and 4.The frequency of the patrol will vary for differing areas according to the location class as shown in the following table. The number of buildings is usually accounted in a zone of 200meters wide on either side of the

pipeline route, and in section of 1 km lengthwise. As the location class increases, the patrolling frequency increases as well.

Table 2-3 - Location Class as defined by GASCO

Location Class	Number of buildings intended for Human Occupancy
Location Class 1	10 or fewer
Location Class 2	More than 10 but fewer than 46
Location Class 3	More than 46
Location Class 4	More than 46 and including multistory buildings and where there may be many other utilities

2.4.2 Leakage Survey

Leakage Survey is conducted to protect the population against the effects of escaping natural gas and to early detect any damage to the pipeline or the components of the valve room. The Cathodic protection system is also inspected weekly to ensure its effectiveness. Written reports showing the results of the leakage survey is reported to the sector office, and in case of detecting any leakage, the maintenance department quickly perform the required procedures to fix the leakage source. The staff undertaking patrolling and leakage surveys must be fully trained before carrying out such duties.

2.4.3 SCADA (Supervisory Control and Data Acquisition System)

GASCO company is working with SCADA system, which 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 Resources Consumption

2.5.1 During Construction Phase

i) Water

Water is mainly used during the construction phase in the hydrostatic testing in addition to the domestic uses by the workers and engineers. The water will be sourced from trucks and

drinking water will be bottled. The expected amount of water to be used during the construction phase of this project is:

- Domestic uses by the workers and engineers: 4 m^3/day
- Construction activities: 3500 m^3
- Hydrostatic testing : 30,000 m^3

ii) Fuel

Diesel fuel will be mainly used for diesel generators that supplies electricity to the difficult construction activities including welding. In addition, diesel will be the fuel used by the trucks and excavators. The expected amount of diesel fuel to be used in the construction phase of this project is 370,000 liters (approximately 725 liters/day). The fuel will be delivered to the construction site via trucks when needed.

2.5.2 During Operation Phase

i) Electricity

The electricity consumption in the operation phase is expected to be sourced from the valve room. The electricity consumption during the operation phase is expected to be minimal which will be mainly consumed at the control room.

2.6 Waste Generation

2.6.1 During Construction Phase

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

Hazardous wastes:

- Used oil waste
- Asphalt
- Miscellaneous containers, paint cans, solvent containers, aerosol cans, adhesive, and lubricant containers

Non-hazardous wastes:

- Soil (excavated or surplus)
- Packaging materials
- Damaged products (pipes, etc.);
- Packing timber;
- Paving materials;
- Electrical cable off-cuts;

- Concrete;

2.6.2 During Operation Phase

The pipeline operation is not expected to dispose any type of solid waste during the operation phase.

2.7 The Expected Timeline of the Project Execution

- Engineering Work: 14 months
- Procurement work: 14 months
- Construction work: 17 months

Duration expected for the whole project is around 27 months. For activity durations and overlapping refer to annex 3.

3 Legislative and Regulatory Framework

3.1 Preface

The World Bank has defined 10 environmental and social safeguard policies that must be considered to its financed projects. Applicability of such policies to this project is overviewed and discussed in subsequent sections.

Egyptian legislation provides environmental compliance procedures and emission limits which are at least comparable with WB/international requirements, if not more stringent. GASCO is bound by internal policies which obligate them to comply with national legal requirements. In the case that national requirements are non-existent for specific issues or pollutants, WB requirements will be adopted.

3.2 National Administrative and Legal Framework

The following is a brief description of the different national authorities and institutions of relevance with respect to environmental assessments including Environmental and Social Impact Assessments (ESIAs).

The main legal instrument dealing with environmental issues in Egypt is Law 4/1994, amended by Law 9/2009 and law 5/2015 and its Executive Regulations amended by decree 1095/2011, then 710/2012 and 964/2015, commonly known as the Law on Protection of the Environment. The law deals mostly with the protection of the environment against pollution. Prime Ministerial Decree 631 of 1982 established the EEAA as the competent body for environmental matters in Egypt. Law 4 also stipulates the role of the EEAA as the main regulatory agency for environmental matters.

According to Article 1 of Law 4, the legal entity responsible for a given project is required to carry out an assessment of the project's potential impacts on the natural and socio-cultural environment before implementing that project. The findings of the assessment are submitted to the EEAA for review and approval before other relevant governmental authorities can issue their permits for implementing the project.

An ESIA is required to be viewed as an integrated part of the project planning process, according to EEAA requirements. The ESIA will help to ensure that environmental concerns are taken into account along with technical and economic considerations.

The Egyptian Environmental Affairs Agency (EEAA) is an authorized state body regulating environmental management issues. Egyptian laws identify three main roles of the EEAA:

- It has a regulatory and coordinating role in most activities, as well as an executive role restricted to the management of natural protectorates and pilot projects.

- The agency is responsible for formulating the environmental management (EM) policy, setting the required action plans to protect the environment. Following-up their execution in coordination with Competent Administrative Authorities (CAAs).
- In specific to this project, EEAA is responsible for review and approve of the environmental impact assessment studies.

EMU (Environmental Management Unit at Governorate and District level) is responsible for the environmental performance of all projects/facilities within the governorates premises. The governorate has established environmental management units at both the governorate and city/district level. The EMU is responsible for the protection of the environment within the governorate boundaries and are mandated to undertake both environmental planning and operation-oriented activities. The environmental management unit is mandated to:

- Follow-up on the environmental performance of the projects within the governorate during both construction and operation phases to ensure that the project abides by laws and regulations as well as mitigation measures included in its ESIA approval.
- Investigate any environmental complaint filed against projects within the governorate
- The EMU are affiliated administratively to the governorate, yet are technically affiliated to EEAA.
- The governorate has a solid waste management unit at the governorate and district level. The units are responsible for the supervision of solid waste management contracts.

The CAAs are the entities responsible for issuing licenses for projects construction and operation. The ESIA is considered one of the requirements of licensing. The CAAs are thus responsible for receiving the ESIA forms of studies, check the information included in the documents concerning the location, suitability of the location to the project activity and ensure that the activity does not contradict with the surrounding activities and that the location does not contradict with the ministerial decrees related to the activity. The CAA forwards the documents to EEAA for review. They are the main interface with the project proponents in the ESIA system. The CAA is mandated to:

- Provide technical assistance to Project Proponents
- Ensure the approval of the Project Site
- Receive ESIA Documents and forward it to EEAA
- Follow-up the implementation of the ESIA requirements during post construction field investigation (before the operation license)

After submission of an ESIA for review, the EEAA may request revisions in the ESIA report within 30 days, including additional mitigation measures, before issuing the approval of the report. GASCO will have the right to issue an appeal within 30 days from its receipt of the EEAA's decision. It should be noted that once the ESIA has been approved, the ESMP as will be presented in the report, will be considered an integral part of the project; and the GASCO will be legally responsible

for the implementation of that plan, depending on their involvement in construction or operation. It is therefore worth mentioning that the GASCO must ensure that all mitigation measures and environmental requirements described in the ESMP have been clearly referred to in the tender documents for the construction works, the construction contracts, and have been respected. GASCO will follow-up on the construction contractor to ensure that the ESMP is adequately implemented in the construction phase.

According to the guidelines of the ESIA preparation issued by the EEAA, projects are classified into three categories according to the severity of possible environmental impacts and location of the establishment and its proximity to residential settlements: Category (A): projects with minimum environmental impacts, Category (B): projects with potential adverse environmental impacts yet less than category C, and Category (C): Projects which have highly adverse impacts. These are required to prepare a full EIA study.

Based on these categories, the proposed Natural Gas lines project is classified as "C" under the Egyptian requirements. Class C projects require full ESIAs including public consultation sessions (2 sessions were held: a scoping session and a public consultation session).

3.3 Applicable Environmental and Social Legislations in Egypt

The Egyptian environmental law covers many aspects, such as air quality, water quality, noise, solid waste management and occupational health and safety. Each of these aspects will be discussed in details and the allowable limits for the different aspects included according to applicability to the project.

Mitigation measures are mentioned in Chapter 7 of the study to ensure compliance with these legislations.

3.3.1 Environmental Law 4/1994 (amended by 9/2009 and 15/2015)

3.3.1.1 Regulations for the Protection of Air Environment from Pollution

According to the provisions of Articles 34 through 40, 42, 43, and 47 bis in Law 4/1994 amended by Law 9/2009, and Article 42, annex 5,6 in the Executive Regulations, the project developer must ensure the following:

1. The site of the project must be selected properly to suit the project activity in order to ensure that the total pollution emitted by the proposed project during the construction and operation phases will not exceed the maximum permissible limits for the pollutants in the ambient air as listed below:

Table 3-1 - Maximum Limits of Outdoor Air Pollutants (Annex 5 of the Executive Regulations amended in 2012)

Pollutant	Location Area	Maximum Limit [µg/m³]			
		1hour	8hours	24hours	1Year
Sulphur Dioxide	**Urban**	300		125	50
	Industrial	350		150	60
Carbon Monoxide	**Urban**	30 mg/m³	10 mg/m³	-	-
	Industrial			-	-
Nitrogen Dioxide	**Urban**	300	-	150	60
	Industrial	300	-	150	80
Ozone	**Urban**	180	120	-	-
	Industrial	180	120	-	-
Total Suspended Particles (TSP)	**Urban**	-	-	230	125
	Industrial	-	-	230	125
Particulate Matter less than 10 µm (PM_{10})	**Urban**	-	-	150	70
	Industrial	-	-	150	70
Particulate Matter less than 25 µm ($PM_{2.5}$)	**Urban**	-	-	80	50
	Industrial	-	-	80	50
Suspended Particles Measured as Black Smokes	**Urban**	-	-	150	60
	Industrial	-	-	150	60
Lead	**Urban**	-	-	-	0.5
	Industrial	-	-	-	1.0
Ammonia (NH_3)	**Urban**	-	-	120	-
	Industrial	-	-	120	-

Other limits include the allowable limits for pollutants emissions in air from the different sources which are detailed in annex 6 of the Executive regulations amended by decree 1095/2011, 710/2012 and 964/2015. The limits relevant to the current project scope are the pollution limit from asphalt mixing units which will be utilized to return the roads to their original state after the project completion, and the limits of emissions from vehicles which are shown in the following tables.

It should be noted that as per the Annex 6 of the executive regulations; the actual pollutant concentration from the stack is calculated at standard conditions using the following equation;

$$\text{Concentration at Standard Conditions} = \text{Measured Concentration} * \frac{(21 - \text{Reference Oxygen \%})}{(21 - \text{measured Oxygen\%})} * \frac{\text{Measured Tempreture} + 273}{273} * \frac{1}{\text{measured atmospheric pressure}}$$

Table 3-2 - Allowable Emission levels from Asphalt mixing units (Table 12 of Annex 6 of the Executive Regulations amended in 2012

Maximum Allowable Emissions Level (mg/m^3)		
Total Suspended Solids (TSP)	**Carbon Monoxide (CO)**	**Total Volatile Organic Compounds (VOCs)**
50	500	50

- Reference conditions (at 13% O_2, temperature of 273 Kelvin, and 1 atm pressure).
- The asphalt mixing unit should be placed at a minimum distance of 500 m from the nearest residential area, taking into consideration the prevailing wind direction.

Table 3-3 - Maximum allowable emissions from vehicles that operate using gasoline fuel (Table 23 of Annex 6 of the Executive Regulations amended in 2012)

	Before the year 2003		From 2003 to 2009		Year 2010 and later	
Pollutants	**Hydrocarbons HC (ppm)**	**CO%**	**HC (ppm)**	**CO%**	**HC (ppm)**	**CO%**
Maximum allowable Limit	600	4	300	1.5	200	1.2

Measurements should be done at the idle speed from 600 to 900 rpm.

Table 3-4 - Maximum allowable emissions from vehicles that operate using diesel fuel (Table 24 of Annex 6 of the Executive Regulations amended in 2012)

Manufacturing Year (model)	Before the year 2003	From 2003 and later
Smoke density factor K (m^{-1})	2.8	2.65

Measurements are done in accordance with the ISO-11614 international standard.

3.3.1.2 Noise

Article 42 of the environmental law states that during the construction and operation phases of the project, the resulting noise levels must not exceed the sound intensity levels given by Table 3 of Annex 7 of the Executive Regulations when carrying out production, service or other activities, particularly when operating machinery and equipment or using sirens and loudspeakers. The table lists the maximum permissible noise level limits according to area type as per the following designation:

- Sensitive areas to noise exposure
- Residential suburbs with low traffic flow
- Commercial and administrative areas in city center
- Residential areas with some workshops, administrative activities, or recreational and entertainment activities overlooking public roads less than 12 meters,
- Areas overlooking public roads more than or equal 12 meters, or industrial areas with light industries
- Industrial Zone with heavy industries

Table 3-5 - Maximum permissible noise level limits for the project area (from Annex 7 of the Executive Regulations, Table 3)

AREA TYPE	MAXIMUM PERMISSIBLE EQUIVALENT NOISE LEVEL [dB(A_{eq})]	
	Day	Night
	7 AM – 10 PM	10 PM – 7 AM
Sensitive areas to noise exposure	50	40
Residential suburbs with low traffic flow	55	45
Commercial and administrative areas in city center	60	50
Residential areas with some workshops, administrative activities, or recreational and entertainment activities overlooking public roads less than 12 meters	65	55
Areas overlooking public roads more than or equal 12 meters, or industrial areas with light industries	70	60
Industrial Zone with heavy industries	70	70

3.3.2 Waste Management Regulations

The collection, transportation and safe disposal of solid wastes from houses, public places, commercial and industrial establishments is regulated through the public cleanliness law 38/1967 amended by law 31/1976 and its executive regulations issued by Minister of Housing Decree Number 134 of 1968, as well as the environmental law 14/1994 and its executive regulations.

3.3.2.1 Public Cleanliness Law Number 38/1967

Law 38 for the year 1967 amended by law 31/1976 and its Executive Regulations issued by decree 134/1968 prohibit the dumping of solid wastes in any location other than those designated by the municipal authorities. This includes solid waste treatment and disposal, in addition to the temporary storage in undesignated containers. Article 1 of the Ministry of Housing and Utilities decree 134/1968 defines solid waste as any waste generated by persons, residential units, non-residential constructions such as commercial establishments, camps, animal cages, slaughterhouses, markets, public spaces, parks, and transportation methods.

The Public Cleanliness Law and its Executive Regulations requires the municipal authority responsible for public cleanliness or the contracted entity assigned by it for the collection, transportation, and disposal of solid wastes, to carry out these processes in accordance with the specifications stipulated in the Executive Regulations and any other regulations by the municipal authority.

3.3.2.2 Environmental law 4/1994

In general, the law prohibits the disposal of any solid wastes except in areas designated for this purpose through article 37, and articles 38, 39 and 41 of the executive regulations which require that during excavation, construction or demolition activities, the entity undertaking the work must take the necessary precautions to safely store and transport the resulting wastes in accordance with the set procedure.

Regarding the hazardous wastes, and in accordance with the provisions of articles 29 to 33 of law 4/1994 which is equivalent to law 9/2009 and articles 28, 31 and 33 of the executive regulations, the entity producing hazardous wastes in gaseous, liquid or solid form is committed to collect and transport the generated waste to designated disposal sites which are predetermined by the local authorities, the competent administrative authorities and the Egyptian Environmental Affairs Agency.

The hazardous waste should be collected in specific locations with clear warning signs and oral or written instructions for safety conditions that prevent the occurrence of any damage generally or to people who get exposed to it. Additionally, the workers should be trained on proper handling procedure.

The transportation vehicles used to transport hazardous waste should belong to licensed entities that manage hazardous waste and follows the guidelines included in the executive regulations.

3.3.2.3 Hazardous waste from Petroleum sector

Petroleum and Mineral Resources ministerial decree number 1352/2007 defines the hazardous waste materials generated from the petroleum industry, and prohibits handling of these hazardous waste except by entities authorized by EGPC.

3.3.3 Water and Wastewater Management Regulations

3.3.3.1 Protection of Nile River Water Law 48/1982

The protection of the Nile River and water was law number 48 for the year 1982 defines the water ways to which this law is applicable as Fresh water and non-fresh water sources. The fresh water sources are: the river Nile and its branches and bays, as well as the branches and canals of all sizes and the non-fresh water sources are: all types of open type drainages, lakes, ponds and enclosed water bodies and underground water reservoirs.

The law states that for all the stated water ways, it is prohibited to dispose or dump any solid, liquid or gaseous waste from all residential, commercial and industrial activities as well as waste water unless an approval is obtained from the Ministry of Water Resources and Irrigation according to the regulations issued in this regard.

3.3.3.2 Standards and Specifications of fresh waterways

Article 49 of the executive regulations details the standards and specifications of the fresh waterways to which industrial waste water can be discharged as follows:

Table 3-6 -standards and specifications of the fresh waterways to which industrial waste water can be discharged (Article 49 of the ER of Law 48/1982)

Parameter	Limit (mg/liter)
Total dissolved solids	< 500
dissolved Oxygen	> 6
pH	6.5 – 8.5
Biological Oxygen Demand	< 6
Chemical Oxygen Demand	< 10
Organic nitrogen	< 1
Ammonia (NH_3)	< 0.5
Nitrates (NO_3)	< 2
Total Nitrogen (TN)	< 3.5
Total Phosphorous (TP)	< 0.5
Oil and grease	<0.1
Sulphates	< 200
Mercury	< 0.001
Iron	< 0.5
Manganese	<0.2
Cupper	< 0.01
Zinc	< 0.01
Fluorides	< 0.5
Phenol	< 0.002
Arsenic	< 0.01

Cadmium	< 0.001
Chromium	< 0.05
Free Cyanide	< 0.005
Lead	< 0.01
Selenium	< 0.01
Boron	< 0.5
Molybdenum	< 0.07
Nickel	< 0.02
Aldrin, dialdrin	< 0.00003
Achlor	< 0.02
Decarb	< 0.01
Atrazine	< 0.002
Bentazon	< 0.03
Carbofuran	< 0.007
Chlordane	< 0.0002
Dichlorobrote	< 0.03
Phenobrote	< 0.009
Mircrobrote	< 0.01
T 2, 4, 5	< 0.009

3.3.3.3 Industrial Wastewater disposal Law 93/1962

The industrial wastewater disposal into the drainage systems is regulated by law 93/1962 and its executive regulations amended by decree 44/2000. The law prohibits the disposal of domestic, industrial and commercial wastewater, treated or untreated, in public drainage system without obtaining a prior approval.

Article 14 of the executive regulations set the parameters required regarding the quality of the wastewater discharged to the public sewage network.

Table 3-7 - standards and specifications of wastewater discharged to public sewage system (Article 14 of the ER of Law 93/1962)

Parameter	Limit in the disposed wastewater
(pH)	6-9.5
Temperature	43
BOD_5	600 ppm
COD	1100 ppm
Total suspended solids	800/100l
Dissolved solids	10 ppm
Oil and grease	100 ppm
Total nitrogen	100 ppm

Total phosphorous	25 ppm
cyanide(CN^-)	0.02
Phenol	0.05 ppm
Deposited materials (after 10 minutes)	8 cm^3/l
Deposited materials (after 30 minutes)	15 cm/l
Total heavy metals	5 mg/l
Chromium 6	0.5 mg/l
cadmium (Cd)	0.2 mg/l
lead(Pb)	1 mg/l
Mercury(Hg)	0.2 mg/l
Silver(Ag)	0.5 mg
Copper(Cu)	1.5 mg
Nickel(Ni)	1 mg/l
Bioter	2 mg/l
Arsenic(As)	2 mg/l
Boron(B)	1 mg/l
Mercury	0.2
Nickel	0.1
Silver	0.5

3.3.4 **EEAA ESIA guidelines related to the Public Consultation**

Consultation with the community and concerned parties, where all the stakeholders are invited, should clearly provide attendees with the necessary information about the project. Paragraph 6.4.3 of EEAA EIA guidelines provides detailed information about the scope of public consultation, methodology and documentation thereof

- Paragraph 6.4.3.1 Scope of Public Consultation
- Paragraph 6.4.3.2 Methodology of Public Consultation
- Paragraph 6.4.3.3 Documentation of the Consultation Results
- Paragraph 7 Requirement and Scope of the Public Disclosure

3.3.5 **Land Acquisition and Involuntary Resettlement**

The Egyptian Constitution has preserved the right of private property, Egyptian Constitution (1971, amended in year 1980) and Egyptian Constitution (2014, articles 33 and 35). The Egyptian Civil code 131/1948, Articles 802-805 recognize private ownership right and stipulates that the owner of a certain property has the sole right of using and/or disposing his property.

Property expropriation for public benefit is indicated by Law No. 10 of year 1990 and its amendments by law No. 1 for the year 2-15. The law describes the cases of Property Expropriation

for Public Benefit, considering gas projects as public benefit activities. Land acquisition procedures according to this law are as follows:

1. The land acquisition procedures start with declaring the project for public interest. Afterwards a presidential decree is issued accompanied with a memorandum specifying the plots required for the project as well as a complete plan for the project and its structures (Law 59/1979 & Law 3/1982 stipulated that the Prime Minister may issue the Expropriation decree);
2. The decree and the accompanying memorandum must be published in the official newspapers; a copy for the affected communities must be placed at the main offices of the concerned Local Government unit.

This law has specified, through Article 6, the formation of the "Compensation Valuation Commission". This Article states that the commission is established at the Governorate level and consists of a delegate from the relevant Ministry's Surveying Body (as President), a representative of the Agricultural Directorate, a representative of the Housing and Utilities Directorate, and a representative of the Real Estate Taxes Directorate in the Governorate. The compensation shall be estimated according to the prevailing market prices at the time of the issuance of the Decree for Expropriation. Amendments of the law in 2015 has specified the period allowed for submitting a grievance to be 15 days and allowed additional 30 days to submit all relevant documents

This project will require temporary land acquisition leading to economic displacement hence all relevant legal actions are applicable according to the Egyptian law. Land needed for the valve rooms will be allocated as public property.

3.3.6 **Law no. 94/2003, Protection of communities Human Rights Laws**

The Law on Establishing the National Council for Human Rights (NCHR) aims to promote, ensure respect, set values, raise awareness and ensure observance of human rights. At the forefront of these rights and freedoms are the right to life and security of individuals, freedom of belief and expression, the right to private property, the right to resort to courts of law, and the right to fair investigation and trial when charged with an offence.

3.3.7 **Work environment and occupational health and safety**

Several laws and decrees tackle occupational health and safety provisions at the work place, in addition to Articles 43 – 45 of Law 4/1994, which address air quality, noise, heat stress, and the provision of protective measures to workers. These laws and decrees apply to the work crew that will be involved in construction activities.

Law 12/2003 on Labor and Workforce Safety and Book V on Occupational Safety and Health (OSH) and assurance of the adequacy of the working environment. The law also deals with the provision of protective equipment to workers and fire-fighting/emergency response plans. Moreover, the following laws and decrees should be considered:

- Minister of Labor Decree 48/1967.
- Minister of Labor Decree 55/1983.

- Minister of Industry Decree 91/1985
- Minister of Labor Decree 116/1991.

The environmental aspects that have to be taken in consideration for the workplace are noise, ventilation, temperature, and health and safety, which are as follows

3.3.7.1 Noise

Annex 7 of the Executive Regulations amended in 2012 stipulates the permissible limits for sound intensity and safe exposure times that must be observed by the operators for the work areas and places within the proposed project.

Table 3-8 - Permissible noise levels inside sites of productive activities (Table 1, Annex 7 of the Executive Regulations)

No.	TYPE OF PLACE AND ACTIVITY	MAXIMUM PERMISSIBLE EQUIVALENT NOISE LEVEL [dB(A)]	Exposure Duration
1.	a) Work places (workshops and industries) with up to 8 hour shifts (licensed before 2014)	90	8
	b) Work places (workshops and industries) with up to 8 hour shifts (licensed since 2014)	85	8

For the first item (a, b) the exposure duration shall be decreased by half if the noise level increases by 3 dB (A) combined with using ear plugs. This is to avoid any impacts on the sense of hearing.

The instantaneous noise level shall not exceed 135 dB (A) during working period.

The noise level is measured inside working areas and closed areas in L_{Aeq} according to the international guidelines (Parts 1&2) ISO 9612/ ISO 1996 or the Egyptian specifications No. 2836 part 1 & 2 and No. 5525 concerning this matter.

Equivalent noise level L_{Aeq} is the average acoustic pressure at the level of measurement (A) during a specific time period, and expressed in dB.

Table 3-9 - Maximum Permissible Exposure to Heavy Hammers (Table 2, Annex 7 of Executive Regulations)

Peak Noise Intensity Level [dB(A)] L_{cPeak}	135	130	125	120	115
Number of Allowable Strikes during Working Hours	300	1000	3000	10000	30000

The intermittent noise exposure depends on the noise level intensity presented in the previous table (number of strikes per shift).

The hammer strikes are considered intermittent if the duration between strikes 1 second or more. If the duration is less than 1 second, the strikes are considered continuous and the noise level shall comply with Table 1 of Annex 7 of the executive regulations.

3.3.8 **Petroleum pipelines Law 4/1988**

The petroleum pipelines law 4/1988 states that the owner of a property should allow the passing of pipelines transporting liquid or gaseous hydrocarbons beneath the ground surface in accordance with the procedure mentioned in the executive regulations (Decree 292/1988).

Article 2 of the law specifies that no buildings or trees, other than agricultural land trees, should be constructed or planted at a distance less than 2 m on each side of the pipeline inside urban and 6 m on each side of the pipeline outside the urban areas. If it is necessary to place the pipelines at a closer distance than what is specified in the law, it is allowed through a decision from the chairman of Egyptian General Petroleum Corporation (EGPC); taking into consideration the necessary safety precautions.

The law also specifies that if the activities done in accordance to the law will result in damage to the property, the owner has the right to a fair compensation to be decided by a committee formed by a decision from the Minister of Petroleum, and the executive regulations include the guidelines for compensation estimation.

3.3.9 **Natural Protectorates Law Number 102/1983**

Law 102 for the year 1983 defines the areas that are considered as natural protectorates and prohibits any actions or activities that can damage or deteriorate the natural environment or the marine and terrestrial ecology in these areas.

The protected areas are determined through a decree, based on the suggestion of the Environmental Affairs Agency, and the law prohibits the establishment of any activities such as buildings, roads or agricultural commercial and industrial activities in the protected areas unless an approval is acquired from the competent administrative authority.

Although no natural protectorates are expected to bein proximity to the project area, care will be taken to follow the provisions of annex 4 of law 4/1994 which defines the following animal species as protected species:

- Birds and animals listed by the Ministerial Decree 28/1967 by the Minister of agriculture in accordance to the provisions of article 117 of the agricultural law number 53/1966 amended by law 116/1983.
- Any other birds or animals determined by the international conventions to which Egypt is committed.

- Any other birds or animals for which a decree from the Minister of Agriculture will be issued with the agreement of the EEAA.

3.3.10 **Traffic Related Laws**

The applicable laws regarding the traffic and work done in relation to roads is governed by Traffic law 66/1973 amended by law 121/2008. The law is concerned with traffic planning during the construction of projects. Law 140/1956 is also concerned with the utilization and blockage of public roads, and Law 84/1968 is also concerned with public roads, including Highways, main roads and regional roads.

The governing laws require that no works that could affect the traffic flow be undertaken without prior permission, and specifies that the competent administrative authority could utilize public ways for a fee. The executive regulations of law 140/1956 outlines the specifications for the management of construction and demolition debris, and in general prohibits vehicle drivers to cause any road pollution by dumping wastes, or construction wastes, or any other material.

3.3.11 **Relevant international treaties to which Egypt is a signatory**

Egypt has signed and ratified a number of international conventions that commit the country to conservation of environmental resources.

- International Plant Protection Convention (Rome 1951)
- African convention on the conservation of nature and natural resources (Algeria 1968)
- UNESCO Convention for the protection of the world cultural and natural heritage (Paris, 16 November 1972)
- Convention on International Trade In Endangered Species Of Wild Fauna And Flora (CITES) (Washington 1973)
- International tropical timber (Geneva 1983)
- Basel Convention on the control of trans-boundary movements of hazardous wastes and their disposal (1989)
- United Nations convention on climate change (New York 1992). The convention covers measures to control greenhouse gas emissions from different sources including transportation.
- United Nations Convention on climate change and Kyoto Protocol (Kyoto 1997)
- Convention on biological diversity (Rio de Janeiro 1992), which covers the conservation of habitats, animal and plant species, and intraspecific diversity.
- Convention for the protection of the ozone layer (Vienna 1985)
- Convention for the prevention and control of occupational hazards caused by carcinogenic substances and agents (Geneva 1974)
- Convention for the protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration (Geneva 1977)
- International Labor Organization: core labor standards are to be followed during the project implementation. Egypt has been a member state of the ILO since 1936, and has ratified 64

conventions which regulate the labor standards and work conditions. In 1988, Egypt ratified the Occupational Safety and Health Convention of 1979 (No 152).

- Cultural Heritage: respecting cultural heritage and not financing projects which threaten the integrity of sites that have a high level of protection for reasons of cultural heritage, e.g. UNESCO World Heritage sites
- Consultation, Participation and Public Disclosure: The Aarhus Regulation promotes transparency of environmental information and the inclusion of stakeholders in projects. Consultation serves to identify and manage public concern at an early stage. The regulations include provisions for the public disclosure of key project information such as the Non-Technical Summary and the ESIA.

3.4 World Bank Safeguard Policies

International funding agencies, such as the WB require that the projects they finance to be in compliance with both the country's national standards as well as their own environmental and social policies. Therefore, in addition to the national regulations, the project aims at complying with the WB safeguard policies and guidelines. The policies help to ensure the environmental and social soundness and sustainability of investment projects. They also support integration of environmental and social aspects of projects into the decision-making process. In addition, the policies promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats.

The World Bank (WB) has identified 10 environmental and social safeguard policies that should be considered in its financed projects. The proposed project is classified as Category A according to the World Bank. This mandates a full Environmental and Social Impact Assessment (ESIA).

Table 3-10 - World Bank Safeguard Operational Policies and their applicability to the project

Safeguard Policy	Triggered	Justifications
Environmental Assessment (OP/BP 4.01)	Yes	The project is classified as Category A which requires full environmental assessment.
Natural Habitats (OP/BP 4.04)	No	Location and alignment of project components is mainly along (or close to) previously paved paths. Protected Areas, if encountered, will be avoided.
Forests (OP/BP 4.36)	No	Proposed project areas contain No forests.
Pest Management (OP 4.09)	No	The proposed project will not involve purchasing or using Pesticides or herbicides.
Physical Cultural Resources (OP/BP 4.11)	No	Some of the proposed project activities, mainly pipeline lying, will pass by Dahshour area which is a famous archeological site. The line mostly passes along the Fayoum/Al-Wasta desert road hence limited chances of archeological sites. The project will make sure to avoid any declared archeological sites however procedures for chance finds will be included.

Indigenous Peoples (OP/BP 4.10)	No	No indigenous people are identified in Egypt.
Involuntary Resettlement (OP/BP 4.12)	Yes	The project requires temporary land acquisition during construction of the lines in addition to allocation of plots for 1 valve room (public property) and extension of 4 valve rooms (public property).
Safety of Dams (OP/BP 4.37)	No	Not relevant to the proposed project
Projects on International Waterways (OP/BP 7.50)	No	Not relevant to the proposed project. The pipeline will pass beneath the waterways. It will not cross any water way.
Projects in Disputed Areas (OP/BP 7.60)	No	Not relevant to the proposed project

3.4.1 OP 4.01 – Environmental Assessment

According to the World Bank Operational Policy OP 4.01, the Natural Gas Connection Project is classified among Category A projects. Projects under this Category are likely to have significant adverse environmental impacts that are sensitive[1], diverse, or unprecedented.

Likely environmental impacts of the project shall be analyzed and mitigation measures proposed for expected negative impacts, along with an Environmental Management and Monitoring Plan.

3.4.2 OP 4.09 Pest Management

The proposed project will not involve purchasing or using any pesticides or herbicides during the project activities including the right of way maintenance.

3.4.3 OP 4.11 – Physical Cultural Resources

Project areas may include sites, buildings and monuments that fall under the definition of Physical Cultural Resources[2]. As the project involves excavations in many, which may be near sites of cultural value, there has been specific attention in this study to identify the locations of such sites, and to develop mitigation measures for controlling the effects on such sites. These mitigation measures are also reflected in the Environmental Management and Monitoring Plan.

As part of the avoidance mechanism GASCO ensures that the line passes along the existing natural gas hence chances of archeological sites are limited. The project will make sure to avoid any declared archeological sites. Approvals from the relevant authorities are also secured before starting of the construction in order to ensure the line does not pass through archeological sites.

[1]A potential impact is considered "sensitive" if it may be irreversible (e.g., lead to loss of a major natural habitat) or raise issues covered by OP 4.10, *Indigenous People*; OP 4.04, *Natural Habitats*; OP 4.11, *Physical Cultural Resources;* or OP 4.12, *Involuntary Resettlement.*

[2] Physical Cultural Resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features, and landscapes that have archeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.

3.4.4 OP 4.12 – Involuntary Resettlement

According to the WB's safeguard policy on Involuntary Resettlement, physical and economic dislocation resulting from WB funded developmental projects or sub-projects should be avoided or minimized as much as possible. Unavoidable displacement should involve the preparation and implementation of a Resettlement Action Plan (RAP) or a Resettlement Policy Framework (RPF), to address the direct economic and social impacts resulting from the project or sub-project's activities causing involuntary resettlement.

It is envisaged that the project on hand will result in the economic dislocation of people. A RAP study has been prepared in order to outline a proposed approach and work plan to guide the implementation, handover, and monitoring and evaluation of the resettlement process.

3.4.5 World Bank Environmental, Health, and Safety Guidelines

The general World Bank Environmental, Health, and Safety Guidelines in addition to the World Bank Onshore Oil and Gas Development EHS guidelines will be followed to ensure that the project complies with the Environmental Health and Safety standards and requirements of the WB during the different phases of the project.

3.5 Gap analysis for key Egyptian and WB environmental issues

This section outlines the key requirements of both the Egyptian Legislations and the World Bank policies and the gaps between the requirements of the two entities.

3.5.1 Air Quality

Table 3-11 - Ambient Air Quality limits in the Egyptian legislations and WB standards

	Requirements of Egyptian Legislation				Requirements of World Bank			
	Outdoor Air Pollutants (in urban and industrial areas) as per Article 34 of law 4/1994 amended by law 9/2009 and Annex 5 of the Executive Regulations amended by Decree 710/2012.				**Ambient Air Quality** as per OP 4.01 IFC General EHS Guidelines (Table 1.1.1 [34])			
Exposure Period	**1 hr**	**8 hr**	**24 hr**	**1 year**	**1 hr**	**8 hr**	**24 hr**	**1 year**
Carbon	30	10	N/A	N/A	N/A	N/A	N/A	N/A

[3]World Health Organization (WHO).Air Quality Guidelines Global Update, 2005.

[4] IT stands for Interim Target, which are the increment values that should be targeted by an organization during the implementation of a project leading to the recommended guideline values.

monoxide CO ($\mu g/m^3$)	(urban and indus.)	(urban and indus.)						
Sulphur dioxide SO_2 ($\mu g/m^3$)	300 (urban) 350 (indus.)	N/A	125 (urban) 150 (indus.)	50 (urban) 60 (indus.)	N/A	N/A	125 (IT-1) 50 (IT-2) 20 (guideline)	N/A
Nitrogen Oxides NOx ($\mu g/m^3$)	300 (urban) 300 (indus.)	N/A	150 (urban) 150 (indus.)	60 (urban) 80 (indus.)	200 (guideline)	N/A	N/A	40 (guideline)
Particulates PM_{10} ($\mu g/m^3$)	N/A	N/A	150 (urban) 150 (indus.)	70 (urban) 70 (indus.)	N/A	N/A	150 (IT-1) 100 (IT-2) 75 (IT-3) 50 (guideline)	70 (IT-1) 50 (IT-2) 30 (IT-3) 20 (guideline)
Particulates $PM_{2.5}$ ($\mu g/m^3$)	N/A	N/A	80 (urban) 80 (indus.)	50 (urban) 50 (indus.)	N/A	N/A	75 (IT-1) 50 (IT-2) 37.5 (IT-3) 25 (guideline)	35 (IT-1) 25 (IT-2) 15 (IT-3) 10 (guideline)
Total suspended particles TSP ($\mu g/m^3$)	N/A	N/A	230 (urban) 230 (indus.)	125 (urban) 125 (indus.)	N/A	N/A	N/A	N/A
Ozone O_3 ($\mu g/m^3$)	180 (urban) 180 (indus.)	120 (urban) 120 (indus.)	N/A	N/A	N/A	160 (IT-1) 100 (guideline)	N/A	N/A

In case of any discrepancy between the requirements of Egyptian legislations and the requirements of the World Bank, the requirements of the World Bank will be applied; since it's the funding entity. However, the Egyptian limits will be applied for the following cases, since there are no corresponding limits in the World Bank standards to these parameters::

- Carbon monoxide limits
- Sulfur dioxide limits for 1 hour, and 1 year
- Nitrogen oxide limits for 24 hours
- Total suspended particulates limits
- Ozone limits for 1 hour

3.5.2 Water Quality

Table 3-12 - Egyptian legislations and WB standards concerning Water Quality

Requirements of Egyptian Legislations		Requirements of World Bank	
Reference	**Requirements**	**Reference**	**Requirements**
Executive Regulations issued by decree 92/2013 of Law 48/1982 (Article 49)	States the standards an specifications of fresh waterways quality to which industrial water can be discharged	OP 4.01 IFC General EHS Guidelines: Environmental	Projects with the potential to generate process wastewater, sanitary (domestic) sewage, or stormwater should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety, or the environment.
Ministerial Decree No. 44/2000 of law 93/1962	Includes the quality of industrial wastewater discharged to the sewage network. The decree also states the entity should acquire the wastewater discharge licenses from the concerned authorities during the construction and operation phase	OP 4.01 IFC General EHS Guidelines: Environmental	Includes in Table 1.3.1 the indicative values for treated sanitary sewage discharges

Table 3-13 - Limits for discharge of liquid effluent into sewer system

Parameter/Pollutant	Effluent threshold (ER 44/2000 of law 93/1962	Effluent threshold (WB requirements)
pH	6-9.5	6-9
BOD (mg/l)	600	30
COD (mg/l)	1100	125
Total nitrogen (mg/l)	100	10

Total Phosphorous (mg/l)	25	2
Oil and grease (mg/l)	100	10
Total suspended solids (mg/l)	800	50
Total Coliform Bacteria (Most Probable Number/100 ml)	N/A	400

In case of any discrepancy between the requirements of Egyptian legislations and the requirements of the World Bank, the requirements of the World Bank will be applied.

3.5.3 **Noise**

Table 3-14 - Egyptian legislations and WB standards concerning Ambient Noise

Requirements of Egyptian Legislations		**Requirements of World Bank**	
Reference	**Requirements**	**Reference**	**Requirements**
Law 4/1994 amended by law 9/2009 and its ERs amended by decree 1095/2011 and 710/2012	Maximum allowable limit for ambient noise intensity	OP 4.01 IFC General Guidelines: Environmental Table 1.7.1	Limit of noise beyond the property boundary of the facilities.
Law 4/1994 amended by law 9/2009 and its ERs amended by decree 1095/2011 and 710/2012	Maximum noise limits in work environment	IFC General Guidelines: Occupational Health and Safety Table 2.3.1	Limit of noise exposure inside the work environment

Table 3-15 - Limits for ambient noise as per Egyptian and WB requirements

Egyptian Law Permissible noise level				WB Permissible noise levels		
Area type		Maximum permissible equivalent noise level [dB(A_{eq})]		Receptor	One hour L_{Aeq} (dB_A)	
		Day	Night		Daytime	Night
		7 AM – 10 PM	10 PM – 7 AM		7:00 – 22:00	22:00 – 7:00
Residential	Sensitive areas to noise exposure	50	40	Residential	55	45
	Residential suburbs with low traffic flow	55	45			
	Residential areas with some workshops, administrative activities, or recreational and entertainment activities overlooking public roads less than 12 meters	65	55			
	Areas overlooking public roads more than or equal 12 meters	70	60			
Industrial	Industrial areas with light industries	70	60	Industrial	70	70
	Industrial Zone with heavy industries	70	70			

Table 3-16 - Limits noise exposure in Work environments as per Egyptian and WB requirements

Egyptian Law Permissible noise level			WB Permissible noise levels		
Type of place and activity	Maximum permissible equivalent noise level [dB(A)]	Exposure duration	Location/ activity	Equivalent Level, L_{Aeq}, 8 hrs	Maximum LAmax, fast
a) Work places (workshops and industries) with up to 8 hour shifts (licensed before 2014)	90	8	Heavy Industry (no demand for oral communic	85 dB(A)	110 dB(A)

			ation)		
b) Work places (workshops and industries) with up to 8 hour shifts (licensed since 2014)	85	8	Light industry (decreasing demand for oral communic ation)	50-65 dB(A)	110 db(A)
Closed wedding and celebration halls (provided that this limit does not exceed the hall boundaries)	95	4	Open offices, control rooms, service counters or similar	45-50 dB(A)	N/A
Work rooms for computers, typewriters or similar equipment	65	-	Individual offices (no disturbing noise)	40-45 dB(A)	N/A
Work rooms for activities requiring routine mental concentration – Bank lobbies, control rooms for industrial activities, restaurants and cafeterias	60	-	Classroom s, lecture halls	35-40 dB(A)	-
Hospitals, clinics, public libraries, museums, post offices, courts, mosques and worships places.	45	-	Hospitals	30-35 dB(A)	40 dB(A)
Universities, schools, institutions, nursery, …etc. (inside classrooms)	40	-			
Universities, schools, institutions, nursery, ...etc. (building yards and gardens)	55	-			
Residential buildings,	50	-			

hotels, …etc. (living rooms)					
Residential buildings, hotels, …etc. (bedrooms)	35	-			

In case of any discrepancy between the requirements of Egyptian legislations and the requirements of the World Bank, the requirements of the World Bank will be applied.

3.5.4 Land acquisition issues

1- **The cut-off date**: The WB resettlement policy OP4.12 on involuntary resettlement requires setting a cut-off date in order to prevent people influx to the project area. The Egyptian laws does not set a cut-off date, particularly if the impacts are related to agricultural lands that might experience changes in crops and tenancy.

2- ***Monitoring and Evaluation*:** Monitoring or evaluation measures are not stipulated in Egyptian regulation. Lack of the necessary legal provision needed to put in place monitoring and evaluation measures can negatively impact the accountability and transparency programs and plans may not be able to benefit from corrective action in cases of mistakes nor receive rewards in cases of good performance.

3- ***Valuation of compensation*:** Egyptian regulations use prevailing price in the affected areas to calculate and compensate project affected people for their expropriated property. The prevailing price is assessed by a specialized committee created by the government. For crops, they are valuated according to the price lists developed by the agriculture directorate. Previous Egyptian experiences show that the *full replacement principle* as stated by OP 4.12 has not been realized by the affected group.

In order to bridge the above gaps, GASCO applies the following measures:

GASCO tries to ensure satisfaction with the compensation amounts by applying the following measures:

- If the land is expropriated prior to the harvest season, unripe crops might be damaged completely as a result of the project causing the crop-holder losses in terms of financial investment and effort invested in the cultivation of those crops. This will be a complete loss of crops. **In this case the crop holders will receive full compensation for the crops.**
- During harvest season, the crop holder is allowed to harvest the ripe crops allowing him to benefit from the crops. Moreover, s/he will receive their compensation. Consequently, s/he is partially affected as they will not lose their crops. **In this case the crop holders will receive full compensation for the crops in addition to the harvested crops.**

- During the preparation of lands to be cultivated, the farmers will not lose their crops, and they will exert no effort to cultivate the land. This will be minor impact. **In this case crop holders will receive a compensation equivalent to the rent of the land (uncultivated) identified by the agricultural directorate for uncultivated land.**

GASCO also applies a cut-off date for its projects. For this project the cut-off date was declared to be August 2016. It was announced during the census survey and the field work with the PAPs.

Finally based on the World Bank requirements for applying an effective and accessible grievance mechanism, GASCO established a proactive grievance system. GASCO compensation committee usually conducts several meetings with the PAPs at the construction sites in addition to follow up activities throughout the compensation process. Any complaints arising during the construction activities will be submitted to the resident engineer.

4 Baseline Environmental and Social Conditions

4.1 Description of the Environment

4.1.1 Site Location

As mentioned in the Chapter 2, the project route is planned to path through Giza, Fayoum and Beni Suef governorates, with most of the pipeline being in Giza and Beni Suef, with a small part in Fayoum. Therefore, the baseline mainly describes the environment in Giza and Beni Suef, with a description of the ecology around the path in Fayoum governorate. The pipeline extends through Giza governorate for about 45 km. The part of the pipeline that passes through Giza, starts from Dahshour heading south along Fayoum governorate borders. The route passes mainly through desert areas and lands. The pipeline is located at a distance of 11 km from Dahshour Pyramid, which is considered from the important artifacts in Giza. The pipeline also exists in proximity to Bahariya Oasis, which is located in South Giza. The Natural gas pipe line will also pass by Beni Suef, in Al-Wasta district as shown in Figure 4 2. It extends for about 15 km inside the governorate.

4.1.2 Project Area

4.1.2.1 Giza Governorate

The pipeline will pass through Giza governorate which is located on the west side of the Nile River as shown in Figure 4-1. The pipeline will cross the Nile river till it connects with an existing line in Dahshour, Giza. The governorate is bordered by Qaliubiya, Menoufiya and Behera Governorates in the north, Fayoum and Beni Suef in the south, in addition to 2 localities el Saff and Atfeeh which are located on the eastern side of the River Nile, which are located at a distance of 365 km from the city of Giza..

Figure 4-1 – Giza and BeniSuef location in Egypt
[Source: Egypt State Information Service]

The most important crops cultivated existing throughout the route of the pipeline are: wheat, olives, dates, watermelon, and hibiscus.

4.1.2.2 Beni-Suef Governorate

The Natural gas pipe line will also pass by Beni Suef governorate.

Beni Suef governorate is located in northern Upper Egypt. It consists of38 local units, 220 villages and 7 cities "districts which are; el Wasta which is located at the very north of the governorate, then Nasser district followed by Ehnasia and Beni Suef districts, then Somosta and Beba districts and finally at the very south there is El-Fashne district.

The main crops cultivated around the project area in Beni Suef are: alfalfa, corn, sugar beet and wheat. From the archeological monuments in the area is, Midom Pyramid (4 km away from the pipeline), that's present in Al-Wasta District.

The following figure shows the location of Beni Suef governorate relative to other governorates.

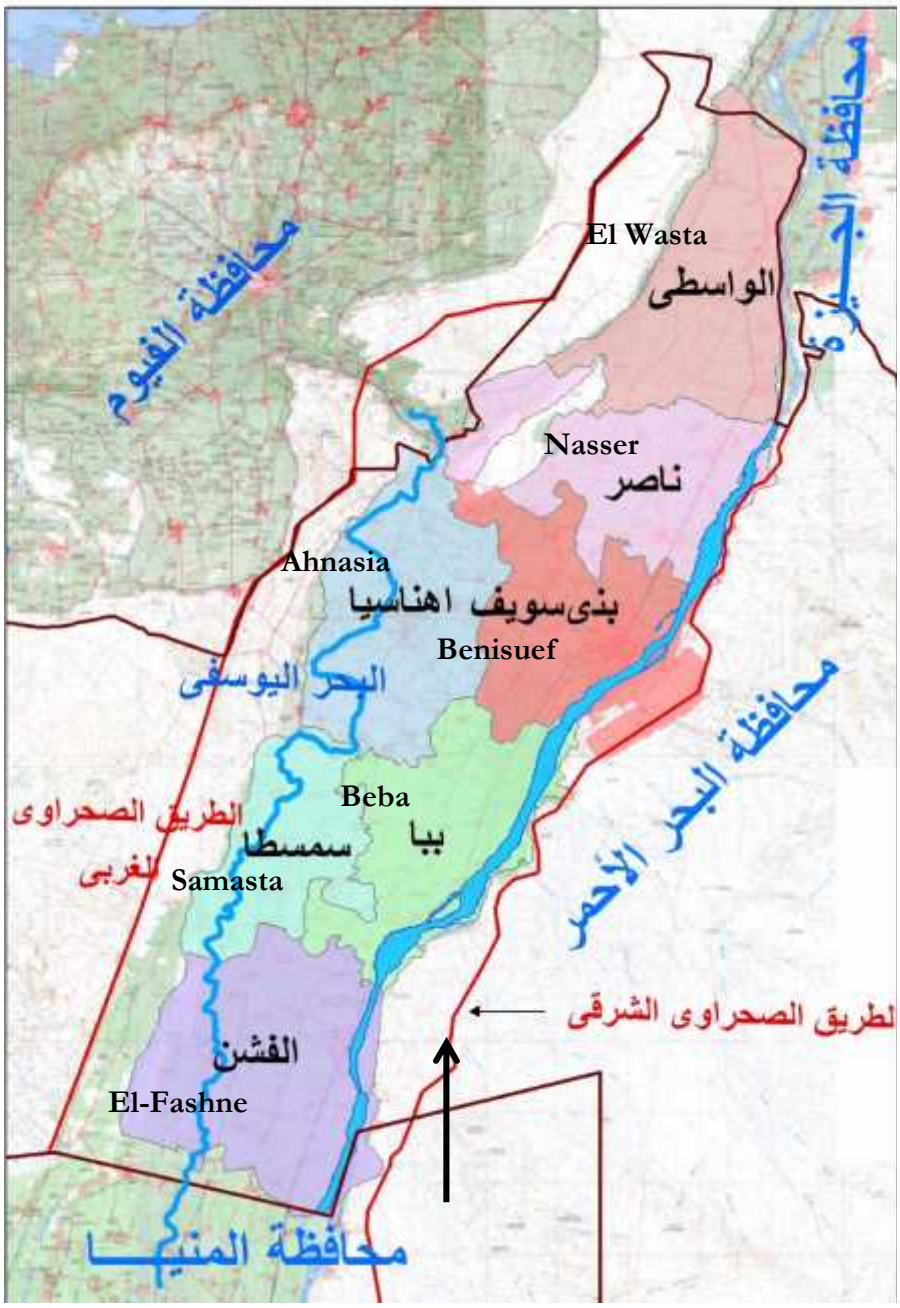

Figure 4-2 – Beni Suef governorate districts
Source: Beni Suef Governorate Portal (http://www.benisuef.gov.eg/Default.aspx)

4.1.3 **Climate and Meteorology**

The concerned region is characterized by high temperature in summer and warmth in winter, with an average highest months' daily temperature of the year 27.5°Cin July, and a minimum of 12.3°Cin January. In conclusion the climate in this specific region is characterized by being a Continental climate

4.1.3.1 Temperature

The mean monthly values for temperature are more or less in the same range all over the area which reflects regional identity. The maximum values of temperature are generally recorded in July being 34.8°C and the minimum in January being about 19.9°C. The monthly mean temperatures during the whole year are presented in Table 4-1.

Table 4-1 – Monthly temperatures in the region

Month	Maximum temperature	Minimum temperature	Daily average
January	19.9	6.2	12.3
February	21.5	6.9	14
March	24.4	9	17.2
April	28.6	12.1	20.5
May	32.4	15.7	24.3
June	34.8	18.9	27.1
July	35.3	20.6	27.5
August	34.7	20.7	27.4
September	32.6	18.7	25.8
October	30.5	16.2	23.3
November	25.8	12.1	18.5
December	21.3	8	14.2
Yearly average	28.5	13.8	21

4.1.3.2 Relative Humidity

As shown in Table 4-2, the relative humidity Increases in the late fall and winter months as a result of the low temperatures, where it reaches maximum of 66%, 68% and 69% in November, December and January, while less than 50% in Spring months (April, May, June).in general the average annual relative humidity is 58%.

Table 4-2 - Monthly averages of relative humidity

Month	%
January	66
February	59
March	58
April	48

May	46
June	48
July	58
August	61
September	61
October	61
November	69
December	68
Yearly average	58

4.1.3.3 Rainfall

The monthly rain amounts and the annual falling is very low in this region as shown in Table 4-3.December, January and February are considered the most months of rain precipitation in which (4.9, 3.5, 3.5 mm each). This amount of precipitation cannot be considered reliable for agricultural purposes

Table 4-3 - Monthly averages of rainfall (mm) in Giza Governorate

Month	mm
January	3.5
February	3.5
March	2.4
April	0.9
May	1.3
June	0
July	0

August	0
September	0
October	2.5
November	3.2
December	4.9
Total	22.2

4.1.3.4 Wind

North wind is generally moderate and mild and it is the prevailing winds throughout the year. The Following table shows the average wind speed throughout the year (in knots). The following figure also shows the wind rose distribution directions in the region.

Table 4-4 - Monthly averages of wind speed (knots) in the region

Month	Knot
January	3.9
February	4.7
March	5.1
April	5.3
May	5.4
June	5.4
July	5
August	4.4
September	4..3
October	4.2
November	3.8

December	3.7
Yearly average	4.6

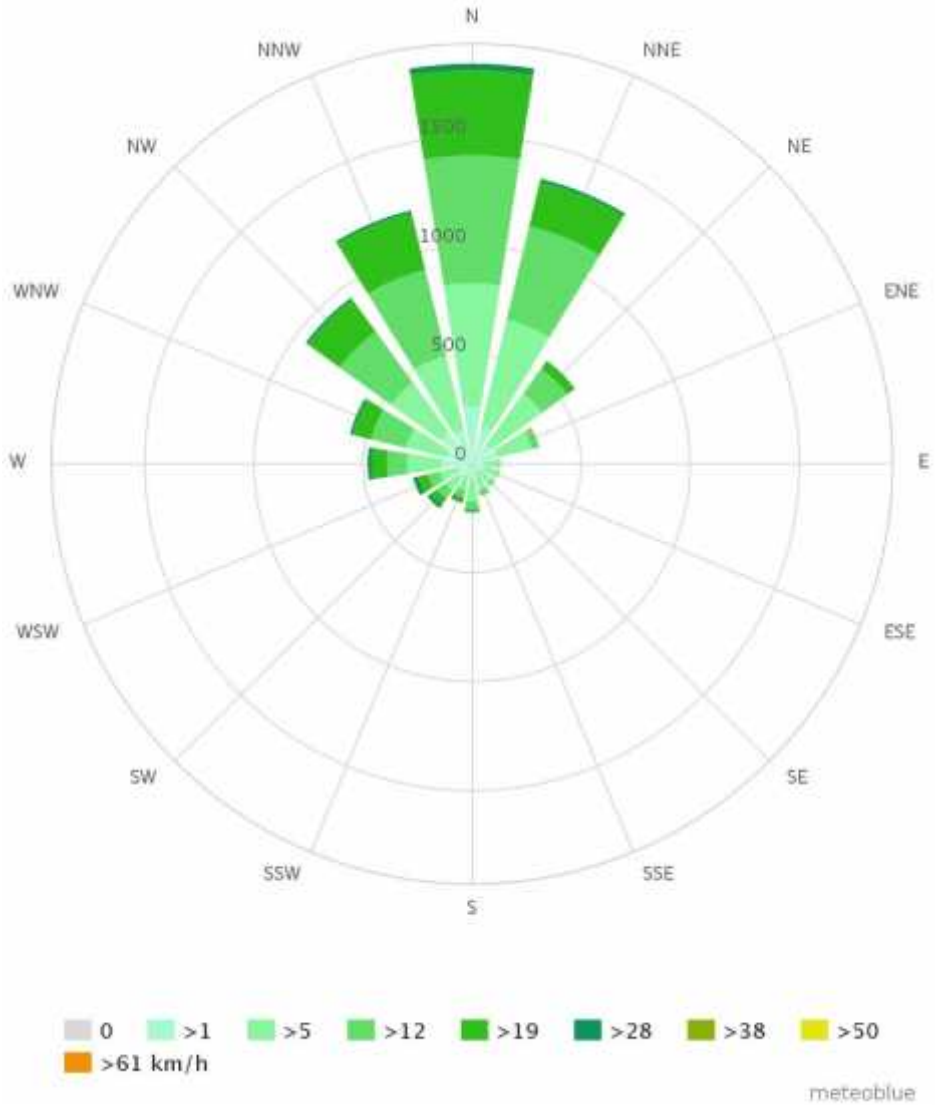

Figure 4-3 - The annual average wind directions in Giza governerate

4.1.4 **Ambient Air Quality**

The overall objectives of studying ambient air quality are to:

- Establish air quality baseline which will assist in the estimation of the project impact on the local physical, biological and social environment ;
- Verify compliance with the local and world bank regulatory limits for the ambient air quality;

- Check the conditions of operation and the adequacy of controls on discharges from the nearby suspected sources, provide a warning of unusual or unforeseen conditions and, where appropriate, trigger a special environmental monitoring program

4.1.4.1 Site Specific Air Quality Assessment

Air quality has been carried out as part of the baseline description, where 1 point has been selected in Fayoum governorate, which represents the closest residential areas to the pipeline path.

The baseline air quality measurements were conducted on a basis of 8 hours with one-hour intervals for carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), Total Suspended Particulates (T.S.P) and particulate matter (PM10) at the specified location where the air quality was found to comply with the national guidelines for all the analyzed parameters. Standard ambient air quality monitoring instruments were used under the supervision of experienced specialists. Air quality measurement specifications are shown in Annex 4.

4.1.4.2 Sampling strategy

The selection of the active air measurement location is based on the nature of the surrounding activities, the location of the nearest sensitive receptors with respect to the project plots, prevailing wind direction; site topography, and the future layout of the proposed project components. Moreover, the selection is based on the guidelines stated in the American Society for Testing Materials (ASTM) reference method[5].

The GPS coordinates of the selected Ambient Air monitoring location are:

Table 4-5 - GPS coordinates of the selected Ambient Air monitoring location

Governorate	Location	Latitude	Longitude
Fayoum	Ezbat Sawairis	29°30'8.24"N	31° 4'23.31"E

[5]D1357-95 (Reapproved2000) Standard Practice for Planning the Sampling of the Ambient Air

Figure 4-4 - location map for Ezbat Sawairisin Fayoum governorate

Figure 4-5 – Air and Noise measurement location

This specific location was chosen because it is located in a residential area and agricultural lands and close to the pipeline route.

4.1.4.3 Analysis Results

The air quality at the sampling locations is exhibiting acceptable levels of classic air pollutants in comparison with the Egyptian limits and the World Bank limits. The analysis results are presented in Table 4-6.

Table 4-6 - One hour average results for Ezbat Sawairisin Fayoum(µg/m3)

Time	NO	NO_2	NO_x	SO_2	CO	PM10	T.S.P
10:00	7.1	9.1	15.9	12.7	1.1	86.5	112.8
11:00	11.9	14.5	26.3	9.1	1.2		
12:00	5.9	14.4	20.3	11.7	2.2		
13:00	7.9	15.9	23.8	11.7	1.2		
14:00	8.3	17.5	25.8	13.4	1.2		
15:00	9.2	13.2	22.4	17.2	1.3		
16:00	11.6	18.7	30.2	14.8	1.3		
17:00	9.5	19.9	29.4	18.6	1.3		
Egyptian Limits	**150**	**150**	**150**	**150**	**10mg/ m^3**	**150**	230
World Bank	**N/A**	**N/A**	**N/A**	**125 (It-1)***	**N/A**	**150 (It-1)**	**N/A**

** IT stands for Interim Target, which are the increment values that should be targeted by an organization during the implementation of a project leading to the recommended guideline values.*

All the recorded data showed compliance with the national and international guidelines for ambient air quality.

4.1.5 **Noise**

4.1.5.1 Site specific assessment

Noise measurements methodology and measurement method are discussed in Annex 4. The main results are shown in the following tables.

Table 4-7 - Ambient Noise Levels Readings at day for Ezbat Sawairis in Fayoum

Time	Sound Level Equivalent &PercentileRecordingsindBAfor8Hours						Permissible Limits LAeq(dBA)	
	LAeq	LA10	LA50	LA90	LA95	LCpeak	National	World Bank
10:00	**50.2**	50.52	46.05	39.93	37.27	116.97	**65**	**65**
11:00	**52.3**	49.06	34.62	28.4	27.83	121.52		
12:00	**54.4**	56.87	47.47	39.7	37.8	104.96		

13:00	**63.7**	57.38	49	41.11	39.06	105.77		
14:00	**55.2**	52.54	41.9	36.13	34.77	93.7		
15:00	**58.4**	54.52	42.65	35.86	34.17	105.57		
16:00	**57.9**	60.94	53.44	45.95	43.89	104.93		
17:00	**55.2**	58.67	49.75	38.61	36.17	99.24		

By substituting in the noise level equation (found in Annex 4), the equivalent sound level = 57.8dBA

Table 4-8 - Ambient Noise Levels Readings at night for Ezbat Sawairis in Fayoum

Time	Sound Level Equivalent &PercentileRecordingsindBAfor8Hours						Permissible Limits LAeq(dBA)	
	LAeq	LA10	LA50	LA90	LA95	LCpeak	National	World Bank
19:00	**40.8**	50.52	46.05	39.93	37.27	116.97		
20:00	**44.6**	49.06	34.62	28.4	27.83	121.52		
21:00	**43.2**	56.87	47.47	39.7	37.8	104.96		
22:00	**40.1**	57.38	49	41.11	39.06	105.77	**55**	**45**
23:00	**39.8**	52.54	41.9	36.13	34.77	93.7		
00:00	**40.2**	54.52	42.65	35.86	34.17	105.57		
01:00	**38.7**	60.94	53.44	45.95	43.89	104.93		
02:00	**39.1**	58.67	49.75	38.61	36.17	99.24		

By substituting in the noise level equation (found in Annex 4), the equivalent sound level = 41.3 dBA

The previous analysis results show that the noise level at the specified location complies with the Egyptian and World Bank regulations.

4.1.6 **Geological characteristics**

As the proposed NG pipeline is planned to pass inside Giza governorate and in BeniSuef governorate as well, then we are going to discuss the geological features of both of the governorates here below,

4.1.6.1 <u>For Giza governorate the geology is found to be consisting of:</u>

Giza is located in a central location in the heart of the Arab Republic of Egypt, linking the Nile Delta and Upper Egypt, the Nile River crosses the borders of the governorate dividing it into two parts:

- Eastern part containing the Eastern Desert environment which have natural, distinctive characteristics.

- Western section containing the Western Desert natural which have distinctive characteristics as well as the presence of the Bahariya Oasis inside it.

The beginning of the fork of the River Nile to Damietta and Rosetta branches is located inside the borders of the governorate in the northern part, all of the above mentioned gave the Giza governorate a variety of natural properties and geological characteristics.

The geological situation of the governorate defines the quality of the rocks and sediments that make up the governorate and their geological age, which is divided as follows:

1. Quaternary deposits:
   - Holocene deposits

Holocene sediments on the surface of the Nile Valley extend for more than 15 meters. There are agriculture areas and a network of canals and drains inside the area of these deposits. Some sand dunes appear on the surface of the ground on the top of the compositional Western plateaus that belong to the Holocene age.

- Pleistocene deposits

This sediment is located below the Holocene sediments in the Nile Valley, which is made up of dark mud containing fine sand lenses. The thickness of these deposits reaches more than 200 meters. The Pleistocene deposits appear on the surface of the ground in different parts of the governorate comprising sand, sand gravel and clay. The thickness of these deposits ranges between 16 meters to 20 meters

- Lower Miocene deposits

These deposits appear on the surface of the ground at the north and the west of the governorate, and it is composed of sand, sand-stone, and some remains of fossilized trees. These deposits are known as Wood Mountain formation and their thicknesses range between 60 to 70 meters.

- Oligocene deposits

They appear on the surface of the ground near the Nile Valley in the northern zone of the governorate, in addition to the central western zone of the governorate. They are made of a thick sequence of sandstone with some shale interference, which is known as the Tarry Mountain formation and its thickness ranges between 170 to 200 meters.

- Eocene deposits

This sediment is usually located below the Pliocene sediments in the Nile Valley and in the vicinity of Bahariya Oasis which is located in the southern region of the governorate. The Eocene deposits consist of limestone, marl and limestone sand. The thickness of this layer ranges from 200 meters to over 500 meters.

2. Tertiary deposits
   - Paleocene deposits

These deposits usually appear in the far southern part of the governorate, which includes the formation Tarawan chalk and Esna shale sediments. The thickness of Tarawan chalk ranges between 20 to 50 meters, while the thickness of Esna shale ranges between 100 to 120 meters.

- Upper cretaceous deposits

Upper Cretaceous rocks usually exist in Abu Rawash area and the Bahariya Oasis. These rocks consist of limestone and Cretaceous limestone; with thickness ranging between 100 to 150 meters. The deposits of this age also exist beneath the seabed of Bahariya Oasis, which is composed of sandstone and shale, with some iron deposits, which give these deposits a red color. The thickness of these deposits varies between 750 to 1,100 meters and is known as Bahariya formation.[6]

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4.1.6.2 For Beni Suef governorate the geology is found to be consisting of:

Geological units are composed of sedimentary origin between loam configurations brought by the Nile River, and some limestone formations in the East (east of the Nile), then there are sand and sand dunes on the western side of the flood plain. The geological formations in the governorate are as follows:

A) Quaternary Deposits:

These are disjointed and incoherent configurations that are represented by:

- Nile flood Deposits:

These are represented by the sediments constituting the flood plain, and brought by the River Nile from Ethiopia hill. These sediments consist of silt and clay, the silt layer has a thickness of about 9 meters and the thickness increases as we move to the south, as well as at the west, where the proportion of sand rises in the soil due to north west and western wind blowing from the Western desert.

- **Sandy sediments**:

These are represented in the longitudinal bar parallel to the flood plain lands. These sediments consist of very small sand particles brought by the wind from the desert, and also from the movement of the sand dunes in the region.

B) Eocene formations:

These are limestone formations at the east of the governorate, ranging back to the Middle Eocene era. In some regions, sand and silt are noticed above the ground surface of the hill. In some other areas, limestone appears above the ground surface, and accordingly these areas are mostly used as quarries.

Specific soil investigation study for the pipeline route will be conducted before the commencement of the construction activities after the contractual agreement with the construction contractor. Until the time of this study preparation, and specifically for the HDD crossings it is expected that the soil

[6]Environmental characterization of the Giza Governorate, 2007

will consist mainly of Sandy soil, and further investigation will be conducted upon starting the construction phase.

4.1.7 Terrain (topographic)

The figure below shows the topographic characteristics in Egypt. The land is of desert sandy nature with some plateaus and hills such as Mokattam Plateau. It's characterized by flat terrain and some slopes across. The topography and flat surface helped develop a good network of roads, which eased the connection within the region. Some sand dunes (longitudinal and crescent shaped) caused some problems in transportation and road design.

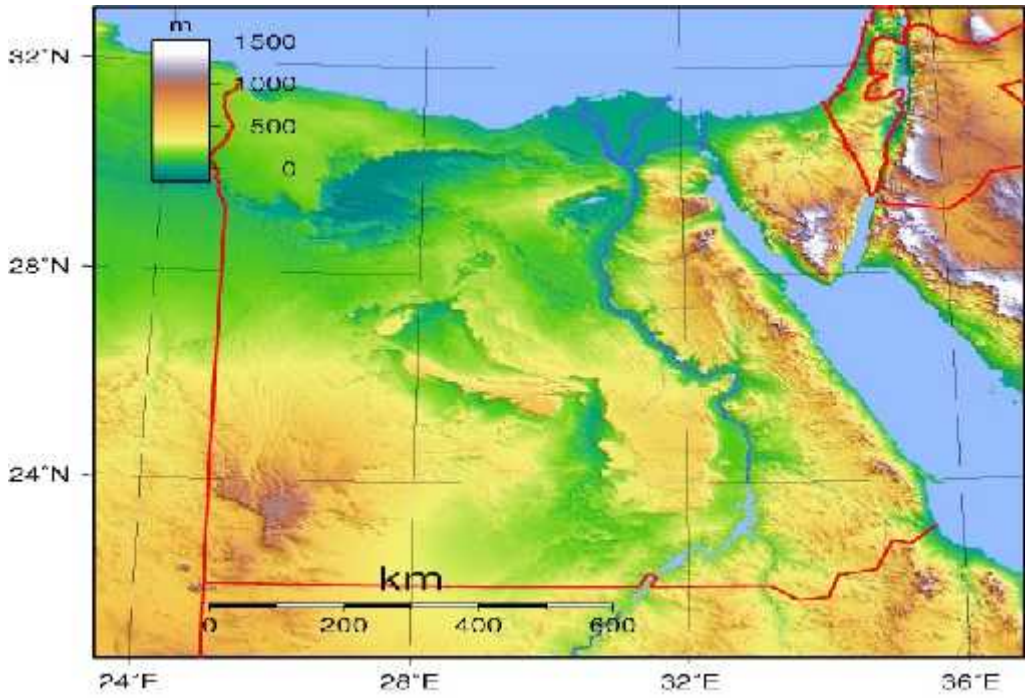

Figure 4-6 - Topography Map in Egypt

Due to the great area of Giza governorate, there is extreme diversity in the characteristics of its surface; divided into many sections as follows:

- Young alluvial plains

These occur on both sides of the River Nile. Beneath these plains exists sediments of silt, mud, and a fine sand belonging to the Holocene age. In general, the ground level height of these plains varies between about 23 meters above sea level at the southern part of the governorate to 16 meters above sea level in the northern part of the governorate.

- Old alluvial plains

They are located south-west of the Nile Valley, between modern alluvial plains and the Western Structural plateau. Beneath these plains exists some sediments belonging to Pleistocene era; consisting of coarse sand and gravel with some clay lenses.

- Structural plateau (Plains)

They are located in north-west and in south-east of the governorate; ranging in height from 100 meters to 300 meters above sea level. Beneath these plains exists sediments of the Triathlon era, which consist of sand, gravel, sand stone, and some shale, and interrupted by rocks of basalt in some places in the northern part of the governorate near the Nile Valley.

- Structural plateau (Hills)

The Nile River sculpts its course through the low tectonic; separating the structural limestone plateau into two plateaus; one located at the eastern side of the Nile and the other located at the western side of the Nile. The altitude of the Western plateaus (known as Al Ahram Plateau) range between 100 to 200 meters. Beneath this plateau exists rocks consisting of limestone, marl and sandstone belonging to the Eocene era. There are also structural plateaus in southwestern part of the governorate; with heights ranging between 200 meters to 400 meters above the sea level. Beneath this plateau, there are rocks ranging in age between the Cretaceous and the upper Eocene ages. These rocks consist of limestone, marl, sandstone, dolomitic limestone and Cretaceous limestone.

- Bahariya oasis depression

This occurs in the southwestern part of the governorate; taking an elliptical shape longitudinally between the plateaus surrounding it. Its heights ranges between 100 to 150 meters above sea level and sandstone rocks and shale exist beneath it.

4.1.8 **Water: Availability and Quality**

The pipeline path will not intersect with any waterways. However, the source of the water to be used in hydrostatic testing will be one of the Nile branches. Since Giza canal and Ibrahimeya canal are considered to be the biggest and nearest canals to the pipeline route, this section will highlight the main properties of these canals.

Close to the pipeline route, "Ibrahimeya canal's" width is 20 m and it is surrounded by agricultural area on its sides. According to the "Twelfth International Water Technology Conference, IWTC12 2008, Alexandria, Egypt", the rank of the Average Water Quality Index (AWQI)[7] for Ibrahimia Canal (BeniSuef is marginal as shown in the following figure.

[7] This index depends on comparing water quality variables to local water quality guidelines The results of those comparisons are combined to provide a water quality ranking (excellent, good, fair, marginal, poor) for individual water bodies. The main advantage of this index is the ability to represent measurements of a variety of variables in a single number.

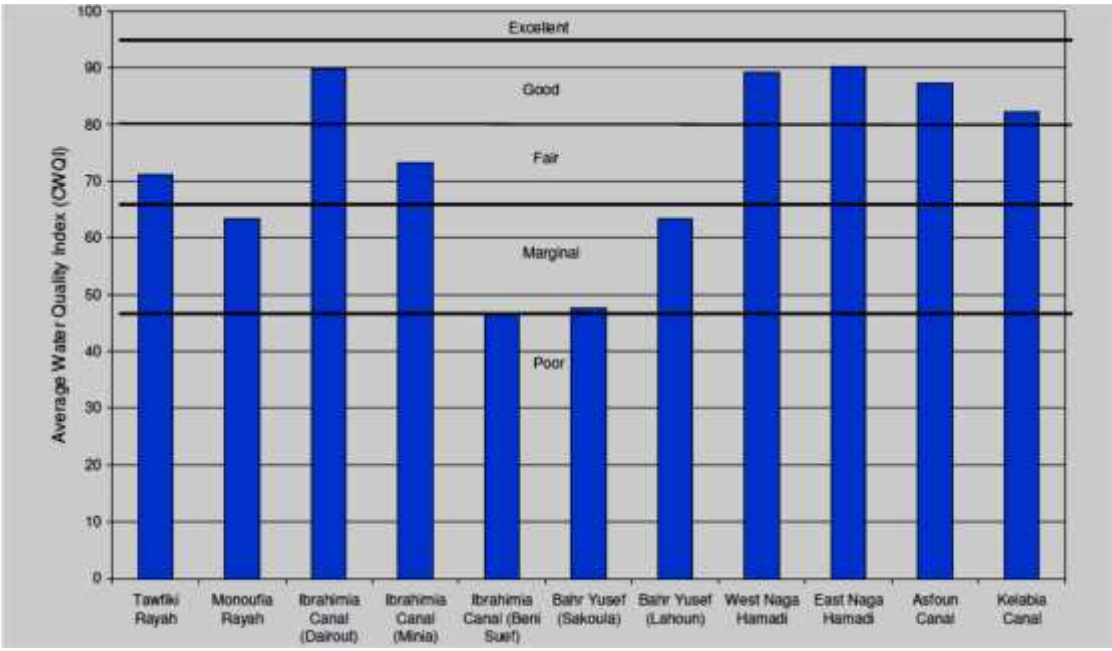

Figure 4-7: Average water quality index for the different irrigation canals including Ibrahemeya canal

The width of el Giza Canal close to the pipeline route is 30 m and there are agricultural areas on the eastern side and a road on its western side, the following figure shows the location of El Giza canal beside the pipeline route.

Figure 4-8 Giza canal and Ibrahimya canal locations beside the pipeline route

4.1.9 **Ecology and Biodiversity**

Figure 4-9 - Location Map

4.1.9.1 Overview

Figure 4-9 shows Dahshour/Al Wasta pipeline which extends from Dahshour to Al Wasta. This pipeline passes through three governorates Giza, Fayum and BeniSuef. The first section of pipeline starts at the valve room (following the Dahshour compression Station) which is surrounded by a desert habitat as seen in Figure 4-10. The line then extends south towards Fayum were it passes near agricultural land. The ecology of Fayum will be the main focus of this section since the first and last sections of the line that passes in the Giza and BeniSuef governorates, respectively, are mostly desert environments with no visible signs of flora or fauna according to the field survey.

Figure 4-10 - Ecology Survey Location 1 near Valve Room

Figure 4-11 - Ecology Survey Location 2

4.1.9.2 IUCN Red List

The International Union for the Conservation of Nature (IUCN) Red List of Threatened Species is evaluates the conservation status of plant and animal species and is widely recognized as a

comprehensive global approach. The IUCN Red List highlights plant and animal species that are facing a higher risk of global extinction by listing them as Critically Endangered, Endangered and Vulnerable. Table 4-9 shows the Red List of Egypt's terrestrial species without taking into consideration extinct species, extinct in the wild or of least concern. No vulnerable or endangered species are located in or around the project sites.

Table 4-9 - Red List Species of Egypt

Species	Status	Population Trend
Fauna		
Acanthodactyluspardalis (Leopard Fringe-fingered Lizard)	Vulnerable	Decreasing
Acinonyxjubatus (Cheetah)	Vulnerable	Decreasing
Allactagatetradactyla (Four-toed Jerboa)	Vulnerable	Unknown
Ammotraguslervia (Aoudad)	Vulnerable	Decreasing
Aquila clanga (Greater Spotted Eagle)	Vulnerable	Decreasing
Aquila heliaca (Eastern Imperial Eagle)	Vulnerable	Decreasing
Capra nubiana (Nubian Ibex)	Vulnerable	Decreasing
Chersophilusduponti (Dupont's Lark)	Near Threatened	Decreasing
Chlamydotisundulata (Houbara Bustard)	Vulnerable	Decreasing
Circus macrourus (Pallid Harrier)	Near Threatened	Decreasing
Coraciasgarrulus (European Roller)	Near Threatened	Decreasing
Crociduraflowerі (Flower's Shrew)	Data Deficient	Unknown
Crocidura religiosa (EgyptianPygmyShrew)	Data Deficient	Unknown
Emberizacineracea (Cinereous Bunting)	Near Threatened	Decreasing
Eretmochelysimbricata (Hawksbill Turtle)	Critically Endangered	(not given)
Falco cherrug (Saker Falcon)	Endangered	Decreasing
Falco concolor (Sooty Falcon)	Near Threatened	Decreasing
Falco naumanni (Lesser Kestrel)	Vulnerable	Decreasing
Falco vespertinus (Red-footed Falcon)	Near Threatened	(not given)
Felis margarita (Sand Cat)	Near Threatened	Unknown
Ficedulasemitorquata (Semi-collared Flycatcher)	Near Threatened	Decreasing
Gazelladorcas (Dorcas Gazelle)	Vulnerable	Decreasing

Species	Status	Population Trend
Gazellagazella (Mountain Gazelle)	Vulnerable	Decreasing
Gazellaleptoceros (Slender-horned Gazelle)	Endangered	Decreasing
Geochelonesulcata (African Spurred Tortoise)	Vulnerable	(needs updating)
Geronticuseremita (Northern Bald Ibis)	Critically Endangered	Decreasing
Hippopotamus amphibius (Common Hippopotamus)	Vulnerable	Decreasing
Hyaenahyaena (Striped Hyaena)	Near Threatened	Decreasing
Merionessacramenti (Buxton's Jird)	Vulnerable	Decreasing
Milvus milvus (Red Kite)	Near Threatened	(not given)
Monachusmonachus (MediterraneanMonkSeal)	Critically Endangered	Decreasing
Neophronpercnopterus (Egyptian Vulture)	Endangered	Decreasing
Numeniusarquata (Eurasian Curlew)	Near Threatened	Decreasing
Oryx leucoryx (Arabian Oryx)	Endangered	Decreasing
Pantheraleo (Lion)	Vulnerable	Decreasing
Pantherapardus (Leopard)	Near Threatened	Decreasing
Paragomphussinaiticus	Vulnerable	Unknown
Pelecanuscrispus (Dalmatian Pelican)	Vulnerable	Decreasing
Philochortuszolii	Critically Endangered	Decreasing
Pipistrellusariel (Desert Pipistrelle)	Data Deficient	Unknown
Plecotuschristii	Data Deficient	Unknown
Rhinolophusmehelyi (Mehely's Horseshoe Bat)	Vulnerable	Decreasing
Serinussyriacus (Syrian Serin)	Vulnerable	Decreasing
Spalaxehrenbergi (Middle East Blind Mole Rat)	Data Deficient	Decreasing
Telescopushoogstraali	Endangered	Decreasing
Testudo graeca (Spur-thighed Tortoise)	Vulnerable	(needs updating)
Testudo kleinmanni (Kleinmann's Tortoise)	Critically Endangered	Decreasing
Testudo werneri (Negev Tortoise)	Critically Endangered	Decreasing
Torgostracheliotos (Lappet-faced Vulture)	Vulnerable	Decreasing

Species	Status	Population Trend
Trapelussavignii (Savigny's Agama)	Vulnerable	Decreasing
Flora		
Dracaena ombet	Endangered	(not given)
Medemiaargun	Critically Endangered	(not given)

4.1.9.3 Important Bird Areas and Bird Species

Lake Qarun protectorate which occupies the deepest part of the Fayoum Depression is considered to be an important area for several key bird species. The Lake holds large numbers of waterfowl in winter. There is a high abundance of Grebes which are fresh water diving birds and species such as Anascrecca, Aythyafuligula and Fulicaatra that are large in number. According to desktop research there are at least 10 species of waterbird species that are known to breed in the Lake Qarun area. Table 4-10 shows the key bird species in the Lake Qarun area while Figure 4-12 shows the location of the project site (red circle) and its proximity to Lake Qarun in Fayoum.

Table 4-10 - Key bird species near study area

Scientific Name	Common Name	IUCN Red List Status
Podicepsnigricollis	Black-necked grebe	Least Concern[8]
Larusgenei	Slender-billed gull	Least Concern
Vanellusspinosus	Spur-winged lapwing	Least Concern

[8] A least concern (LC) species is one which has been categorized by the International Union for Conservation of Nature as evaluated but not qualified for any other category. As such they do not qualify as threatened, near threatened, or (prior to 2001) conservation dependent.

Figure 4-12 - Left: Venellusspinosus, Right: Podicepsnigricollis

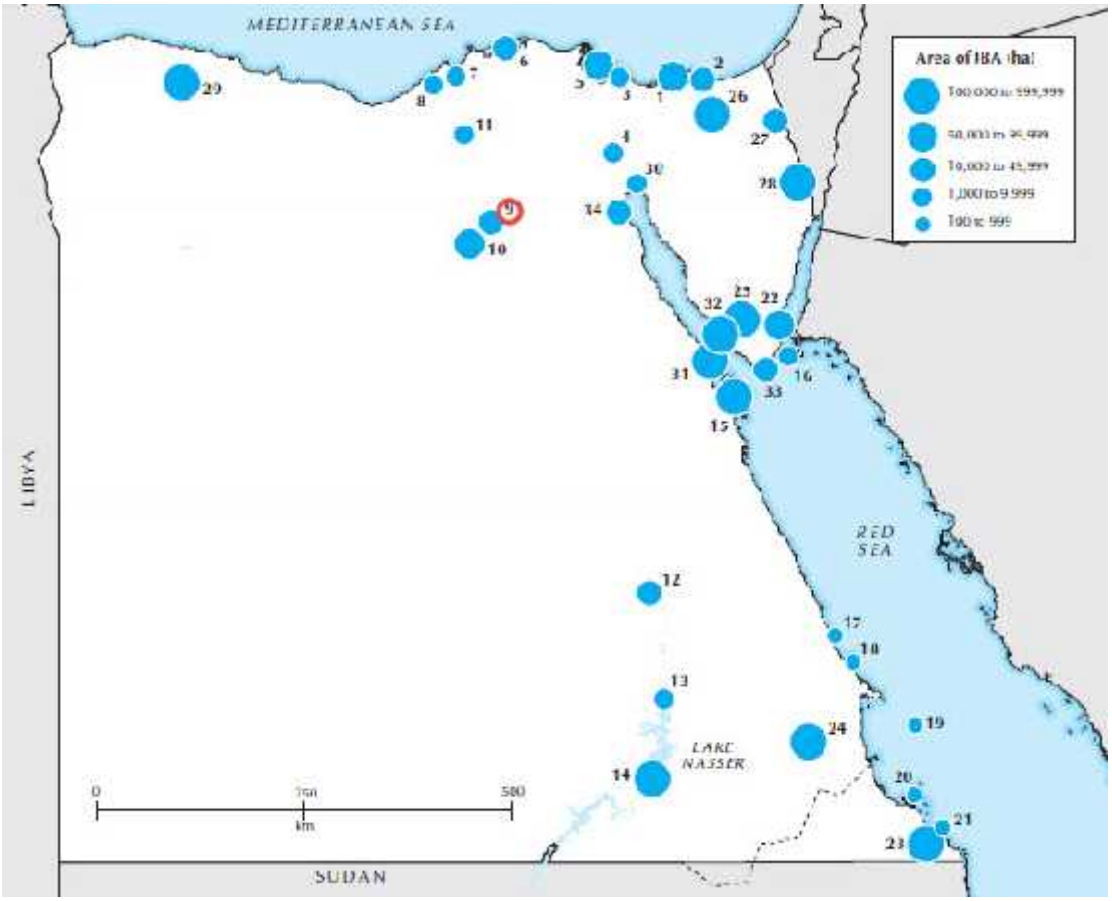

Figure 4-13 - Important Bird Areas of Egypt

4.1.9.4 Fauna

A list of 27 species of wild mammals have been identified in the Fayoum governorate out of 170 species that are documented in Egypt. Many of these mammals are very rare or extinct such as the white deer. The low number of predators in the region is mainly due to the use of rodenticides and

other factors such as the lack of adequate habitats for the mammals. The most common species of the mammals are desert mammals such as the Egyptian Gazelle, foxes and rodents. No mammals were spotted during the field survey of the site but rodents are known to form the largest mammalian group in the area. The most common rodent species documented in the area include Arvicanthisniloticus (Field rats), Rattusrattus (Black Rats) and Acomyscahirinus (Bicolored spiny mouse). Other Mammal species in the area include vulpesvulpesaegyptiaca (Red fox) and Vulpesrueppelli (Sand Fox).

Furthermore according to the literature review it is documented that 15 species of reptiles and amphibians are found in the Fayoum area and 14 species of fish.

Figure 4-14 - Vulpesvulpes

4.1.9.5 Flora

Vegetation in the Fayoum governorate can be divided under two different categories; desert vegetation and salt marsh vegetation. According to literature review Table 4-11 shows the most common species of vegetation in the Fayoum governorate and notes describing them. All of the flora species listed below are common species that are not classified as being vulnerable.

Table 4-11 - Common species in Fayoum

Species	Notes
Aizoonhispanicum	Succulent (Salty areas)
Atriplezrosea	Small herb (salty areas)
Abutilon pannosum	Small herb
Polygonumobtusifolium	Small herb

Alopecurusmyosuroides	Grass
Bromusfasciculatus	-
Var. alexandrinus	Grass
Echinochloacolonum	-
Var. glaycum	Grass
E.cruspgalli var. breviseta	Grass
Paspalidiumobtusifolium	Grass (very rare)
Fimbristylisferruginea	Sedge
Cyperusfuscus	Sedge
Scripusfistulosus	Sedge
Ornithogalum trichophyllum	Liliaceae (hulb)
Najaspectinata	Submerged water plant (very rare)
Myriophyllum spicatum	Water plant (endemic)
Salix subserrata	Water plant (endemic)
Tamarixpasserinoides	Small tress (endemic)
T.passerinoides	-
Var.macrocarpa	Small tree (endemic)

Figure4-15 - Left: Aizoonhispanicum, Right: Fimbristylisferruginea

4.1.9.6 Protectorates

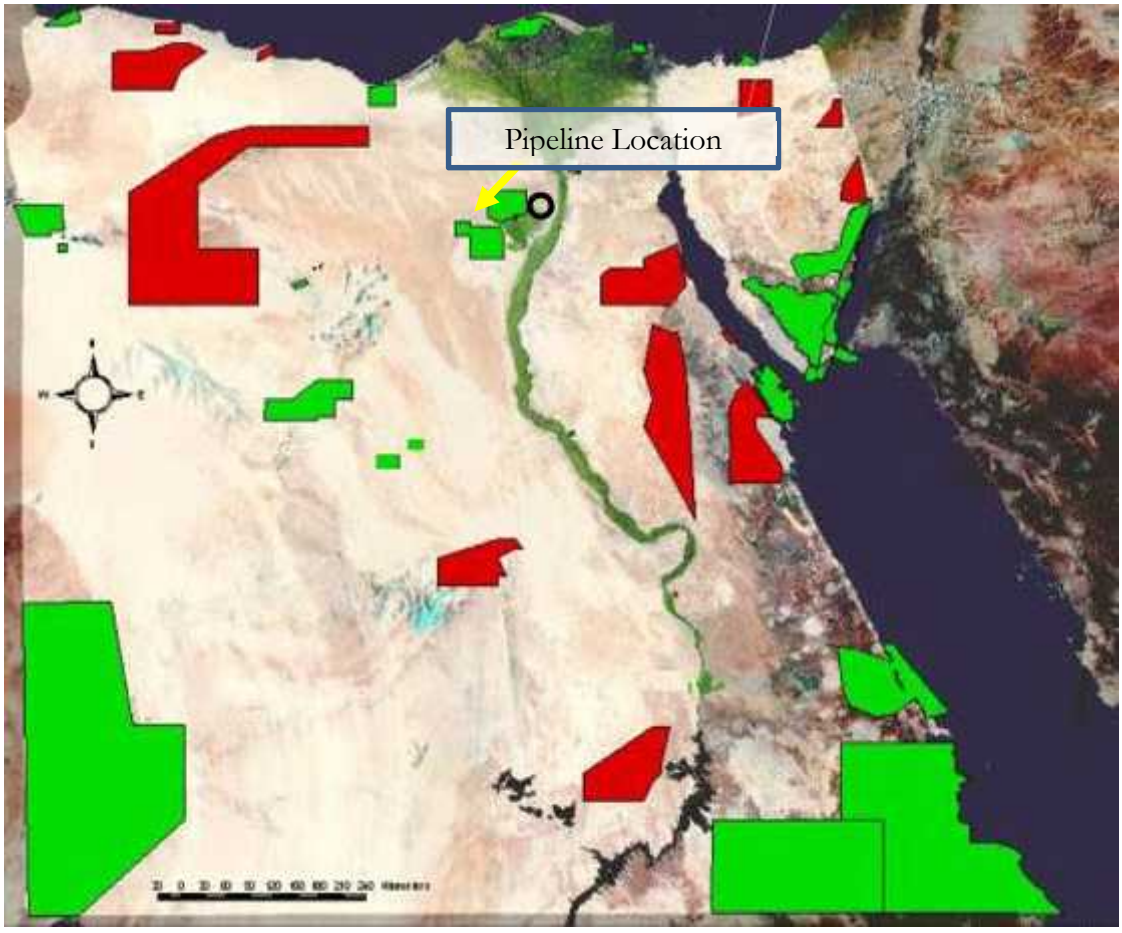

Figure4-16 - Protected areas of Egypt

Figure4-17 – Proximity of Protectorate to Pipeline

Lake Qarun protectorate is approximately 22 km away from the project site and is bordered by agricultural land to the south and desert to the north as can be seen in Figure4-16 and Figure4-17. Qarun was previously larger in size with dense marsh vegetation along its shores. The Lake was declared a protected area by Prim Ministerial decree 943 in 1989. The lake is constantly experiencing a changing ecology due increases in the level of its salinity which could eventually become too high to support any life forms. Unregulated tourist developments have led to increased disturbance to birds in Qarun Lake due to destruction of their habitats in particular mudflats and saltmarshes.

No impact is expected to occur on Lake Qarun from project activities.

4.1.10 **Socio-economic Profile**

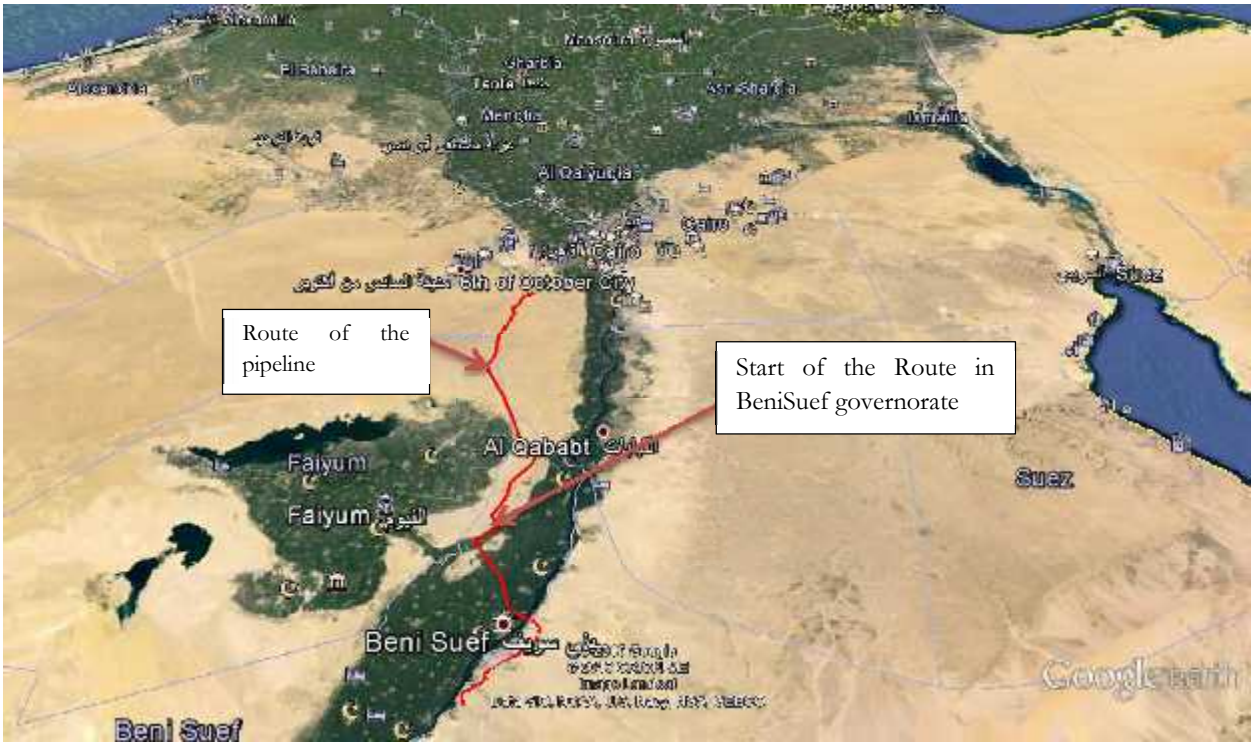

Figure 4-18 - Map showing the route with Administrative division of governorates

According to the previous map (Figure 4-18 - Map showing the route with Administrative division of governorates), the route passes through BeniSuef and Giza govenroates. The following section provides a brief socio-economic profile of both governorates:

Beni Suef Governorate

BeniSuef is one of the governorates of northern Upper Egypt region. Beni Suef is bordered in the north by 6th of October and Helwan (Giza and Cairo governorates), and from the south by Menia, to the east it is bordered with the Red Sea governorate and Fayoum governorate to the west. The governorate's total area is about 10954 km^2 and the governorate's population reached nearly 2.97 million (CAPMAS, 2015).

Beni Suef is easily connected to Cairo and is characterized by availability of transportation means; it has access to several main roads namely: Cairo\Aswan agricultural road, Cairo\Assiut desert road to the east of the Nile River, Assiut\Cairo west desert road, BeniSuef\Koraimat\Zafarana road, Beni Suef/Fayoum agricultural road in addition to rail roads.

Beni Suef is administratively divided into 7 marakez, 7 cities, 39 rural local units which consist of 180 villages and 844 hamlets.

Beni Suef is an agricultural governorate where cultivated areas reached about 289.90 thousand feddans. BeniSuef also hosts 7 industrial zones for light and medium industries in diversified industrial fields: food processing, medical and aromatic plants to produce human and veterinary medicines, chemicals, garments, slaughterhouses, dairy products, cotton ginning, paper, clay bricks, ceramics, marble and granite, and cement.

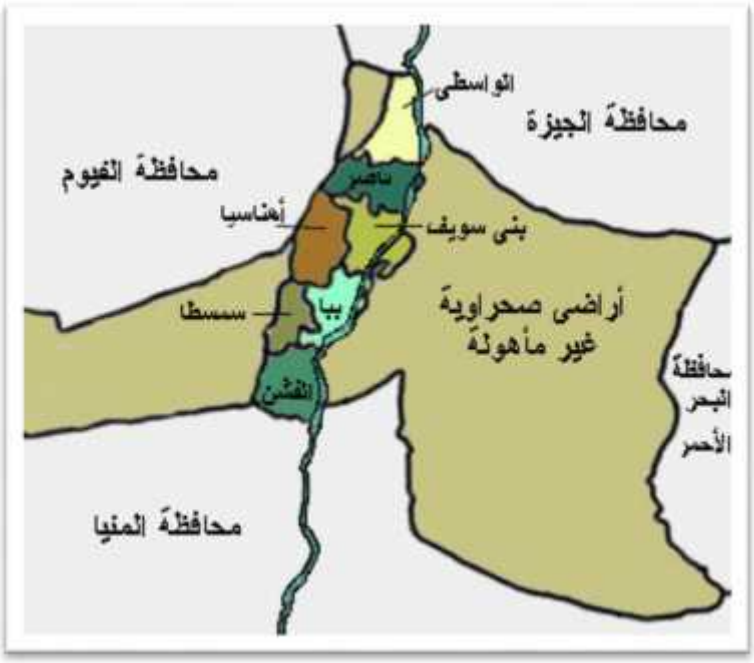

Figure 4-19 - Administrative Map of BeniSuef Governorate

Giza Governorate

Giza governorate is located on the west side of the Nile River. It is bordered by Qaliubiya, Menoufiya and Behera Governorates in the north, Fayoum and Beni Suef in the south, in addition to 2 localities el Saff and Atfeeh which are located on the eastern side of the River Nile. The governorate's population reached 7.82 million persons (CAPMAS, 2015) and is divided into 8 districts. Giza total area comes to 121 km^2.

The governorate of Giza is considered an agricultural governorate, with the diversity of agricultural productions from field crops, vegetables and fruits in addition to the vast expanses of deserts, both in the Eastern Desert and the Western Desert, and there also located in Giza Governorate the Bahariya Oasis in the Western Desert within the administrative border of the Governorate.

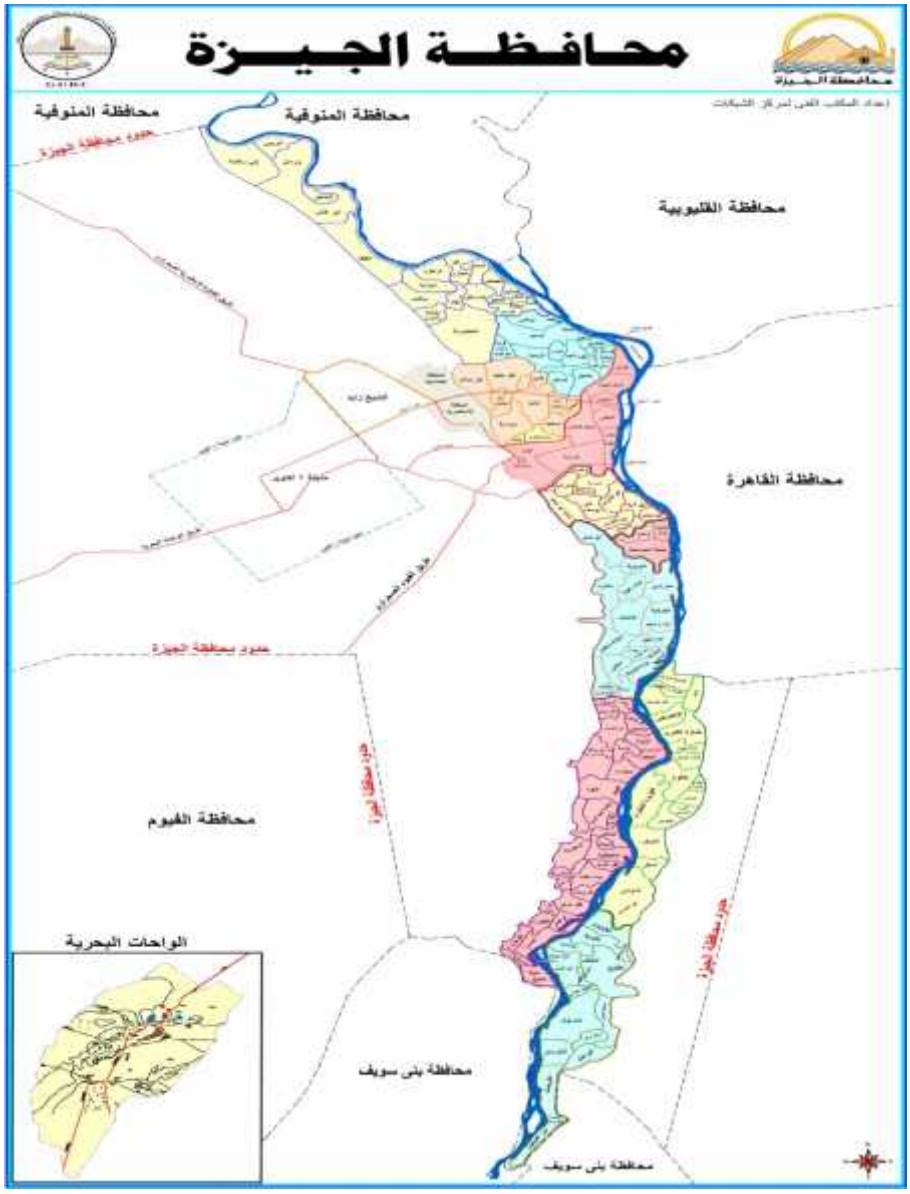

Figure 4-20 - Administrative Map of Giza Governorate

4.1.11 **Social Land Use of the route**

Semi Desert areas: the line spans mainly in the desert area along Assuit West Road. It is characterized by limited socio-economic activities. There are some land reclamation areas but they are still of limited use.

Figure 4-21 - Assuit West Desert Road

4.1.12 **Archaeological, Historic and Cultural Heritage**

The pipeline route is considered in close proximity to the Midom Pyramid archaeological site (around 4 Km away); however no activities will be carried out inside the site and good site practices will be implemented to eliminate any plausible impact on the archeological site. Dahshour area also contains many archaeological sites such as Dahshour pyramid archeological site (around 12.5 km away), the Bent pyramid which is about 15.6 km away from the pipeline and the red pyramid (14.2 km away) that were built during the reign of Sneferu Pharaoh. Also, there are other pyramids such as the pyramid of king Amenemhat II, and III (around 15 km away) as well as the pyramid of Sesostris III. Some valuable artifacts were found in that area which became well known as "The treasure of Dahshour". If any archeological, historic or cultural heritage sites are discovered during the construction activities, GASCO is committed to immediately stop the construction activities, and inform the National Supreme Council of Antiquities.

5 Environmental and Social Impacts

The environmental and social advantages of upgrading the Egyptian Natural Gas Network are diverse. Natural Gas provides improved safety, reduced financial burden on the national budget, and secures supply to the power plants. On the national level, it promotes the utilization of Egyptian natural resources and reduces the subsidy and import burden. Even on the global level, the project involves cleaner fuel with reduced carbon footprint.

A thorough analysis of environmental and social impacts is important to detail an effective management and monitoring plan which will minimize negative impacts and maximize positives.

All the potential impacts will be analyzed and discussed in the sections below. Afterwards, a rating matrix method will be applied to identify the significance of the impacts based on the frequency and severity of each impact. This evaluation method is used to determine the most significant impacts, and the suitable mitigation measures that will be applied to eliminate or reduce the adverse effect of such impacts on the environment and surrounding community as much as possible.

The assessment of impacts distinguishes between the construction phase and the operations phase.

5.1 Positive Impacts

5.1.1 During the construction phase

5.1.1.1 Provide direct job opportunities to skilled and semi-skilled laborers

The project is expected to result in the creation of job opportunities, both directly and indirectly. Based on similar projects implemented recently by GASCO, the daily average number of workers during the peak time will be about 400 temporary workers for 6 months (total of 46500 workers days). The local community could theoretically provide a proportion of this temporary labor force dependent on skills needed and the strategies of the individual contractors in sourcing their workforce.

In order to maximize employment opportunities in the local communities it is anticipated that training will be required for currently unskilled workers. On-the-job training will also supplement opportunities for the local workforce for both temporary construction roles also for long-term operations phase position, where these are available.

5.1.1.2 Create indirect opportunities

Increased economic activity in project through the following supply chain:

- Implementation of works and provision of supplies related to construction, operation and closure of the site and ancillary facilities;
- Provision of transportation, freight and storage services to the Project;
- Drivers and mini-bus owners will benefit from the transportation of the workers;
- Provision of food supplies, catering, and cleaning services;

- Provision of building and auxiliary materials and accessories, engineering, installation and maintenance;
- Provision of white goods, electronic appliances, communications and measurement equipment;
- Security personnel;
- Retail services;
- Provision of fuel;
- Workers and engineers may need accommodation facilities;
- National pipes and scaffold factories will be flourished.

5.1.2 During the operation phase

5.1.2.1 Economic Impacts

The expansion of the National Natural Gas Grid has several positive economic impacts:

- Support the expansion of power generation projects. The current gas connection lines will mainly provide energy source for the new "Siemens Power Stations". The expansion in power generation will dramatically enhance the national electricity grid;
- Expanding the natural gas network will positively provide an energy source to local industries which will indirectly create job opportunities;
- Variation of the energy mix in order to reduce the dependency on imported fuel;

5.2 Negative Impacts

5.2.1 Potential Negative Impacts during Construction - Environmental Impacts

5.2.1.1 Air Quality

- Dust Emissions are expected to occur during the construction phase due to the on-site activities such as land preparation, ditching, excavation and refilling activities, also in addition to the movement of the construction vehicles can generate some fugitive dust. The generation of dust can cause negative health effect on the respiratory system of the workers.
- Minor gaseous emissions can be expected to occur from the construction activities such as welding of pipe connections, and coating these connections with the polyethylene sheets. Additionally, gaseous emissions are expected to occur during the construction phase as a result of the exhaust gases from vehicles and equipment (excavator, loader, bulldozer, trailer,…) in addition to gaseous emissions from diesel generators.
- However, these emissions are expected to be in small amounts and temporary.
- Minimal odor emissions are expected to occur during the construction phase from chemicals, oils and paints used during the construction phase..

- The air emissions that were measured as a baseline condition (shown in section 4.1.4) were all far below the Egyptian and WB limits and accordingly it is not expected the construction activities will affect the air quality to the extent of exceeding the Egyptian and WB limits.

Due to the continuity of the construction activities, the impact level from dust emission is expected to be **high**.

5.2.1.2 Aquatic Environment

There are no water bodies close to or crossing the project path, therefore no impact is expected from the project on the aquatic environment. However, the aquatic environments can be negatively impacted in case of improper disposal of sanitary wastewater, construction wastes or debris (generated from activities like ditching, and excavation) in the waterways. Also the improper disposal of the wastewater resulting from the hydrostatic testing of the pipeline can cause changes in the characteristics of the waterways used for such disposal. The other construction activities (e.g. pipe laying, trench backfilling, magnetic cleaning, purging) will not generate any wastewater that may affect the aquatic environment.

Usually the generated sanitary wastewater, as well as water resulting from the dewatering activities during excavation, will be collected in tanks and transported via a certified contractor to the nearest wastewater treatment stations, and in the case that the water will be disposed back to the water bodies, full coordination with the Ministry of water and irrigation and with the Holding Company for Water and Wastewater will take place, and proper testing will be carried out to ensure that the disposed water quality is within the limits required by the law.

However, in case the contractor improperly disposed construction wastes or debris in a waterway, there will be adverse impact on the aquatic environment there. Also the improper disposal of the wastewater resulting from the hydrostatic testing of the pipeline can cause changes in the characteristics if the waterways used for such disposal.

During construction, without good practices or improper disposal, the impact on aquatic environment is expected to be **High**.

5.2.1.3 Noise and Vibration

The main sources of noise and vibration during the construction phase are the operation of the construction equipment and machinery such as diggers, cranes, loaders and transportation trucks to perform the different construction activities mentioned in section **Error! Reference source not found.**. Increased road traffic as a result of the excavation activities will also increase the noise intensity level. The negative impact will be mainly affecting the operators working on the site In case the operators don't use their PPE, they may be subject to hearing loss. Additionally, noise and vibration is expected to be higher in small secondary roads where open cut drilling and pavement is expected to be used.

According to the noise baseline measurement in the closest residential areas to the pipeline path (shown in section 4.1.5), the noise levels were already below the national and WB limits, and accordingly it is not anticipated that the construction activities will affect the noise quality to the extent of exceeding the Egyptian and WB limits.

There is an existing compression station at the starting point of the pipeline and at this point the cumulative noise level may increase during construction stage. However, the closest residential area to this point is 1.6 Km away which is not considered a close proximity to the construction site.

Generally, the noise impact during the construction phase is expected to be high.

The construction activities are expected to be carried out throughout the day time, and the noise and vibration impacts are expected to be **High**.

5.2.1.4 Flora and Fauna

As shown in section 4.1.9, most of the pipeline route is located in a desert area with very limited flora and fauna within the surrounding regions of the route. Therefore, minimal impact is expected on the flora and fauna of the project area and the impact is considered as low.

As there are no significant flora and fauna in the project area, the impact is expected to be **low**.

5.2.1.5 Land use, landscape and visual Impact

As mentioned in the baseline conditions (section 4.1.1), there are no current land uses for the route area as it is located in a desert area, which is not expected to be affected due to the project activities.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.1.6 Soils, Geology and Hydrogeology

The excavation activities will result in disturbance of the soil and geological characteristics. This will be more pronounced in the trench's area (around 1 meter depth) where excavation, pipeline laying, and soil compaction as a result of heavy equipment take place. Soil disturbance at higher depths will also take place in case of applying auger boring or HDD technologies in main crossings. In addition, potential soil contamination may take place as a result of spillage or leaks of oils.

However, since there is no current land use for the desert area, the negative impacts on the soil is **insignificant**.

5.2.1.7 Traffic

An increased number of trucks and heavy equipment will be necessary to transport the construction materials and equipment to the project site during the construction phase. Also, the construction activities may lead to rerouting the small secondary/internal roads which the pipeline route passes under for 1-2 days, when either boring or open cut excavation methods are used.

This will lead to reduction in the average speed of the vehicles on the road and the number of operating lanes, and may affect the areas devoted for parking. This may also increase the probability of having car accidents. While the traffic rerouting will only be for a limited number of days during the boring or open cut excavation work and the impact is expected to be high.

In addition, the construction trucks movement can be considered to be a continuous process, with a **medium** impact.

5.2.1.8 Archaeological, Historic and Cultural Heritage

The pipeline route is considered in close proximity to the Midom Pyramid archaeological site (around 4 Km away) and to other far away sites (between 12 and 15 km away); however no activities will be carried out inside the site and good site practices will be implemented to eliminate any plausible impact on the archeological site. However, it is possible that during the construction activities (e.g. ditching, drilling) archeological, historic, or cultural heritage sites are discovered.

Therefore the impact is expected to be **low**.

5.2.1.9 Natural Disaster Risk

Earthquake and floods may disturb the construction activities. This has the potential to negatively impact the time schedule of the construction activities and may cause injuries or fatalities to the workers.

However as natural disasters are not considered common in the project area, therefore the impact is expected to be short-termed, however of **medium** impact.

5.2.1.10 Major Accidents and Hazards

The construction activities may include leaks of the oil equipment and machinery which may affect the land in the project site.

As most of the maintenance activities will be carried off site in areas specialized in such activities, the effect of this impact is expected to be **medium** and for a short-term.

5.2.1.11 Solid Waste Management

Solid waste will comprise domestic waste, construction waste and some hazardous wastes from the project activities discussed in section 2.3. The waste is expected to include the following waste streams:

Hazardous wastes:

- Welding belts
- Used oil waste
- Asphalt
- Miscellaneous containers, paint cans, solvent containers, aerosol cans, adhesive, and lubricant containers

Non-hazardous wastes:

- Soil (excavated or surplus)
- Packaging materials
- Damaged products (pipes, etc.);
- Packing timber;
- Geotextiles;
- Paving materials;
- Electrical cable off-cuts;
- Concrete;

Domestic Wastes:

- From the labor use on-site.

Adverse impacts on the environment from the possible improper disposal of the solid wastes in addition to the increased demand for landfill space. Furthermore, adverse impacts from increased traffic load when transporting waste to designated landfills and/or disposal sites are expected. Accordingly, the impact of improper solid waste handling is expected to be **high**.

5.2.1.12 Public Health

Since the pipeline route is located in a desert area, the construction activities will not have any effect concerning the public health.

Care will be taken to reduce the effect of these impacts as much as reasonably practicable in populated area; also the duration of the construction activities in each location is expected to be Short.

The selected plot for the workers camp for Dahshour – Wasta pipeline project will be near the populated area or the main roads. The location of the workers camp will be decided upon before the commencement of the construction activities.

Moreover, it is not expected that there will be a spread of infectious diseases among workers such as HIV/AIDS since they are not commonly spread among the community. Additionally, the provisions of occupational health and safety laws at the workplace will be applied.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.1.13 Occupational Health and Safety

The workers will be subjected to health and safety hazards during the construction phase from the on-site construction activities.

The impact level of this aspect is considered to be **medium**.

5.2.1.14 Existing Infrastructure

The construction phase may lead to breaking any of the underground infrastructure pipelines (water, sewerage or telecommunication) which will result in negative impacts on the water supply or the telecommunication service for the surrounding areas and in case of breaking a sewerage line, adverse environmental impacts may take place since the sewage may flood to the main road/agricultural land, and infiltrate to the ground water and also residents of the affected area will face water shortage.

The effect of this impact is expected to be **medium** and for a short period of time.

5.2.1.15 Energy Use

There will be an increase in the energy consumption during the construction phase as a result of the transportation of equipment & construction materials to the project site as well as the equipment used for on-site preparation (front loaders, trucks, etc).

However, this increase in energy use is **not significant** and does not affect other users of energy.

5.2.1.16 Land Requirements

Permanent acquisition of land (willing buyer – willing seller approach): for the establishment of the valve rooms. In such cases, the common rule of GASCO is to provide full replacement cost for purchasing the land as per the market price under satisfactory, agreeable and appropriate agreement. It might be roughly suggested that each of the land plots (25m x 45 m) for each of the valve rooms. The line will require the establishment of 2 new valve rooms in addition to expansion of 3 existing valve rooms. In Dahshour – New Capital pipeline, the valve rooms that will be allocated are vacant public land, hence no impact will occur.

Temporary acquisition of land: The project construction phase will necessitate temporary expropriation of about 1,300,000 m^2 mostly of desert areas (only limited plots of newly reclaimed land will be impacted) during the construction. A Resettlement Action Plan (RAP) was prepared guided by the WB Resettlement Policy OP 4.12. The RAP involves a full inventory survey for the PAPs and valuation for the compensation that should be paid.

Since the RAP has been prepared and the impact on land acquisition is mostly temporary, localized but with high severity, since only limited number of newly reclaimed land will be impacted along the route, the impact was identified as **moderate** inconvenience.

5.2.1.17 Temporary storing of equipment and construction material and workers camps

Temporary occupation of land will be required for the workers camps and storing of equipment and materials. Most of the time, the selected plot will be in a public area (road for example) where there is enough space. However, in case temporary use of land may result in the alteration of previous use or agricultural production, the loss for the previous user should be fully and fairly compensated during the period of occupation by the project (full rent price will be paid to the owner).Temporary

occupation of land could raise some issues related to poor sanitation arrangement and improper methods used for disposal of solid wastes and effluents.

Due to the extensive excavation required for this project, and the relative uncertainty on adequate measures to be taken by the contractor for temporary land allocation, the impact level is considered **Moderate**.

5.2.1.18 Labor conditions and occupational health and safety

Throughout this phase there will be many occupational health and safety risks to workers on the sites. These are generic risks associated with construction sites and include slips and falls; moving lorries and machinery; exposure to chemicals and other hazardous materials; exposure to electric shock and burns; weather related impacts (dehydration; heat stroke). This is short term (6-12 months) but because of the large number of unskilled workers who are reluctant to use health and safety tools.

Impact related to Occupational health and safety during the construction phase is **Major**

5.2.2 Potential Negative Impacts during Operation

5.2.2.1 Air Quality

No gaseous emissions are expected to occur during the operation phase except for the potential natural gas leak or in case of accidents and during maintenance activities. In addition, the gaseous emissions generated by natural gas combustion for power generation are much lower than those associated with heavy fuel oil (mazout) or coal, which is a positive impact. Additionally, no dust or odor emissions are expected to occur during the operation phase of the project.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.2 Aquatic Environment

The project operation will not have any effect on the aquatic environment.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.3 Noise and vibration

Minimal noise will be generated from the operation of the valve rooms. Additionally, the compression station which already exists in Dahshour will be utilized as part of the project. Accordingly, the project will not add noise loads to the area especially that the closest residential area to this point is 1.6 Km away.

Thus, the impact level of this aspect is considered to be **low**.

5.2.2.4 Ecology (Flora and Fauna)

The project operation will not affect the flora and fauna since the pipeline is laid underground with minimal maintenance activities.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.5 Land use, Landscape and Visual Impact

Since the pipeline is laid underground, the land in which the pipeline passes through will regain its usage and no visual impacts will occur.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.6 Soil, Geology and Hydrogeology

The operation of the pipeline will not affect the soil, geology or hydrology of the land.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.7 Traffic

The operation of the pipeline does not include any trucks' movement or materials' transportation.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.8 Natural Disaster Risk

Natural disasters such as earthquakes may lead to pipeline breakage. Fire or explosion may take place in the affected areas which may lead to severe injuries or death to the nearby human beings. This may also lead to the temporary cut-off of natural gas supply to the nearby area.

Due to the potential harm of the surrounding environment, the impact level of this aspect is considered to be **high**.

5.2.2.9 Major Accidents and Emergencies

Accidents and emergencies such as release of significant amounts of natural gas due to any failure in the pipeline, maintenance activities or as a result of accidents may take place during the operation of the proposed project. This may also take place as a result of sabotage or trespass.

Such accidents may result in fires in the affected areas which may lead to severe injuries or death to the nearby human beings. This may also lead to the temporary cut-off of natural gas supply to the nearby area. A quantitative risk assessment (QRA) was conducted by GASCO to determine the level of threat to the public in case of an accident or emergency. The results of the QRA are annexed to the ESIA.

Due to the potential harm of the surrounding residents and environment, the impact level of this aspect is considered to be **high**.

5.2.2.10 Solid and Hazardous Waste Management

The pipeline operation will not dispose any type of solid waste and the project will not have a negative impact in that regards.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.11 Public Health

Apart from the big accidents that may take place due to the release of significant natural gas amounts, nothing may cause adverse impacts on the public health and the project activity will not have a negative impact in that regards.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.12 Occupational Health and Safety

The pipeline operation will not affect the occupational health and safety as there will be a small number of workers during the inspection and maintenance activities and the project activity will not have a negative impact in that regards.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.13 Existing Infrastructure

The project operation will not affect the associated infrastructure and no significant impact concerning the associated infrastructure.

Thus, the impact level of this aspect is considered to be **insignificant**.

5.2.2.14 Energy use

This environmental aspect is considered a potential positive impact since the proposed project will support Egypt's strategy by supplying the region with natural gas for electricity generation in addition to supplying natural gas to the residential areas. This will eventually lead to economic growth as the project implementation will attract economic investments to the region.

Furthermore, the proposed project will facilitate the use of a less carbon intensive fuel (natural gas) in Beni Suef Power Plant, with a CO2 emission factor less than that of the grid, since the emission factor of the grid takes into account the use of more carbon intensive fuels in power generation (Heavy fuel oil, Light fuel oil and Coal). Thus, the project will result in net reduction in the CO2 emissions that would otherwise be generated using more carbon intensive fuels. Details of the calculations are mentioned in Annex 12.

Thus, the impact level of this aspect is considered to be **high**.

5.2.2.15 Community health and safety

In addition to a full array of safety and emergency precautions taken by EGAS and the implementing entities, user safety is prioritized by stating emergency precautions on the household gas meter and by setting up emergency response centers. Impacts on user health and safety may occur through improper handling of piping and valves by the user. This may be due to a lack of awareness, illiteracy, or failures in piping or sealants.

User safety impacts could be permanent and **highly** severe.

5.2.3 **Affected parties**

The affected parties or people affected by the project should be discussed in order to try to minimize any hardships they face due to project implementation.

- It is foreseen that the affected parties will be mainly among farmers who will either be losing their income due to the temporarily expropriation of crop land or permanently due to selling it to GASCO for the valve rooms.
- Moreover, there is the risk of work accidents and injuries to the construction workers during the construction phase. However, the probability of this risk is very low, since GASCO is very strict about the health and safety measures and they have their HSE guidelines which they follow strictly.

5.2.4 Summary of the expected environmental impacts

Table 5-1Summary of the expected environmental impacts during the construction and operation phases of the project

Activity	Air Quality	Aquatic Environment	Noise	Ecology	Land Use	Soil	Traffic	Cultural Heritage	Natural Disasters	Hazards and Accidents	Waste Disposal	Public Health	Occupational Health and Safety	Existing Facilities
Construction Phase														
Site Preparation	Temporary, High	Temporary, Low	Temporary, Medium	Not Applicable	Not Applicable	Temporary, Low	Temporary, Low	Temporary, Low	Temporary, Low	Temporary, Low	Temporary, Low	Temporary, Low	Temporary, Medium	Not Applicable
Excavation	Temporary, High	Temporary, Low	Temporary, Medium	Temporary, Low	Not Applicable	Temporary, Medium	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Medium	Temporary, High	Temporary, Low	Temporary, Medium	Temporary, High
Pipelines Laying	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Low	Not Applicable	Temporary, Low	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Medium	Temporary, High	Temporary, Low	Temporary, Medium	Temporary, High
Valve Rooms Construction	Temporary, High	Temporary, Low	Temporary, Medium	Temporary, Low	Not Applicable	Temporary, Low	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Medium	Temporary, High	Temporary, Low	Temporary, Medium	Temporary, High
Pressure Reduction Stations Construction	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Leakage Detection	Temporary, Low	Temporary, High	Temporary, Medium	Temporary, Low	Not Applicable	Temporary, Low	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Medium	Temporary, Medium	Temporary, Low	Temporary, Medium	Not Applicable
Restoring Land and Areas	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Low	Not Applicable	Temporary, Low	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Medium	Temporary, Medium	Temporary, Low	Temporary, Medium	Not Applicable
Operation Phase														
Tests and Connections	Not Applicable	Not Applicable	Continuous, Low	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Temporary, High	Temporary, High	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Valve Rooms Operation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Pressure Reduction Stations Operation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Temporary, High	Temporary, High	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Gas Transportation Lines	Temporary, Medium	Not Applicable	Temporary, Medium	Not Applicable	Not Applicable	Not Applicable	Temporary, Low	Not Applicable	Temporary, High	Temporary, High	Temporary, Medium	Temporary, Low	Temporary, Medium	Temporary, Low

Operation														
Repairs	Not Applicable	Not Applicable	Continuous, Low	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Temporary, Low	Not Applicable	Temporary, High	Temporary, High	Not Applicable	Not Applicable	Not Applicable

5.3 Impacts Significance Ranking

5.3.1 Ranking Methodology

Rating matrix method was applied to identify the significance of the impacts presented above for both the construction and operation phases. Each impact will be given a rank for severity (S) and frequency of occurrence (F). Ranks are given on a scale from 1 to 5, as shown in Table 5-2.

Table 5-2 - Scale used in Severity and Frequency Ranking of Impacts

1	2	3	4	5
very low	Low	Medium	High	very high

An impact is considered significant if its severity is ranked 4 or higher, or if the product of the severity and frequency ratings is equal to 12 or higher.

To determine the severity rank, four parameters are considered, as follows:

1. Scale: How far can the impact spread? To exemplify, considerations can include the size of an area affected by land pollution impacts, number of people affected by health impacts, etc.
2. Possibility of reducing the impact: How difficult will it be to reverse or mitigate the impact? Considerations can include, for instance, availability of technology to change impact, level of complexity of available technology, capacity to apply the available technology, existence of constraints to change impact, etc.
3. Cost of changing the impact: How much will it cost to change the impact?, cost in relation to the means of change considered in the above parameter
4. Effect on public image: To what degree does the impact affect the public image of the enterprise (positively for positive impacts and negatively for negative impacts)?

As for the frequency rank, two parameters are considered:

1. Probability: What is the probability of occurrence of the impact?
2. Duration: How long will the impact last?

Equation 1- Formula used to Determine Aspect Significance Ranking:

$$S = A \quad (R_s \quad , R_r \quad p \quad , R_c \quad , R_{ir} \quad)$$

$$F = A \quad (R_p \quad , R_{dr} \quad)$$

$$R = S \times F = s \quad (S \times F) \geq 12 \text{ OR } S \geq 4$$

This analysis is conducted for both the construction and operation phases of the project.

5.3.2 Determination of Significant Impacts during the Project Construction

The rating system discussed above is applied to the environmental impacts resulting from the various aspects of the project construction stage, and the detailed assessment table is presented in table 1 in annex 10.

Applying the impact ranking method discussed in the beginning of this section yields several significant negative impacts for the following aspects of the project construction stage:

1. Dust emissions during the construction phase due to the on-site activities (site preparation, excavation, etc)
2. The aquatic environment can be impacted in case of improper disposal of construction wastes or debris in the waterways, and in case of improper disposal of sanitary wastewater and water resulting from hydrostatic testing.
3. Increase in noise level resulting from the construction equipment, and other excavation and construction works.
4. The possibility of affecting the existing infrastructure such as water and wastewater networks pipes, telephone connections.. etc. during the construction activities
5. Management of the different types of waste including domestic, hazardous and construction waste, such as Soil, Concrete, Welding belts, used oils, starting from their storage onsite until the final disposal.
6. Occupational Health and Safety aspects
7. Natural disasters that might lead to delays in the work schedule
8. Traffic impacts due to the increase in the number of trucks transporting construction materials and equipment to the site and possible routes re-routing.

Mitigation measures for these significant impacts are discussed in the following chapter.

5.3.3 Determination of Major Impacts during Project Operation

The rating system discussed earlier is applied to the environmental impacts resulting from the various aspects of the project operation stage. The detailed assessment table is presented in table 2 in annex 10.

For the project operation stage, there are two significant negative impacts appear which appear in:

1. In case of pipeline failure due to maintenance activities, accidents, sabotage or trespass, this may lead to the release of a significant amount of natural gas which will cause major risks and to the surrounding communities and the environment.
2. Natural disasters might lead to pipeline failure and accordingly the release of natural gas, which will cause major risks to the surrounding communities and the environment.

The project implementation will yield one significant positive impact which is:

1. Supplying the region with natural gas for the electricity generation which will enrich the national electricity grid.

6 Alternatives

This chapter discusses the different possible alternatives in four main topics: alternative construction methods and technologies (especially in crossing roads, railways and waterways), alternative route options, alternative energy sources other than natural gas, in addition to the "No action" alternative.

6.1 The "No Action" Alternative

The main target of the proposed project is to increase the natural gas supply to Beni Suef Power Plant, in order to help meet the growing national demand. In case of having "No Action", the power plant will run on liquid fuel (Mazoutor diesel) despite that there will be more polluting air emissions in case of transporting it through vehicles, and even during its burning. In the past years, Egypt has suffered from several blackouts which led to social problems which have even caused some political unrest. This was attributed to the shortage in fossil fuels; especially natural gas and mazout. Due to some recent natural gas discoveries, and after implementing the country's strategy of switching the cement plants towards using coal instead of natural gas, the latter returns again to be the best alternative to power plants especially that mazout is mainly imported.. The option of employing renewable energy to drive the Beni Suef Power plant is not technically or economically viable since the power plant is already being constructed and not using it is considered waste of resources. In the current time, it is not technically or economically feasible to fully depend on renewable energy projects to supply the continuously increasing national demand. However, installing renewable energy projects is part of the country's strategy which targets to have 20% of its power generation using renewables by 2022, and this project is not interrupting the country's plans in this issue.

6.2 Pipeline Installation Technology Alternatives

To install a natural gas pipeline beneath the ground level, this can either be done by digging a trench or using trenchless technologies. Trenchless technologies can be further classified as guided methods and non-guided methods. In this analysis, the most famous technology in each category will be considered; namely, horizontal directional drilling representing the guided trenchless technology, auger boring representing the non-guided trenchless technology, and the open-cut representing the trench technology.

6.2.1 Trenchless Technologies

Section 2.3.8 presents the description of HDD and auger boring technologies. HDD has some advantages compared to auger boring and open-cut technique as follows:

- Compared to the open-cut technology, it doesn't cause interruption to traffic flow.
- Compared to the open-cut technology, it causes less disturbance to the surface and sub-surface soil layers.
- Compared to the auger boring technology, it can be used for larger distances and wider range of pipeline diameters.

- Compared to the auger boring technology, it is a surface-launched process which doesn't require drive pits.
- Compared to the auger boring technology, it is a guided method, and accordingly can achieve high accuracy for the pipeline path.
- Can be employed for high depths, and accordingly can avoid any breakage accidents to the existing infrastructure lines/cables.

On the other hand, HDD suffers from some disadvantages including:

- Like any other trenchless technology, and according to the geologic condition, soil collapse may take place during the installation.
- In case of having existing infrastructure lines/cables, there will be less flexibility in choosing the pipeline depth, the fact which may necessitate drilling through soil layers which may be of insufficient strength to withstand the slurry's pressure.
- Not favorable with soils containing gravels and cobbles.

6.2.2 **Open-Cut Method**

This is the traditional method for pipeline installation. It is very simple technology which just depends on excavating the soil, laying the pipeline, and backfilling. However, it is technically not possible to be used in crossings with major waterways. It can be used in crossings with major roads and railways; however, this will cause huge interruption to traffic as this will necessitate either re-routing or reducing the number of lanes. This will lead to reduction in the average speed of the vehicles on the road, and may affect the areas devoted for parking. This may also increase the probability of having car accidents, in addition to negative socio-economic impacts as a result of interrupting the flow of people and goods. Open-cut method may be the only possible solution in case of having long pipeline distances such as in agricultural lands or desert areas.

In conclusion, the HDD/auger boring are the recommended installation technologies for the pipeline crossings with the railways and the regional ring road. In the desert area, open-cut method may be used since this will not negatively affect the environment, and it will be a cheap and safe option.

6.3 **Routing Alternatives**

From the environmental and social point of view, the best pipeline route is the one which minimizes the change in the land use, the interruption of the ecological nature, the intersection with residential areas and areas with special nature such as religious buildings and historical areas. This point of view intersects with GASCO's strategy which aims to choose a route away from the residential areas, and in locations already containing other infrastructure pipelines/cables to minimize disturbance in new areas. GASCO has an unwritten strategy that avoids passing through any construction buildings including: houses, religious buildings and historical areas.

As shown in Figure 2-1, the route starts from the valves room following the Dahshour compression station, and extends towards the south parallel to the Cairo – Fayoum road up to a distance of 8 km. The line then continues to the South East direction parallel to the Western Cairo- Asyut road, on its eastern side, up to a distance of 57 km till it reaches an existing valve room on the Dahshour – Koraymt gas pipe line (one of the national grid gas pipe lines) with a total length of 65 km. The chosen pipeline path moves parallel to existing roads to facilitate the patrolling and maintenance activities when needed, and this makes it the best possible alternative. The chosen pipeline route achieves the environmental and social targets, and at the same time aligns with GASCO's strategy which aims at choosing routes already containing existing infrastructure pipelines to minimize disturbance in new areas.

The following figure shows that a potential alternative route could have been selected (the route highlighted in red). However, this route has been discarded due to the following reasons:

- An increase in the length of the line which will also increase the project's cost.
- The line will intersect with more water bodies (canals and drainages) which will require the utilization of HDD technologies at these intersections. This will also increase the project's cost.

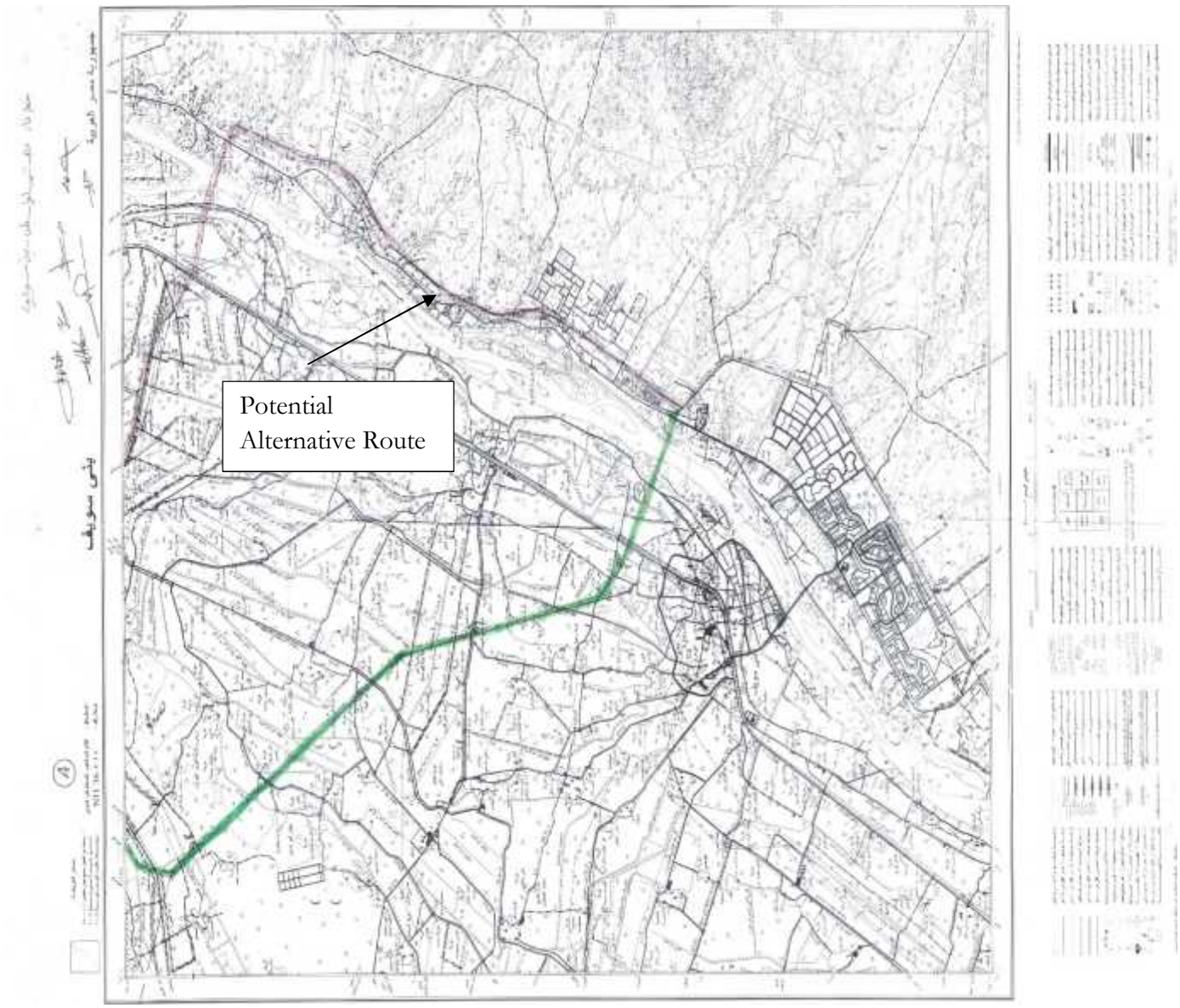

Figure 6-1 - Potential Alternative Route

The layout of the potential routing alternative could be found in annex 1 b.

7 Mitigation Measures

Based on the ranking system applied in the previous section for identifying the significant impacts resulting from the project construction and operation phases, the construction activities will cause seven negative impacts in the fields of dust emissions, noise emissions, affecting existing infrastructure, occupational health and safety, natural disasters, traffic and generation of construction waste. Also, during the operation phase, it is expected that any natural gas release due to natural disasters or failure in the pipeline or during the maintenance activities will cause major accidents and hazards to the surrounding environment.

GASCO will implement the following mitigation measures during the construction and operation phases of the project to eliminate or reduce the probability of occurrence of the negative impacts.

The controls proposed to mitigate or enhance the negative or positive impacts, successively are elaborated in the following sub-sections.

7.1 Mitigation Measures for Impacts during Construction Phase

7.1.1 Proposed Mitigation Measures for Dust Emissions

During the construction phase, dust emissions are expected from on-site activities (preparation, excavation, etc.), in addition to the various construction equipment and vehicles that will be used on site. An assigned supervisor will ensure the implementation of good site construction practices as follows:

- Appropriate setting and covering of stockpiles of friable materials with adequate cover in addition to regular water spraying so as to minimize dust blow.
- Minimizing drop heights for material transfer activities such as unloading of friable materials.
- Transportation of construction waste by a licensed contractor.
- Sheeting of Lorries transporting friable construction materials.

7.1.2 Proposed Mitigation Measures for Gaseous Emissions

- Maintaining and operating construction equipment and vehicles properly during the construction phase and ensure the compliance of the exhaust emissions from diesel engines with the limits of the environmental law.
- Ensuring that vehicles and equipment will not be left running unnecessarily to reduce gaseous and exhaust emissions from diesel engines.
- Using paved routes to access the site wherever possible.

7.1.3 Proposed Mitigation Measures for Solid, Construction and Hazardous Waste Generation

- The existing solid waste management procedures of GASCO will be adopted. The existing management system includes sections on waste reduction, material reuse and recycling, waste segregation with the objective of minimizing the quantity of waste that requires offsite disposal.
- The contractor will obtain official permits from the local authorities for the disposal of wastes (construction wastes landfills, hazardous wastes landfills,…etc) prior to the commencement of construction activities.
- Wastes will be segregated and safely temporarily stored in the allocated areas for waste storage on the premises of the construction site in a way that doesn't cause further traffic disruption.
- Wastes will be covered to avoid the pollution of the ambient air by dust dispersion.
- Adequate trucks will be used for wastes transportation and the trucks will not be overloaded with wastes volumes.
- Consignments for waste disposal will be recorded

7.1.3.1 Non-Hazardous Waste Generation

- The non-hazardous wastes (paper, garbage, wood, plastics,…) will be segregated and transported to the local disposal sites by the mean of the approved contractor
- The non-hazardous wastes will be transported off-site for recycling or final disposal by a licensed contractor and GASCO will supervise the disposal procedure and the conditions of the trucks.

7.1.3.2 Hazardous Waste Generation

- The asphalt waste resulting at the end of the construction phase will be disposed with the construction waste, since asphalt recycling is not a common practice in Egypt.
- Activities that involve fueling, lubricating or adding chemicals will not take place on-site unless it is necessary to avoid soil pollution and generation of additional hazardous wastes. If such actions will necessarily take place on-site, they will be conducted over impervious surfaces and a spill kit will be made available on-site.
- Containers of used chemicals and oil will be collected and disposed in an approved hazardous wastes facility in coordination with the local authorities.
- The hazardous liquid waste will be collected in specific drums and transferred to authorized petroleum companies (Misr Petroleum &Petrotrade companies) to be recycled
- According to Article 33 of Law 4/1994, the contractor is required to keep up records and manifests in a register for the methods of waste disposal and the agencies contracted to receive such wastes.

7.1.3.3 Construction Waste Generation

- The construction waste generated has to be disposed in safe locations assigned by the contractor and the local authorities before starting the construction phase. Landfill in Kom Oshiem desert in Fayoom or landfill in Shabramant in Abo el-Nomros district, Giza can be used for the disposal of construction wastes. However, the contractor will coordinate with the local authorities before the commencement of construction activities the exact landfill to be used.
- A temporary storage location near the pipeline in the construction process has to be assigned. These storage areas should be far away from the traffic congested areas.
- Waste collection should occur daily and it should be transported to the approved and safe disposal locations via adequately equipped trucks. The supervisor has to make sure that this process occurs without any hazards or problems.
- Excavated soil will be reused in the backfilling of the pipeline. The excess excavated soil volumes will be either spread all over the site in the desert area or sent to the construction wastes landfill.

7.1.4 Damage to Existing Infrastructure

There is a high risk of damaging the infrastructure lines that have been established a long time ago without having a proper and accurate mapping or documentation that shows the depths and the routes of these lines (ex. Water, sewage and telecommunication lines...etc). The following mitigation measures will be applied to the proposed project:

- The contractor will gather the most accurate area maps for infrastructure routes before commencing excavation.
- The contractor will perform exploratory excavations manually in the area of the project in order to avoid any damage to the existing infrastructure.
- If a line break occurs, the site manager has to quickly notify the nearest police department and the correspondent authority (according to the type of broken pipe). The authority shall repair the damaged line as soon as possible and the contractor will pay the repairing costs.
- In case an infrastructure line is damaged, a documentation report for infrastructure pipe damage shall be prepared for the any accident, containing the following aspects:
    a. Time and location of accident
    b. Name of contractor/subcontractor causing the accident.
    c. Type of damaged infrastructure line
    d. Description of accident circumstances and causes in addition to the extension of damage.
    e. Actions taken and responses of different parties, such as correspondent authority
    f. Duration of fixing the damage

7.1.5 Noise

Construction activities will cause increase in the ambient noise levels that resulting from the vehicles and machines used for excavation and construction purposes. However, this impact is temporary and will diminish by the end of the construction phase. The following mitigation measures will be applied to reduce the noise impact during the construction phase:

- Noise exposure periods should be minimized for workers so as not to exceed the safe limits mentioned in the environmental laws in addition to the occupational health and safety standards.
- Workers operating in areas or activities of high noise level intensities should be supplied with earmuffs.
- Contractors should train all the workers before the commencement of construction activities about this hazard and how to avoid it.
- Avoid construction activities during peak hours of heavy traffic whenever possible; especially when the project site is in the proximity of a sensitive receptor.
- Restrictions on lorry movements to prevent noise nuisance in the early morning/late evening
- All machine and vehicles should be shut-off when not used.

7.1.6 Management of Accidental Spills or Releases

As part of the HSE management system applied by GASCO, procedure documents are in place for dealing with accidental oil or chemicals spills or releases. The procedure stated that in cases of simple spills the following procedure will be followed:

1. Isolating the spill source.
2. Reporting to the HSE department
3. The contaminated area should be covered with dry sand to absorb the spilled amount
4. The now contaminated sand should be collected in labeled containers marked as hazardous waste and moved to the segregation area.

While in case of major spills or leaks of chemicals or oil, the following procedure will be followed:

1. All the workers should evacuate the work area except for the emergency team.
2. The emergency team should be wearing PPE (Breathing apparatus)
3. Isolating the spill source.
4. The contaminated area should be surrounded by dry sand or sawdust to prevent the spread of the oil or chemical leaked
5. The contaminated area should be covered by firefighting foal to stop the material from evaporating

6. The spilled materials is collected through a vacuum pump and placed in special containers to return it back to the tank, in case of it being clean, or sending it to the designated department for disposal at Sidpec company (for oil refining)
7. The contaminated sand should be collected in labeled containers marked as hazardous waste and moved to the segregation area.

The spill or leak contingency procedure is also referred to in the HSE procedure for the maintenance and oil replacement operations. Both HSE management procedures are presented in annex 13 of this report.

7.1.7 Management of Traffic Disruptions

- Informational signs should be posted at the construction zones before the commencement of any construction activities to inform drivers and ensure the safety of the roads.
- According to the Egyptian Road Code of Practice (Ministry of Housing, 1998), markings, in the form of lane lines and directional arrows, will be posted to direct drivers to the proper lane changes and turnings during the construction phase.
- The contractors and the site supervisor should choose a location for temporary storage of construction materials, equipment, tools, wastes and machinery before construction so as not to cause further traffic disruptions due to routes blockages. In case lateral excavations will take place, alternative routes should be decided upon and facilitated for the use of drivers. The time period of using such alternative roads should be minimized.
- Pedestrian crossings can be provided if necessary.
- Construction work should be avoided at the traffic peak times whenever possible.
- Upon using the open-cut method in agricultural lands, alternative roads should be developed to facilitate the entrance to the farms and an agreement should be held with the owner of these farms beforehand
- Uncontrolled off road driving will be prohibited.

7.1.8 Mitigation Measures for the Impacts of Water Bodies/Wastewater generation

- In case groundwater occurs in the construction site, all the necessary permits from the local sewage or irrigation authority for dewatering should be obtained and the drainage of dewatering water should be pre-planned
- If the groundwater is contaminated or contains hydrocarbons that could be observed or smelled, it should be collected in separate barrels and transported to a specialized wastewater treatment facility
- All liquid waste generated such as chemicals and sewage should be collected in suitable tanks to prevent their drainage over land.
- The water resulting from the hydrostatic test of the pipeline should be tested before being discharged in a water body or be transported directly to the nearest waste water treatment

plant after coordinating with the wastewater company and MWRI in order to reduce the impacts on the aquatic environment.

- Sanitary waste water will be collected in temporary storage tanks and sent to a waste water treatment plant via a certified contractor.

7.1.9 **Occupational Health and Safety**

- Ensure the adequate implementation of occupational health and safety provisions on-site such as providing the personal protective equipment (PPE) to the workers.
- The site should be provided by all the protective and safety requirements stipulated by labor laws and occupational health.

7.1.10 **Land Use**

- Restoring the land to its original condition at the end of the construction phase.
- Hazardous liquids have to be handled carefully in order to avoid the spilling or leaks to the ground

A RAP study has been prepared to ensure mitigating the impacts on livelihood and delivering fair compensation according to WB operational policy OP 4.12.

7.1.11 **Mitigation Measures for Hazards and Accidents**

GASCO holds the responsibility to implement all the plausible precautions to safeguard the pipeline construction activities and protect the surroundings. An emergency preparedness response plan, which is already prepared by GASCO, will be in place to give instructions about the identification of the potential occurrence of accidents and emergency situations that may occur during the pipeline construction and how to respond to them to reduce the risks and impacts that may be associated with these emergency situations.

7.1.12 **Archaeological, Historic and Cultural Heritage**

Construction process should be done carefully so as to avoid any adverse effects on the archaeological sites located near the pipeline being constructed. Also, careful supervision should be given to the construction site to ensure good site construction practices. Moreover, no vibrations are allowed to exist near these sites during the construction phase.

7.1.13 **An approval from the Egyptian Archeaological Agency was obtained for the route and consultation was made with the agency regarding any archaeological or historical sites known along the pipeline route. If any archeological, historic, or cultural heritage sites are discovered during the different construction activities (e.g. ditching, drilling), GASCO is committed to immediately stop the construction**

activities, and inform the National Supreme Council of Antiquities (and this is the chance find procedure followed by GASCO)Management of Community health and safety

In addition to all the environmental and social management and monitoring measures in this section which aim for health and safety, awareness-raising actions and signs should be provided to workers and community members to promote safety and health while safety supervisors hired by the implementing company (Petrojet) to oversee work sites and will be largely responsible for children and their safety around the construction site. Trenching activities can cause impacts on safety of the local community or the workers, in case the contractor does not comply with the safety requirements. It is important to include necessary safety measures that the contractor should apply in the contracts and these measures to be monitored as part of the monitoring activities.

7.1.14 Management of impacts related to temporary land acquisition

The following measures are proposed to manage the impacts related to temporary land acquisition:

Fair compensation price: The main reference of the crop prices applied to all PAPs is the prices indicated by the relevant agricultural directorate at the concerned governorate. Previous experience shows satisfaction with the crop prices offered by GASCO.

Sensitivity to the local community needs: GASCO staff and local farmers with previous experience for similar projects implemented by GASCO revealed that a socially sensitive approach is usually adapted by the company when it comes to the actual execution of the project. An instance on that is the flexibility that both GASCO and the contractor show with farmers during the actual execution of the project. Although GASCO does have a decree for temporary acquisition of lands which is issued prior to the implementation of the project, the contractor in several cases allow additional days for the farmers in order for them to harvest their crops.

Transparency in the valuation process of crop compensation: Transparency in the process of the damaged crops valuation is crucial as a proactive mechanism to eliminate any opportunities for disputes. This is elaborated in more details on the RAP study. The valuation of the damaged crops and ensuring satisfaction with the compensation are key issues that should be considered during planning for the project. It following, however, should be noted:

- The Egyptian Government has a very efficient and fair system for crop compensation that goes in line with the World Bank Safeguard Policy.
- GASCO also has a clear valuation system that was primarily based on the Ministerial Decree 347/2007 that declared the necessity of valuing the vegetation is the responsibility of each governorate and the previous experience of GASCO revealed that the majority of farmers

who were compensated believe that they were offered fair compensations. The field visits revealed that according to the estimates provide by farmers during the field interviews, only 1% of those who were compensated were not satisfied and their cases was accelerated to disputes. Usually, GASCO overcome such cases through transparent sharing of information which is usually appreciated on the local level.

Awareness raising activities among community members: awareness raising is necessary to mainstream the local community's expectations towards the project and ensure the smooth acceptance of the project activities. Local civil society organizations and SDO can develop awareness raising activities to engage the local community during the procedures of temporary land acquisition.

Ensure an efficient grievance mechanism is put in place: Establishing a grievance redress mechanism (GRM) is one of the most fundamental procedures that warrantee smooth and amicable implementation for the project activities. The grievance mechanism is discussed in section 7.1.17.

7.1.15 **Management of impacts related to permanent land acquisition (valve rooms)**

Selection of plots: selection of the location of land plots to be purchased for the valve rooms should be conducted in consultation with the local community. GASCO should select different plots according to technical criteria. Different plots should be considered with land owners who are willing to sell their land voluntarily. It is important to ensure that no one seller will be forced to sell their land and that there are other alternative plots in case the owner is not willing to sell.

Land valuation process should be based on realistic market prices, after consulting with different actors at the local level. It is also important to ensure fair negotiation process for sellers. It is important to involve community leaders to ensure that sellers are offered fair prices.

Documentation of the negotiation process: It is important for the GASCO compensation committee and SDO to keep all relevant documents for selection of the plots, the process of determining the fair value of land according to the market as well as the negotiation process with the seller.

Ensure an efficient grievance mechanism is put in place: Establishing a grievance redress mechanism (GRM) is one of the most fundamental procedures that warrantee smooth and amicable implementation for the project activities. The grievance mechanism is discussed in section 7.1.16.

7.1.16 **Management of impacts related to the temporary land use of workers camps**

Temporary land occupation

Ensure contractor attends to the health and safety of their workers, maintain and cleanup campsites and to ensure the utmost preservation of land use environment and deliver the site after work completion in a condition that is similar or better than pre-project condition.

GASCO has a strict waste management policy to ensure no waste accumulation occurs in workers camps as well as ensure adhering to health measures concerning sanitation to ensure no negative impacts occur.

Fencing the construction area, to reduce disturbance to nearby population, Signage and Markings: provision of informational and directional signs posted prior to the construction. Use of announcements to inform local community of health and safety measures to avoid accidents. Pedestrian crossings can be also provided at proper locations. Develop a communication strategy to raise awareness of the community members on health and safety measures.

7.1.17 **Management of grievances (***Environmental and Social Grievance Redress Mechanisms)*

Grievance system is also important to ensure that complaints are properly handled without delay that may negatively affect the project. Moreover, to ensure that information is shared transparently and that they are accountable to the hosting communities. A functioning GRM is considered to be a good feedback mechanism from the project affected persons and one tool of the citizen engagement.

GASCO operates a comprehensive GRM procedure: Leaflets, posters and brochures are prepared and distributed to the beneficiaries, NGOs, local governmental units, mosques and churches. Thus, sufficient and appropriate information about the GRM will be shared with the communities prior to the construction phase.

Additionally, the World Bank's Grievance Redress Service (GRS) provides an additional, accessible way for individuals and communities to complain directly to the World Bank if they believe that a World Bank-financed project had or is likely to have adverse effects on them or their community. The GRS enhances the World Bank's responsiveness and accountability by ensuring that grievances are promptly reviewed and responded to, and problems and solutions are identified by working together. The GRS ensures that complaints are being promptly reviewed and addressed by the responsible units in the World Bank.

The objective of the Grievance Redress Service is to make the Bank more accessible for project-affected communities and to help ensure faster and better resolution of project-related complaints through the following link (http://www.worldbank.org/grs) and e-mail (grievances@worldbank.org).

The following procedures will be applied in order to have a clear grievance's activities:

7.1.17.1 Institutional Responsibility for Grievances

GASCO Compensation Committee and Social Development Officer (SDO) in cooperation with the local government units, governorates, agriculture associations, and the project manager will address all grievances raised by community people, particularly the ones related to resettlement activities.

The main tasks of the Social Development Officer are:

1- Raise awareness about the grievances mechanisms among the PAPs
2- Collect the grievances received from different channel
3- Document received grievances
4- Direct the grievance to the responsible department to address the grievance
5- Follow up on the resolution
6- Document, report and disseminate outcomes of the grievances
7- Monitoring of grievances activities

7.1.17.2 Grievance Tires

The proposed mechanism is built on two tiers of grievances:

First tier of Grievances: Project Manager (on Site) Dr. Hisham Talaat (01274641111) / Social Development Officer – Eng. Ahmed Galal (0121 1878678)

The Project Manager for each site / SDO is responsible to ensure that the GRM system is widely advertised and well explained on the local level. Moreover, s/he will follow up on the complaint until a resolution is reached. The turnaround time for the response/resolution should be 10 days and The SDO should inform the complainant of the outcome of the grievance.

It is worth noting that most of the previous experience of GASCO is suggesting that complaints are usually handled efficiently and resolved on the local level. In case the PAP is not satisfied with the resolution, the complainant shall submit the grievance to the second level of grievance.

Second tier of Grievances: On the level of GASCO headquarter (Mediation Committee)

If the aggrieved person is not satisfied with the decision of the first tier, he can raise the complaint to the Mediation Committee at GASCO headquarter. The Mediation committee should ensure a resolution is made within 15 days.

The above mentioned tiers are consistent with the World Bank's policy OP 4.12. Providing multi-levels of tiers will result in amicable implementation of the project. It is a function of the project, to provide aggrieved people with an avenue for amicable settlement without necessarily pursuing a court case. The absence of first tier mechanism denies project affected groups the direct channel for grievance and delays resolution of disputes against the interest of both the PAP and the project.

7.1.17.3 Grievance channels

Due to the diversity of the context in different Governorates and the socioeconomic characteristics of the beneficiaries, the communication channels to receive grievances were locally tailored to

address all petitioners concerns and complaints. The following are the main channels through which grievances will be received:

1. Project Manager (on Site)acts as the main channel for receiving complaints. He is available on the location. Most of the complaints raised to him/her are raised verbal. He should document all received grievances in written form, giving each grievance a serial number.
2. Hotline: 149 is the hotline in GASCO
3. Community leaders and NGOs/CDAs are an appropriate channel, particularly, in rural areas.
4. Regular meetings with community members including influential stakeholders
5. GASCO Website for literate persons who have access to the internet
6. GASCO Compensation Committee, Mediation Committee and Government Relations Committee

7.1.17.4 Response to grievances

Response to grievance will be through the following channels

1. The same channel the complaint was submitted. .
2. Response to grievances should be handled in timely manner(according the duration indicated for each tier), thereby conveying a genuine interest in and understanding of the worries put forward by the community.
3. GASCO should keep a record of complaints and results.

7.1.17.5 Monitoring of grievances

All grievance activities should be monitored in order to verify the process. The following indicators should guide the monitoring process:

1. Number of received grievances per month (Channel, gender, age, basic economic status of the complainants should be included)
2. Type of grievance received (according to the topic of the complaint)
3. Number of grievances solved
4. Level of satisfaction with grievance resolutions
5. Documentation efficiency
6. Dissemination activities done
7. Efficiency of response to grievance provided (efficiency in time and action taken)

A Grievance Monitoring Report should be developed on a quarterly basis in order to keep track of all grievances developed. The report should be developed by the SDO in the GASCO headquarter

All grievances received shall be documented in a grievance register. The following table represents the main contents of such form:

Box 1: Grievance form
Serial Number:
Markaz:
Date:
Gender of the aggrieved person
Age of the aggrieved person
Education of the person reporting a grievance
Topic of grievance
Actions to be taken (short term- long term)
The referral of grievance
Monitoring for grievance

Figure 7-1 Grievance Form

7.2 Mitigation Measures for Impacts during Operation Phase

7.2.1 Mitigation Measures for Hazards and Accidents

- GASCO holds the responsibility to implement all the plausible precautions to safeguard the pipeline during its operation and protect the surroundings. A full description of the technical design measures used to mitigate the risk of any operational failures is provided in the QRA report prepared by GASCO.
- Regarding the possibility of the release of significant amount of natural gas during the pipeline operation, regular inspection and preventive maintenance activities will be conducted by GASCO to check the pipeline connection and the welding efficiency. The inspection will additionally include checking any construction activities in the vicinity of the pipeline to prevent any failure that may lead to breakage or threaten the safe operation of the pipeline.
- The pipeline is monitored by centralized SCADA systems monitored by GASCO to observe the operating parameters of the pipelines. If any failure occurred such as corrosions or leaks, valves supplying the pipeline will be shut down and the maintenance team will implement the appropriate maintenance actions. In addition to that, signs with a number for emergency will be placed on the pipeline route to be used in case of any emergency. Also, signs indicating the presence of the high pressure pipeline underneath will be posted.
- Advanced fire and gas detection systems as well as shutdown and isolation systems will be installed all over the pipeline.
- Pipeline patrolling will be conducted to ensure there are no encroachments on the pipeline, and the frequency of patrolling will vary according to area class as follows:

Table 7-1 Pipelines Class and Patrolling Frequency

Pipeline Location	Vehicular	Walking

Pipeline Location	Vehicular	Walking
Location Class 1	6 months	No survey
Location Class 2	1 month vehicular accessible areas in canal and river crossings	6 months Arable land, AGIs, valve rooms, crossings, sleeves
Location Class 3		2 weeks survey all areas
Location Class 4		2 weeks survey all areas

- All necessary permits will be obtained from landowners, farmers, railways, etc. prior to starting work. The patrol will ensure that he holds a valid identity card or letter of authorization.
- Leakage surveying will be conducted to protect the surrounding population and workers against the effects of gas leakage from the pipeline in case any damage to the pipeline is detected. The survey will be conducted in areas where the pipeline runs close to buildings and workers.

Emergency Response Plan

An emergency preparedness response plan, which is already prepared by GASCO, will be in place to give instructions about the identification of the potential occurrence of accidents and emergency situations that may occur during the pipeline operation and how to respond to them to reduce the risks and impacts that may be associated with these emergency situations. Workers will be provided with adequate emergency preparedness and response training and simulations.

The Emergency Preparedness and Response Procedures includes the following aspects:

- Overview of emergency management
- Emergencies classes brief description
- Key personnel responsibilities
- Typical site emergency procedure
- Emergency communication plan

GASCO HSE General Manager coordinates with all GASCO sites to review and update the emergency plan at least once a year, and all GASCO sites are provided with sufficient and suitable tools and capabilities needed for emergency situations. These facilities may be some or all of the following:

- Fire-fighting equipment
- Fire-fighting systems & automatic safety control systems
- Personal protective equipment (PPE)

The emergency response plan includes also a hotline for the local community to report any emergencies. The number is "149" and it is advertised along the signs added to locate the pipeline.

Moreover, in planning the emergency preparedness response, GASCO takes into account the needs of relevant interested parties, e.g. emergency services and neighbors; where arrangements with the neighboring communities are agreed and considered to integrate them in emergency preparedness plan to overcome any possible accidents. Trial emergency experiments also take place periodically according to contingency plan requirements; involving relevant interested parties as appropriate. The full details of the HSE plan during the operation are attached in Annex 5.

7.2.2 **Energy Use**

This environmental aspect is considered a potential positive impact since the proposed project will support Egypt's strategy by supplying the region with natural gas for electricity generation in addition to supplying natural gas to the residential areas. This will eventually lead to economic growth as the project implementation will attract economic investments to the region.

8 Environmental and Social Management Plan (ESMP)

8.1 Objectives of the ESM&MP

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 roles and responsibilities for different stakeholders for implementation and monitoring of mitigations. This section also presents an assessment of the institutional capacity for implementing the ESMMP.

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

8.2 Institutional Framework for Implementation

The project shall be implemented by the Egyptian Natural Gas Company (GASCO), an affiliate of the Egyptian Natural Gas Holding Company (EGAS), which owns a majority share.

The following project management chart (Figure 8-1 – Site Project Management Structure in GASCO), of GASCO indicates that the responsibility of each relevant employee in the project's implementation.

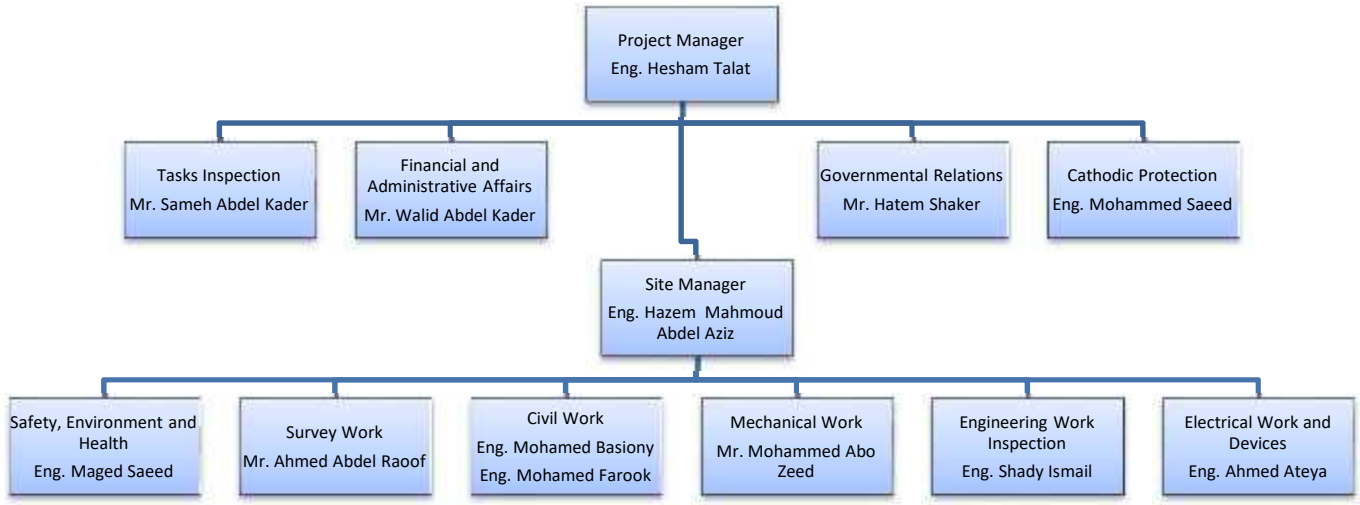

Figure 8-1 – Site Project Management Structure in GASCO

The Environmental Policy of GASCO mentions that the company and its affiliates are committed to:

- Comply with legislation relevant to their nature of activity
- Provide training and awareness for their staff in order to carry out their work safely
- Achieve continual improvement in the fields of safety, health and environment
- Investigate and analyze incidents to prevent its recurrence
- Follow-up companies and contractors compliance and implementation of health, safety and environment rules, regulations and provisions
- Provide necessary information and data on health, safety and environment
- Ensure execution of the policy through setting objectives, targets and an action plan. The policy shall be reviewed whenever needed

Staff members of GASCO carry out audits and, to make sure the EMS is being implemented according to set objectives and targets. As part of the EMS procedures, GASCO presents monthly and quarterly reports about its environmental performance. GASCO reviews these reports, and makes occasional site inspections to compare these reports with field conditions.

8.2.1 Environmental Management Structure of Implementing Agency

GASCO is also certified for ISO: 14001 and OHSAS: 18001, and has direct involvement in the environmental management and monitoring of the natural gas pipeline. One of the standard tasks of the HSE Department of GASCO, which is followed up by EGAS, is establishing Environmental Registers for facilities, and frequent auditing of this register. The Environmental Register is audited by the Environmental Department head of GASCO. The HSE Department performs audits twice annually on the average, in addition to infrequent and emergency inspections. The routine monitoring activities performed include:

- Visual inspection of solid waste and scrap, and disposal methods
- Visual inspection of existence of liquid waste such as leaked condensate hydrocarbons or chemicals used in the heaters
- Checking that handling of hazardous waste is according to the approved procedures, which are described below
- Use gas analyzers to measure SO_2, CO, CH_4 and O_2 in ambient air, and detect possible leaks
- Noise measurements

GASCO HSE personnel have received training on environmental auditing, environmental impact assessments for industrial establishments, and environmental legislation.

The Environmental Department of GASCO has been less involved on design, planning, tendering and construction procedures of natural gas connection projects. Their role has been more effective in the operational phase according to the described procedures above. However, the Safety Department in GASCO usually reviews designs, and assigns full time staff member to supervise the

construction contractor, making sure that adequate safety measures are considered during design and implemented during construction.

The current positions and person-power of the HSE Department of GASCO is shown in Figure 8-2 These positions are divided over three sectors of the HSE Department, namely Environmental Protection, Safety and Fire Fighting, and Technical Consultancy and Inspection. Furthermore, representatives from each sector are present at the Site HSE department, as well as the HSE headquarters. The organizational structure is shown in Figure 8-2.

1	General Manager
3	Executive Manager
6	Assistant Manager
7	Director
9	Department Head
8	Engineer
10	Chemist
13	Specialist
1	Secretary
35	Technical Assistant
93	Total

Figure 8-2- OHSE Department positions and person-power

The ESMP will suggest mitigation and monitoring responsibilities for the contractor and GASCO's HSE Department. The assignment of these responsibilities among the various sectors of the department is the decision of GASCO HSE Management.

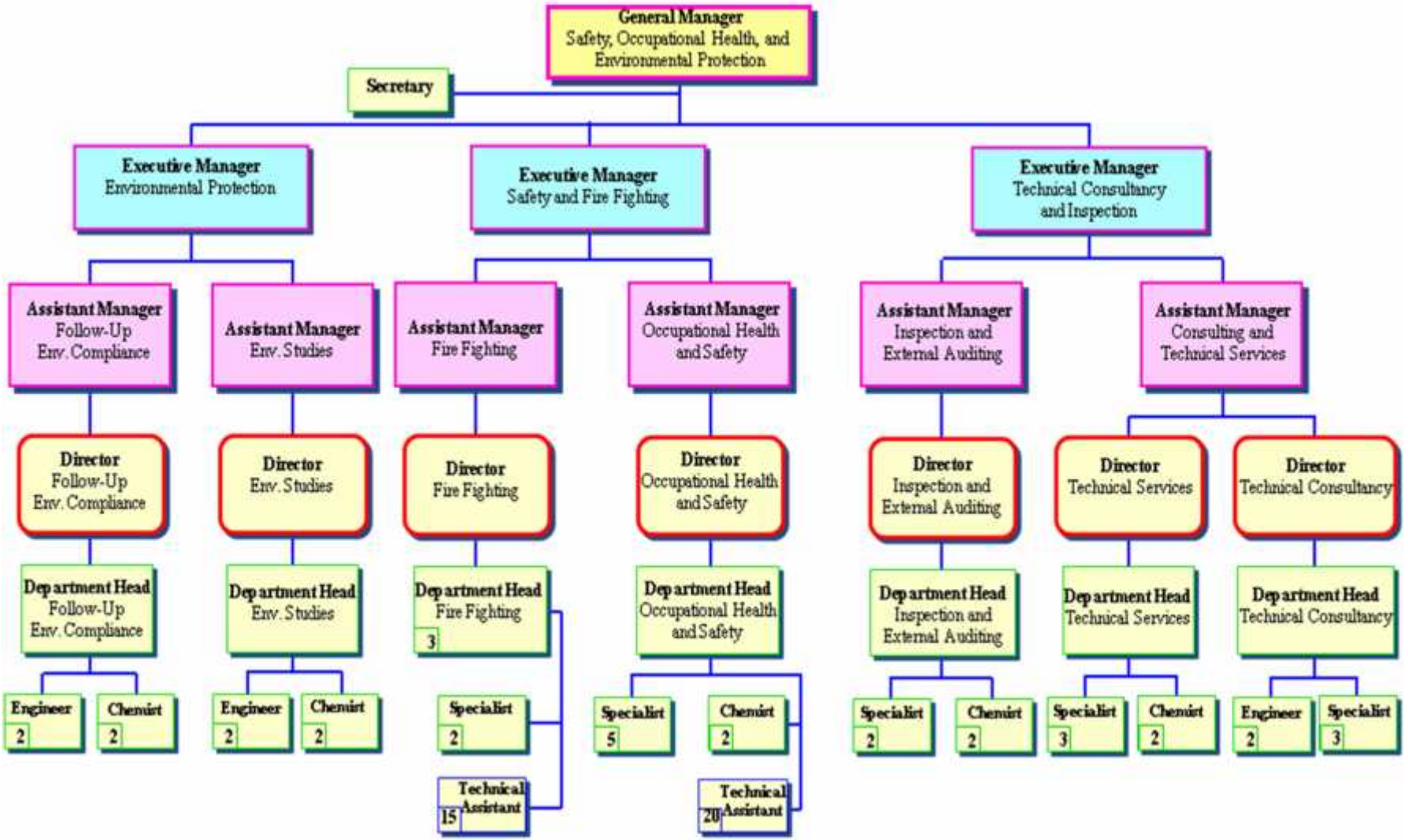

Figure 8-3 - GASCO OHSE organizational chart

8.2.2 **Social Management Structure of Implementing Agency**

The analysis conducted during the preparation of the ESIA and the RAP showed clearly that the main impacts that should be carefully mitigated and addressed is the impact related to temporary and permanent land acquisition and the accompanying process of crops valuation and paying compensation. Currently, this process is done by GASCO through the Compensation Department, which participated in the formation of a Compensation Committee for the project.

The ESIA team noted that although this department is fully aware of the acquisition and compensation issues and is adapting an approach which is very close to the Bank's requirements, certain specific considerations related to OP 4.12 are still not very clear for GASCO staff. The ESIA team suggests appointing a "Social Development Officer" who should be working on full time basis during the project construction to ensure the social management plan is sufficiently addressed. The Social Development Officer might be a GASCO staff with relevant background (e.g. a background in social development or social science). It is required that the "Social Officer" be aware of the World Bank safeguard policy on involuntary resettlement and the associated procedures. Training courses on participatory approaches and the aspects of OP 4.12 might be needed in order to build his/her capacity to efficiently follow up the implementation of the social management plan. The Social Development Officer will be working closely with the Consultant who will be preparing the RAP.

GASCO has appointed Eng. Ahmed Galal, a staff member of the Environmental and Social Department as Social Development Officer during the project implementation. His contacts are added in the grievance mechanism

8.2.2.1 Social Development Officer

The main roles and responsibilities of the Social Development Officer are as follows:

- He/She is the primary person in charge of ensuring that the proposed social management plan is sufficiently considered and applied.
- Develop detailed list of the local stakeholders and the NGOs representatives and maintain communication channels with them and ensure that they are engaged and consulted
- Developing all the required techniques and formats to monitor the implantation of the social management plan
- Report to the WB on the progress related to the ESMP and the safeguard policies including the fair compensation to PAPs

- Assure transparent and timely sharing of information
- Review PAPs grievance and conduct regular feedbacks and meetings as a proactive and early measure to eliminate disputes
- Follow up the progress to respond to the concerns of PAPs
- Work closely with local NGOs and other stakeholders to raise the awareness of local communities on the safety of line and other related issues.

This social management plan involves a monitoring process that will be the main responsibility of the Social Development Officer. The monitoring of the compensation process and the adherence to the safeguard policy OP 4.12 necessitates the development of some forms/templates in order to be able to process the management and monitoring system appropriately. This includes a Registration Form for affected plots, containing specific information to identify the owner and the approximate value of the crops. Also, a grievance form should be used to record any complaints and ensure that action will be taken. Draft model for these forms are provided in Annex B. It should be noted that these forms should be updated by the Social Development Officer based on the actual needs.

The results of the monitoring and management system should be reported quarterly to the Headquarter of GASCO. The monitoring and management will be implemented by the branches of GASCO in each governorate under the supervision of the Social Development Officer.

In addition to appointing the Social Development Officer other local-based mechanisms are also suggested, mainly the establishment Compensation Committee with main objective of working as a safeguard mechanism to ensure that the interests of the poor and most vulnerable are protected and to ensure that the valuation and compensation process is as transparent as possible.

8.2.2.2 Compensation Committee

The main roles and responsibilities of the Compensation Committee are as follows:

- Supervise the inventory survey for the project affected persons (PAPs)
- Valuate the affected assets
- Estimate the amount of compensations to PAPs based on the collected information (Egyptian legislations and the World Bank safeguard policy OP 4.12)
- Prepare and disseminate lists of PAPs
- Obtaining approvals from GASCO on the planned compensation
- Apply proactive mechanism for grievance redress including transparent sharing of information, carrying out consultative activities with the local communities and ensuring involvement of local leaders in resolving disputes.
- Ensure that grievances are addressed

Normally, this Committee (currently is formed under GASCO projects) is composed of a manager, an accountant and a lawyer. The committee will be composed of the following members:

- A representative from the GASCO (namely the Social Development Officer and the staff of the Compensation Department including the lawyer,
- A representative from the contractor
- A representative from the Agriculture Association
-

In cases of acceleration of disputes, a Supreme Compensation Committee with the responsibly of settling disputes could involve the same composition above headed by councilor from the Supreme Court. It should be stressed here that all possible mitigation actions and procedures should be considered in order to prevent the in necessity of involving the Supreme Committee.

8.3 Management and Monitoring Activities during the Construction Phase

8.3.1 Management of Air Quality

8.3.1.1 Management of Dust Emissions

Monitoring dust emissions will take place by monitoring activities that generate dust such as (excavation, preparation of site, vehicles and equipment movement..); ensuring that measures for minimizing dust emissions are applied properly while performing such activities.

8.3.1.2 Management of Gaseous Emissions

Monitoring of air emissions will be done by the periodic inspection of vehicle maintenance schedules, and black smoke produced from any machinery should be observed on-site.

8.3.2 Management of Solid, Construction and Hazardous Waste Generation

8.3.2.1 Solid and Construction Waste Generation

To monitor solid and construction waste management practices, observation of solid and construction waste stockpiles should take place to ensure the frequency of their removal from the site. Site observations will also take place to ensure that solid and construction wastes stockpiles do not contain hazardous components and monitor the frequency of their removal from the site.

8.3.2.2 Hazardous Waste Generation

To monitor hazardous waste management practices, observation of hazardous waste stockpiles should take place to ensure the frequency of their removal from the site.

8.3.3 Management of Land Use

• Recording any spills or leakages incidents and periodically analyzing these data.

• Surveying of structural status of buildings and performing soil investigations shall be undertaken under the supervision of a structural consultancy firm if necessary.

• The pipeline route should be revisited and investigated at the end of the construction phase to ensure that the land has been restored to its original conditions before the project. These observations can be performed as part of the pipeline patrolling and leakage surveying, described in Section7.2.1.

8.3.4 Management of Possible Risk on Damaging the Existing Infrastructure

Such risk can be monitored by documenting and analyzing reasons that led to the existence of such type of accidents and updating procedures to prevent their reoccurrence in the future.

8.3.5 Management of Noise Production

Monitoring of noise impacts can be done by periodic observation of the extent of implementation of the mitigation measures mentioned above in section 7.1.5.

8.3.6 Management of Traffic Congestion

Implementation of all mitigation measures mentioned in section 7.1.6in coordination with Traffic Departments of the appropriate governorate shall be monitored.

8.3.7 Management for Occupational Health and Safety

Management of Occupational health and safety can be monitored by on-site observations and also by assuring that all health and safety measures mentioned in section 7.1.9 are applied adequately on-site during the construction phase. An occupational health and safety plan done by the contractor is available for the construction phase and could be found in annex 11.

8.3.8 Management of Water Use/Wastewater Generation

- Monitoring if any oily appearance or smell is observed on-site. This could indicate whether to classify this water as hazardous waste or not, and determine whether it should be sent to an appropriate treatment plant. Coordination with MWRI is necessary regarding the water generated from the hydrostatic testing.
- Reviewing the hazardous wastes register to track the quantities and types of generated chemicals and oils wastes on-site and assure that the collection and handling of such substances is done by an authorized contractor.

8.3.9 Monitoring Activities Table

The tables below include the proposed mitigation measures for each impact, the implementation direct responsibility and the supervision responsibility, in addition to the proposed monitoring activities and methods, frequency and location of monitoring during the construction phase.

The preliminary cost for the general implementation and supervision for all the proposed mitigation measures was estimated to be approximately 13,000 EGP/month. Additional costs will be stated for some mitigation measures in the following table.

Table 8-1 - Mitigation measures and their responsibility during construction phase

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
Air emissions	• Implementation of regular maintenance schedule for machinery • Ensuring that vehicles and equipment will not be left running unnecessarily to reduce gaseous and exhaust emissions from diesel engines	Contractor	GASCO HSE site supervisor	General Implementation/supervision cost: 13000 EGP/month
Dust Emissions	• Water spraying before excavation, filling, loading and unloading • Spraying of stockpiles, storage in covered areas • Using paved routes to access the site wherever possible.	Contractor	GASCOHSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	• Sheeting of Lorries transporting friable construction materials • Ensuring transportation of construction waste by a licensed contractor • Minimizing drop heights for material transfer activities such as unloading of friable materials			
Risk of damaging existing infrastructure	• Consult maps before excavation work • Use of trial pits • Analysis of accidents logs • If a line break occurs, the nearest police department and the corresponding authority shall be informed to repair	Contractor	GASCOHSE site supervisor	• General Implementation/ supervision cost • Cost of infrastructure damage will vary according to the type of damage. The cost will be charged on the contractor.

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	the damaged line			
Solid, Construction and hazardous waste generation	• Identification and use of approved nearby disposal sites through local authority • On-site segregation of wastes according to their types • Designation and use of appropriate stockpiling locations on site • Covering waste stockpiles to avoid ambient air pollution • Daily hauling of waste to disposal site in covered trucks • Activities involving fueling, lubricating or adding chemicals will not take place on-site (unless it is	Contractor	GASCOHSE site supervisor	• Hazardous Waste Disposal: 3500 EGP/ton + transportation cost • General Implementation/supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	necessary) to avoid soil pollution and generation of additional hazardous wastes • Containers of used chemicals and oil will be collected and disposed in an approved hazardous wastes facility • The hazardous liquid waste will be collected in specific drums and transferred by authorized companies			
Noise	• Minimize the time of exposure of workers to noise • Ensuring the use of ear plugs in the field • Training all the workers before the	Contractor	GASCOHSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	commencement of construction activities about this hazard and how to avoid it • Construction activities will be minimized during night so as not to disturb the surroundings • All machines and vehicles should be shut-off when not used			
Traffic Congestion	• Using signs for drivers before the commencement of any construction activities to inform drivers and ensure the safety of the roads • Planning alternative routes when roads are obstructed • Choosing a location	Contractor	GASCOHSE site supervisor	General Implementation/ supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	for temporary storage of construction materials, equipment, tools, wastes and machinery before construction so as not to cause further traffic disruptions • Avoiding construction work at the traffic peak times whenever possible • Prohibiting uncontrolled off road driving			
Water bodies/Wastewater generation	• Acquire discharge permits from sewage/irrigation authority • liquid waste generated such as chemicals and sewage should be collected in suitable	Contractor	GASCO HSE site supervisor	• General Implementation/ supervision cost • Sampling cost: 6500 EGP/ sample

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	tanks • The water resulting from the hydrostatic test of the pipeline should be tested before being discharged in a water body or be transported directly to the nearest water treatment plant. Prior coordination with the Ministry of Water Resources and Irrigation (MWRI) and the Holding Company for Water and Wastewater is necessary • Sanitary waste water will be collected in temporary storage tanks and sent to a waste water treatment plant via			

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	a certified contractor.			
Hazards and Accidents	• An emergency preparedness response plan, which is already prepared by GASCO, will be in place to give instructions about the identification of the potential occurrence of accidents and emergency situations that may occur during the pipeline construction and how to respond to them to reduce the risks and impacts that may be associated with these emergency situations • Gasco's spill oil	GASCO HSE department	GASCO Headquarters	GASCO management cost (General Implementation/ supervision cost)

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	contingency plan will be applied in case of any accidental spills and release occurrence.			
Land Use	• Restoring the land to its original condition at the end of the construction phase. • Hazardous liquids have to be handled carefully in order to avoid the spilling or leaks to the ground	Contractor	GASCO Headquarters	General Implementation/ supervision cost
Occupational Health and Safety	• Ensure the adequate implementation of occupational health and safety provisions on-site such as providing the personal protective equipment (PPE) to the workers. • The site should be provided by all the protective and safety	Contractor	GASCOHSE site supervisor	• Training Cost: 6000 EGP/training program • General Implementation/supervision cost

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
	requirements stipulated by labor laws and occupational health.			
Temporary land acquisition and crop damage	RAP document prepared Providing fair compensation to the land owners for the loss of crops.	GASCO Compensation Committee GASCO Social Development Officer	GASCO Environmental Department	Estimated amount for crop compensation according to the RAP study
Permanent land acquisition for valve rooms (willing seller – willing buyer approach)	Ensuring Providing fair market value to the land owners for purchasing the land for the valve rooms	GASCO Compensation Committee	GASCO Social Development Officer	GASCO will purchase the land under willing buyer – willing seller scheme
Archaeological, Historic and Cultural Heritage	Chance-find procedure will be applied in case of any artifacts were found	Contractor	GASCO Headquarters	No Cost

Table 8-2 - Environmental Monitoring during Construction

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
Air emissions	Inspection of vehicle and machinery maintenance schedule	Contractor	GASCO Environmental Officer	Quarterly	Documentation office	Review of schedule	13000 EGP/month for General implementation and supervision cost
	Exhaust emissions concentrations from diesel generators	Contractor (via third party)	GASCO Environmental Officer	Once before construction commencement, then quarterly for each vehicle	Vehicle maintenance site	Sampling of exhaust emissions	10000 EGP/ sample
Dust Emissions	Inspection of the construction activities	Contractor	GASCO Environmental Officer	Daily	Construction site	Site observation	General implementation and supervision cost
Risk of damaging existing infrastructure	Frequency and location of damage incidents	Contractor	GASCO Environmental Officer	Monthly	Documentation office	Documentation in the monthly HSE reports and accidents logs	• General Implementation / supervision cost • Cost of infrastructure damage will

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
							vary according to the type of damage. The cost will be charged on the contractor.
Solid, Construction and hazardous waste generation	Use of on-site allocated stockpile locations	Contractor	GASCO Environmental Officer	Weekly	Construction site	Site observation	General implementation/ supervision cost
	On-site segregation of hazardous waste components from construction wastes and other non-hazardous wastes	Contractor	GASCO Environmental Officer	Daily	Construction site	Site observation	General Implementation / supervision cost
	Quantities and types of waste generated	Contractor	GASCO Environmental Officer	Daily	Construction site	Recording of daily transportati	hazardous waste disposal: 3500 EGP/ton

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
						on statistics and records from the waste disposal sites	+transportation cost
Noise	Sound intensity levels and exposure durations	Contractor (via third party)	GASCO Environmental Officer	Quarterly, at least one measurement per contractor/sub-contractor	Construction site	Noise recording, reporting in monthly reports	• General Implementation/ supervision cost • Sampling Cost: 5000 EGP/ sample
	Complaints from neighboring residents	Contractor	GASCO Environmental Officer	Weekly	Construction site	Assessment of the filed complaints	General Implementation / supervision cost
	Use of earmuffs by Construction workers	Contractor	GASCO Environmental Officer	Weekly	Construction site	Site observation	General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
Traffic Congestion	Traffic congestions	Contractor	GASCO Environmental Officer	Weekly	Construction site	Obstructed roads observation	General Implementation / supervision cost
	Complaints from neighboring/ affected residents	Contractor	GASCO Environmental Officer	Weekly	Construction site	Assessment of the filed complaints	General Implementation / supervision cost
	Appropriate implementation of the mitigations measures agreed upon with the contractor	Contractor	GASCO Environmental Officer	Monthly	Construction site	Site observation	General Implementation / supervision cost
	Restoring the dug trench-line to its original condition at the end of the construction	Contractor	GASCO Environmental Officer	At the end of the construction phase	Construction site	Site observation	General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	phase						
Water bodies/Waste water generation	Oily appearance or smell of wastewater streams Samples to test wastewater which will be discharged (pH odour, TSS, COD, BOD, Oil & Grease…etc)	Contractor (via third party)	GASCO Environmental Officer	Continuous during construction and hydrostatic testing	Construction site	Site observation and Chemical Analysis	• 6500 EGP/sample General Implementation / supervision cost
	Wastewater analysis after hydrostatic testing Samples to test wastewater which will be	Contractor (via third party)	GASCO Environmental Officer	Before wastewater discharge	Construction site	Chemical analysis	• 6500 EGP/sample General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	discharged (pH odour, TSS, COD, BOD, Oil & Grease…etc)						
Soil/Land Use	Recording any spills or leakages incidents and periodically analyzing these data.	Contractor	GASCO Environmental Officer	Upon detection of any spillage or leakage incidence	Construction site	Site observation	General Implementation / supervision cost
	Surveying of structural status of buildings and performing soil investigations	Contractor (via third party)	GASCO Environmental Officer	Yearly, if necessary	Structural consultancy firm for the affected site (if any)	Structural consultancy firm	General Implementation / supervision cost
	The pipeline route should be revisited and investigated at	Contractor	GASCO Environmental Officer	After end of construction	Construction site	Site investigation	General Implementation / supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
	the end of the construction phase to ensure that the land has been restored to its original conditions before the project						
Occupational Health and Safety	PPEs, first aid kits, emergency plans, fire-fighting equipment, ….etc.	Contractor	GASCO Environmental Officer	Daily	Construction site	Observation	• General Implementation / supervision cost • Training Cost: 6000 EGP/training program
Temporary land acquisition and	Complaints and grievances from PAPs	GASCO Social Development Officer	GASCO Environmental Officer	Monthly	Project Site	Review list of PAPs, meetings	General implementation/ supervision cost

Impact	Monitoring Indicators	Responsibility for implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost (estimate costs)
crop damage	about fair compensation and procedures	Compensation Committee			Documentation offices	with the PAPs, compensation receipts, grievances, and follow up forms	
Permanent land acquisition for valve rooms (willing seller – willing buyer approach)	Complaints and grievances from PAPs about fair compensation and procedures	GASCO Social Development Officer Compensation Committee	GASCO Environmental Officer	Monthly	Project Site Documentation offices	Review list of PAPs, contracts, grievances, and follow up forms	General implementation /supervision cost

8.4 Management and Monitoring Activities during the Operation Phase

This section describes the monitoring activities that will be undertaken during the operation phase of the project.

8.4.1 Management of Hazards and Accidents

To prevent, as much as reasonably practicable, the hazards that could be expected from the operation of the natural gas pipeline on the surrounding communities and environment, GASCO will implement all the necessary precautions to safeguard the pipelines operation. GASCO will be responsible for monitoring the entire length of the pipeline outside the power stations, and as for the components inside the power station; it will be the responsibility of the electricity authority to monitor these components. In general the monitoring of the pipeline will be done through the following actions.

8.4.1.1 Pipeline Patrolling

Patrolling the pipeline is done by GASCO on regular intervals, according to the pipeline location class as explained in section 7.2.1, to ensure that no activities or actions undertaken in the area can cause damage to the pipeline. The patrolling is done using either a vehicle or walking over the line over a duration ranging from 2 weeks to 6 months according to the defined line class.

The patrol will be responsible to observe and report any findings to the Sector Office on a daily basis, if any pipeline is at risk, the notification should be carried out as soon as possible. In case of risk, the patrol will obtain an authorization letter from GASCO to directly stop the work or action being carried out immediately. A report will be written by the patrol on a daily basis to record the day's proceedings.

8.4.1.2 Leakage Survey

Survey for leakages from the pipeline will be done through several monitoring activities, one being onsite leakage survey duty which has a certain frequency set by a qualified engineer with suitable experience in the field of corrosion control for buried ferrous pipes, according to the ASME B31.8. The survey duty frequency will be determined in advance and reviewed annually, and in case it coincides with the patrolling duties, it can be done simultaneously, but reported in different sheets.

An additional measure will be monitoring the pipeline operation pressure, which will be monitored through the centralized SCADA system operated by GASCO personnel. This monitoring system will indicate any significant pressure drop in the pipeline in case of leakages.

Inspection on the status of the cathodic protection should also be conducted on defined intervals, according to the practical experience of the engineering department, in each area to avoid any failure in the pipeline due to corrosion. An inspection and maintenance report will be prepared by the inspection team to report the observations and actions taken during the work performed.

Additional precautions should be taken for the sections of the pipelines marked as vulnerable, or reported as high risk area. Also, the patrolling and leakage survey teams should receive training about the proper method to carry out their tasks.

8.4.1.3 Emergency Response

In case of emergencies, the proper action will be taken according to GASCO's Emergency Response Procedure. The procedure includes the key personnel responsibilities and communication methods, as well as the emergency classes. Reports will be prepared after the necessary actions are taken to document the cause of the emergency and the remedial actions taken. An emergency response plan done by GASCO is available for the operation phase and could be found in annex 5.

8.4.2 **Monitoring Activities Table**

The tables below include the proposed mitigation measures for each impact, the implementation direct responsibility and the supervision responsibility, in addition to the proposed monitoring activities and methods, frequency and location of monitoring during the operation phase.

Table 8-3 - Mitigation measures and their responsibility during operation phase

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility of Mitigation	Responsibility of direct supervision	Estimated Cost
Hazards and Accidents	• Scheduled patrolling activities, inspection and preventive maintenance activities • Inspection will include any activities that could potentially lead to damage in the pipeline • In case of emergency, the source of the leak will be isolated until the maintenance team performs the required maintenance • Signs will be posted over the pipeline path showing the numbers to be called in case of emergency	HSE department at GASCO (on-site section)	HSE department at GASCO (central unit and administration)	GASCO management cost

Table 8-4 - Environmental Monitoring and Management Plan During Operation Phase

Impact	Monitoring Indicators	Responsibility for Implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost
Hazards and Accidents	Patrolling reports for the pipeline	GASCO inspection Department in the pipeline's area	GASCO inspection Department in the head office	2 weeks, 1 month or 6 months (According to pipeline Class Table 2-3)	Pipeline route	Patrolling schedule	GASCO Management cost
	Regular inspection and maintenance	GASCO maintenance Department in the pipeline's area	GASCO maintenance Department in the head office	Quarterly (According to the inspection and maintenance time plan)	Pipeline route	Inspection and maintenance time plan	GASCO Management cost
	Leakage survey and pipeline pressure parameters (through SCADA system)	GASCO inspection department/ GASCO operation department in the pipeline's area	GASCO inspection department/ GASCO operation department in the head office	2 weeks, 1 month or 6 months (According to the leakage survey schedule)/ continuous	Pipeline route and documentation office	Leakage Survey Schedule/ operational log	GASCO Management cost

Impact	Monitoring Indicators	Responsibility for Implementation	Supervision	Frequency/ Duration	Location	Methods	Estimated Cost
				monitoring			

9 Stakeholder Engagement and Public Consultation

The public consultation chapter aims to highlight the key consultation and community engagement activities and their outcomes, in addition to outlining the key aspects to be addressed when holding the consultation activities.

Throughout the various consultation and engagement activities, the work teams experienced and recorded the different reactions of the community and the governmental stakeholders towards the proposed project. The main concern was that the construction of the pipelines does not meet the expectations of the local community to be connected to the natural gas service. Temporary land acquisition is expected as well as impacts on the market value of the land.

Consultation activities (scoping, interviews, focus group discussions, public hearings/consultations) with various stakeholders and community people in the host communities were held for the proposed NG pipeline connections project in compliance with:

- WB policies related to disclosure and public consultation, namely,
  - World Bank Procedure (BP 17.50)
  - World Bank Operational Policy (OP 4.01)
- Egyptian regulations related to the public consultation
  - Law 4/1994 modified by Law 9/2009/2009 modified with ministerial decrees no. 1095/2011 and no. 710/2012

Objectives of various consultation activities are summarized as follows:

1- Define potential project stakeholders and suggest their possible project roles
2- Disseminate comprehensive information about the project to enable stakeholders to identify their concerns, needs, and recommendations.
3- Document stakeholder feedback and enhance the ESIA accordingly
4- Identify the most effective outreach channels that support continuous dialogue with the community
5- Discuss potential resettlement plans and impacts of involuntary resettlement

9.1 **Defining relevant stakeholders**

The following table represents the stakeholders contacted and engaged during the consultation events:

Table 9-1 - Main stakeholders identified for the project

Stakeholder	Role/ concern
Local Governmental entities	
Governorates	The main role of the governorates is the provision of support to the project through mobilizing people to gain information about the project. Media is known to shed light on activities of the governorate entities
Local Governmental units (District authorities and village authorities)	- Permissions for the lands needed for valve rooms should be prepared by the governorate and approved by the LGU. - Rehabilitation of roads, which is one of the major issues raised by the community, will be performed by the LGU.
Agricultural cooperatives	- Provide the data about the PAPs. - Provide the data about the prices of the crops
Other governmental entities	
Information Centers on the governorate level	Provide NG companies with underground utilities and infrastructure maps.
Governmental Authorities	Various authorities in the governorate will support the project through permissions for excavation works, maintenance, health related issues, etc.
Media	
Television and radio representatives	Inform the community about the project and its impacts and support dissemination of ESIA studies
Press people	
Websites editors	
NGOs working on environmental and social related aspects	
NGOs on the central level	Play an active role in any awareness-raising related to the project May provide support during the valuation and compensation process
NGOs on district level	
Specific union of NGOs	
Other	
Traders	Provide workers with food and amenities.
Contractors	From the project adjacent areas, may be affected.
Community people	
Community leaders	Main cornerstone in mobilizing the communities.
Potential beneficiaries	Potentially benefit from the project
Potential Project Affected Persons (PAPs)	Farmers whose lands may be traversed by project components.
Natural Gas companies	
GASCO	Implementing agency overseeing activities of the Environmental and Social Management Plan

The abovementioned stakeholders were consulted using various tools i.e. Individual interviews, group meetings and public consultation. Most of them have attended the public consultation hearings conducted during March – April 2016. However, some of them were interviewed in their premises in order to enable them to spell out their concerns and worries freely.

9.2 Consultation Methodology and Activities

GASCO has conducted a preliminary public consultation session, as part of the process of updating the existing ESIA of Giza North gas pipelines and in line with the national legislative requirements and The World Bank requirements. This session was held prior to the preparing of the draft ESIA and RAP of the current study. The session was held in Cairo on 12th January 2016 (announcement was published on GASCO website: www.gasco.com.eg).

The following topics were presented and raised during the consultation session were:

- Introduction about GASCO
- The proposed new project and proposed routes
- Project activities
- Scope of the updated ESIA
- Anticipated environmental and social impacts, mitigation measures and monitoring plans
- Resettlement Policy Framework
- Terms of Reference of independent consultant to prepare site/route specific ESIA
- Terms of Reference of independent consultant to prepare site/route specific Resettlement Action Plan (RAP);
- Terms of Reference of independent consultant to prepare due-diligence for

Figure 9-1 - EGAS Assistant Vice President introducing the public consultation session

associated facilities

- Terms of Reference to prepare Quantitative Risk Assessment

Figure 9-2 - Presenting the routes of the gas pipelines

Later consultation activities held during the current study were conducted on two rounds during the preparation of the site/route specific ESIA and RAP. The consultation process during preparation of the ESIA and RAP was a dynamic and evolving process which adapted with the nature and expectations of the host community. Engaging with the local leadership and the parties involved with agriculture activities such as agricultural cooperatives in order to reach out to various groups of the PAPs.

Throughout the various consultation and engagement activities, the work team came across various prejudices and misconception related to the project. Such perception originated from the unfavorable experience the community had with various previous development projects and other NG pipelines. Additionally, managing community expectations and avoiding over-promising is also a key aspect of efficient stakeholder communication and helps to avoid.

9.3 Scoping consultation event

The scoping session was held in Beni Suef governorate (Beni Suef University Conference hall) on the 21 of March, 2016.

- Three consultants from EcoConServ (environmental and social)
- Four representatives of GASCO
- Governorate representatives
- EEAA Regional Office representatives

The list of invitees included EEAA regional branches, environmental offices of the governorates, NGOs, governmental media centers, and various government employees. In cooperation with the Consultant, invitees were informed of the date and location of the Public Consultation at least two weeks ahead. Participants were invited through:

1- Invitations sent by GASCO via mails, Faxes and e-mails.
2- Telephone communication by GASCO and the Consultant.
3- An advertisement was published in Gomhoryia Newspaper.
4- Invitations sent by the consultant to governorate stakeholders

Figure 9-3 - Newspaper ad for the scoping session

9.3.1.1 Participants profile

The event was conducted on the 21 of March 2016. 90 persons attended the consultation event. They are segregated into 82.2% males and 17.7% females.

Table 9-2 - Distribution of participants by profession

Distribution of participants according to Profession	Numbers	Percentage
Administrative officials governorate level	4	4.4
Administrative officials target village councils	6	6.6
Gas Companies	10	11.1
NGO's	19	21.1

Community members	51	56.6
Total	**90**	**100**

9.3.1.2 Summary of the discussions

Eng. Mostafa Fahim – Vice Chairman for Networks – GASCO, welcomed the participants and pointed to the importance of scoping sessions in order to discuss potential impacts of the project. GASCO is one of the leading firms of the Petroleum Sector and the Ministry of Petroleum. This project is part of the response of the government to meet the growing needs of the energy sector as well as switch to a clean source of energy.

Eng. Farag Mohamed Farag – EEAA Northern Upper Egypt Regional Office Representative, pointed to the importance of the ESIA studies in order to determine the acceptance of the different stakeholders to the project. Community participation is important to national projects in collaboration with the civil society. Scoping sessions also aim to identify the different positive and negative impacts of the project especially at the local areas where the line will pass.

Brigadier Tarek Kamel – Head of Environmental Department – BeniSuef Governorate has welcomed the participants and indicated that the main aim of the scoping session is to discuss the point of view of the civil society towards such a national project. The governorate is willing to support all developmental projects that would revive the local economy. Projects need to take into consideration the environmental aspects.

Eng. Ibrahim Mahmoud – Head of health and Safety department – GASCO, has then described the route of the pipeline and the areas it is supposed to pass through. He also explained the aim of the current projects which are providing energy source to Beni Suef power station and the new capital power station. This will also support the expansion of the natural gas grid in Upper Egypt. The new Power stations known as "Siemens stations" represent a new addition to the national power generation grid.

Figure 9-4 - The panel of Speakers

Figure 9-5 - Presentation of the route of the lines

Figure 9-6 - Environmental Expert

Figure 9-7 - Participants of the session

Figure 9-8 - Female participants

Figure 9-9 - Panel of Speakers

Table 9-3 - Key comments and concerns raised during the scoping session

Issue	Questions and comments	Responses
Alternatives of Pipeline Route *Discussed in chapter 6, analysis of alternatives*	Why does the pipeline cross from Dahshour to the West of the Nile although the power plant is available east of the Nile? Will the pipeline feed the industrial area?	This pipeline aims mainly to support power generation stations. The remaining capacity will be used to supply natural gas to Upper Egypt. The line has to reach the pressure room to be released again to the Upper Egypt area.
	The pipeline will pass through a populated area at Beni Adi, will the community be connected to the natural gas service?	There is a national plan to expand the natural gas household connections. But to be honest this depends on many other factors including width of the streets and the population density and infrastructure. This is the mandate of another company but in total the national target is to extend natural gas to 6 million households.
	In the map presented there are large desert areas, why did you choose this route which passes in cultivated areas? How will the compensations be handled? Will it be related to the agriculture season? If the road authority refuses the route is it possible to change it?	We have already designed the route to pass along the desert areas between Fayoum and Beni Seuf. But we have finally to cross the cultivated areas to cross the Nile. We cross agricultural areas only as it is the sole option. Farmers will be fully compensated for their crops.
Environmental Impacts *Addressed in the ESMP, Chapter*	With regards to the air emissions and the noise what kinds of impacts are expected? How will the company deal with these adverse impacts?	The ESMP will be explained in detail in the coming session where the consultant will be presenting the findings of the study.
	What will happen to the solid waste during excavation? How will it be disposed of? Will it be sent to a special landfill?	It will be handled according to the Egyptian laws and regulations in this issue. This also will be presented as part of the ESMP in the next session.

Issue	Questions and comments	Responses
	Are the pipelines covered in steel or you just put it in the trench directly?	The pipeline is covered with a special plastic layer that protects it against water and other factors. It is then covered with soil?

9.4 Second Public consultation event

The second public consultation session was held in BeniSuef governorate (BeniSuef University Conference hall) on the 17 of April, 2016. The session was moderated by the following:

- Two consultants from EcoConServ (environmental and social experts)
- GASCO representative
- Two representatives of EEAA (HQ)
- Governorate representative (Department of Environment)

Figure 9-10 - Public Consultation Advertisement published in El Gomhoria newspaper

The list of invitees included EEAA regional branches, environmental offices of the governorates, NGOs, and various government employees, in cooperation with the Consultant. Invitees were informed of the date and location of the Public Consultation at least two weeks ahead. Participants were invited through:

1- Invitations sent by GASCO via mails, Faxes and e-mails.
2- Telephone communication by GASCO and the Consultant.
3- An advertisement was published in Gomhoryia Newspaper.

9.4.1.1 Participants profiles

The event was conducted on the 17 of April 2016. 56 persons attended the consultation event. They are segregated into 89.2% males and 10.7% females.

Table 9-4 - Distribution of participants by profession

Distribution of participants according to Profession	Numbers	Percentage
Administrative officials governorate level	6	10.7

Administrative officials target village councils	4	7.1
Gas Companies	10	17.8
NGO's	4	7.1
Community members	32	57.1
Total	**56**	**100**

Figure 9-11 - Participants of the session

Figure 9-12 - Consultant's presentation

Figure 9-13 - Comments from the participants

Figure 9-14 - GASCO presentation of the project

9.4.1.2 Summary of discussions

Brigadier Tarek Kamel – Head of Environmental Department – BeniSuef Governorate has welcomed the participants and indicated that the main aim of the public consultation session is to discuss the main findings of the ESIA study with the civil society representatives. The governorate is a strong supportive implementation body for GASCO at all stages of the project.

Eng. Ibrahim Mahmoud – Head of health and Safety department – GASCO, has welcomed the participants in the second public consultation and noted the importance of the session to present the findings of the ESIA study. He gave a brief overview of the project then described the route of the pipeline. He highlighted the importance of the current projects which are providing energy source to Beni Suef power station and the new capital power station. This will also support the expansion of the natural gas grid in Upper Egypt. We welcome any comments that would enrich the ESIA study and add to its results and findings.

Questions and comments:

Issue	Questions and comments	Responses
Environmental Impacts *Discussed in chapter 5, assessment of environmental impacts*	We request the compliance with law number 48/1982 for the protection of the River Nile from pollution.	We have previously conducted excavation under the Nile. We use the latest equipment to avoid any negative impacts during excavation. We request from the Ministry of Irrigation the most updated plans for expansion of the Nile. And we pass the Nile at depth lower than these plans. Thus no impact at all on the Nile either the river itself or the marine environment in the Nile.
	What are the methods for monitoring and protection against emissions during excavation?	We use the watering methods to avoid negative impacts from dust.
	This project represents a start towards the sustainable development approaches to reduce emissions and the effects resulting from the climate change.	Noted. The government aims to use another sustainable source of energy.
	What are the measures related to bypass dust? Bypass landfill east of korymat road. How to protect workers during excavation from bypass dust?	This impact has been taken into consideration in the detailed ESIA study. Geotechnical study includes an analysis of the soil to determine what kind of protection is needed for the pipeline.
Route alternatives *Addressed in chapter 6, analysis of alternatives*	Did the design take into consideration the plans for the Nile River since the line will cross under the river?	Yes the latest plans of the Nile as indicated by Ministry of Irrigation.

Issue	Questions and comments	Responses
Compensation and land acquisition *Addressed in the RAP study*	How are compensations of the crops calculated? How do we collect the compensation value?	We pay the amounts of the crops we spoil according to the prices of the agricultural directorate. We also can wait until you harvest your crops if this is possible. Otherwise if we are tight with the time schedule, we then will pay full compensation of the crops.
	What is the size of the area considered for the right of the way (RoW)?	The construction will be 30 meters from the main road according to the approval of the roads authority. We have to follow the requirements of the roads authority
	We request that excavation is further from the RoW of the road in order not to lose large amounts of our land.	First we have to respect the requirements of the roads authority (20ms). Then the site engineer can discuss that before the implementation and if it is technically possible they will do it. No problem.
	Is the compensation value of the crops fair? How do we make sure the land will return back to its original status after the excavation?	It is based on the prices of the local agriculture directorate and we also consulted with farmers in order to ensure the prices are fair. Yes the land will return to its original status. No problems.
	I own a car service station at the Beni Suef – Wasta road, and I have all official documents. Will there be land acquisition for my shop.	We will coordinate with you on site and probably we will be passing behind your shop. Otherwise we leave an entrance for your shop during excavation to avoid impacts on livelihood. After construction there will be no impacts on your activities. The line will be deep from any impacts that may be caused by the cars activity on top of it.

Issue	Questions and comments	Responses
	What papers do I need to prove my rights in the compensation?	During the implementation there will be GASCO camp on site. You need to contact them with your official papers. They will conduct a site visit and an agreement will be signed with you on the details of the route passing through your land.
	Please take into consideration the impacts of the excavation on cultivated areas? We need to protect the agricultural land that is already diminishing significantly.	After completion of the construction there will be restriction on building on the land. This is in a pay preserving the agricultural land.
	Is it possible for GASCO to buy the land? Since after construction of the pipeline we will not be able to build on the land.	We only pay compensation for the crops. We do not need to fully buy the land of the route.
	If we do not have official papers for tenure of the land, but we have been cultivating it for years, are we eligible for compensations?	Yes any proof of informal rights of the land will make you eligible for compensation.
Safety measures *Annex 6 – emergency response plan*	What are the safety measures for the lines especially that the lines will pass in cultivated areas? At what depth will the lines be laid?	We take all necessary measures to protect our line. It is coated to be protected against water and other elements. It is not put in other cover. We protect it and it is durable enough.
	Please take all possible safety measures to ensure the safety of the lines and conduct more analysis of the soil. The line may be passing at stormwater path.	Stormwater requirements are part of the Ministry of Irrigation. We are not allowed to install the pipeline axial on the storamwater drain route. We can construct the pipeline parallel to the stormwater drain. We also protect the pipeline in this area using different measures to ensure no damage occurs from corrosion factors.

Issue	Questions and comments	Responses
	What are the safety measures for households in cases of emergency (an explosion or fire) for example? Will there be concrete lining for the pipeline at industrial areas?	We ensure all safety measures and we have the existing
Community participation and CSR initiatives	What are the CSR initiatives that GASCO is willing to share with the local community?	We have an annual fund for this issue. We provide community service projects. We have an internal committee to select these initiatives.
	Is this project only to provide natural gas to power stations or will it also provide natural gas to households?	This project aims mainly to provide natural gas to power station. We have here our colleagues from Taqa Wadi el Nile to present the plan for household connections. The new gas pipeline and station have a large capacity to accommodate the expansion in use of the households. But it needs certain technical procedures to connect villages. The width of the streets and the number of households. Some villages are not possible to be connected. But also expanding the natural gas network will mean that butagas cylinders will be available in the markets for other users who are not connected to the natural gas network
	What job opportunities are offered to the local community?	There are unskilled workers jobs. We also need technical jobs after operation. These are usually very limited opportunities. We prefer of course if it is someone from the local community. But in general the jobs will be in the new power station, operation of the pipeline does not need new jobs.

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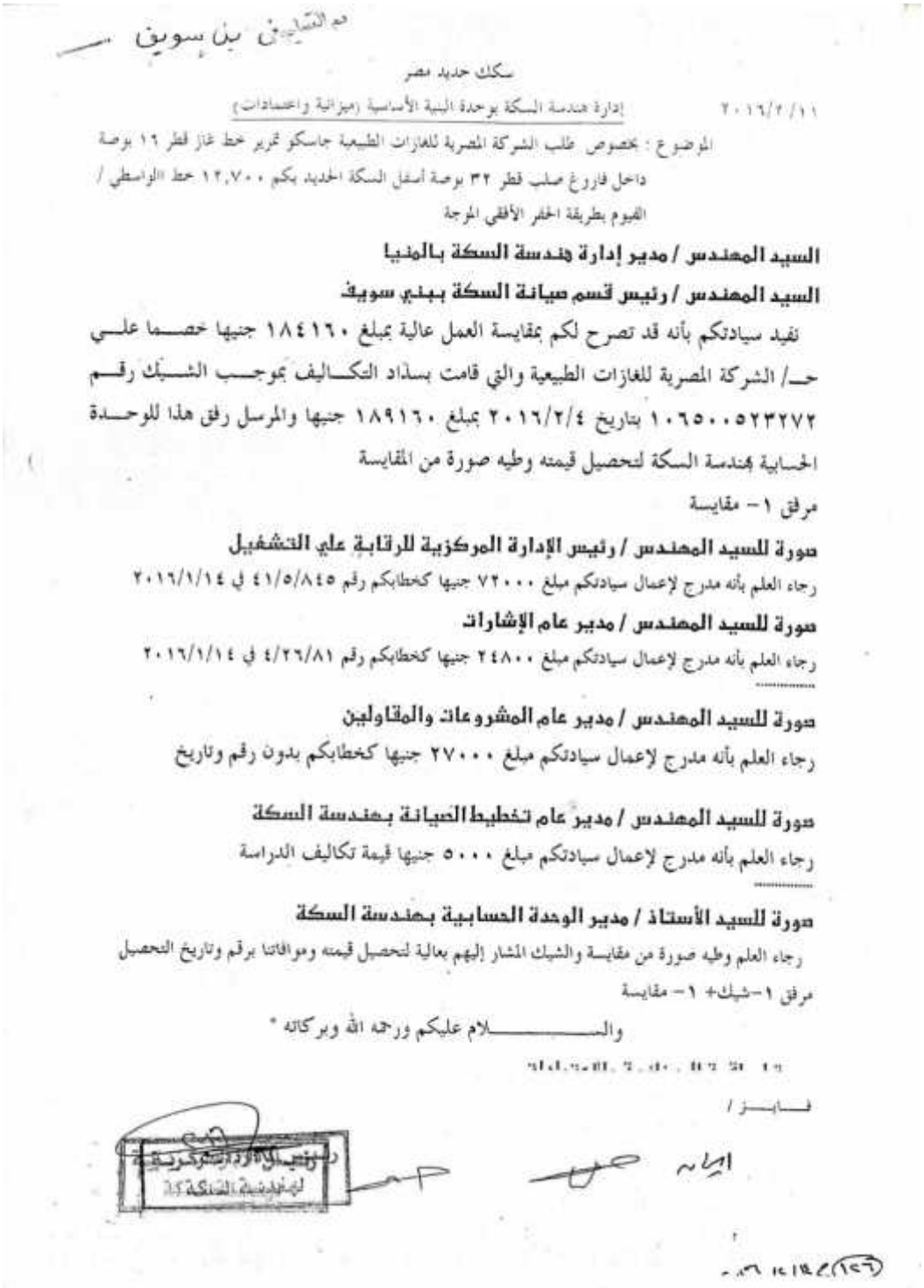
Annexes

Annex 1: Pipeline Route Map

Annex 2: Governmental Approvals

El Minia Rail Way authority crossing approval



سكك حديد مصر

إدارة هندسة السكة بوحدة البنية الأساسية (ميزانية واعتمادات) ٢٠١٦/٢/١١

الموضوع : بخصوص طلب الشركة المصرية للغازات الطبيعية جاسكو تمرير خط غاز قطر ١٦ بوصة داخل فارغ صلب قطر ٣٢ بوصة أسفل السكة الحديد بكم ١٢,٧٠٠ خط الواسطي / الفيوم بطريقة الحفر الأفقي الموجة

السيد المهندس / مدير إدارة هندسة السكة بالمنيا

السيد المهندس / رئيس قسم صيانة السكة ببني سويف

نفيد سيادتكم بأنه قد تصرح لكم بمقايسة العمل عالية بمبلغ ١٨٤١٦٠ جنيها خصما على حـ/ الشركة المصرية للغازات الطبيعية والتي قامت بسداد التكاليف بموجب الشيك رقم ١٠٦٥٠٠٥٢٣٢٧٢ بتاريخ ٢٠١٦/٢/٤ بمبلغ ١٨٩١٦٠ جنيها والمرسل رفق هذا للوحدة الحسابية بهندسة السكة لتحصيل قيمته وطيه صورة من المقايسة

مرفق ١ – مقايسة

صورة للسيد المهندس / رئيس الإدارة المركزية للرقابة علي التشغيل

رجاء العلم بأنه مدرج لإعمال سيادتكم مبلغ ٧٢٠٠٠ جنيها كخطابكم رقم ٤١/٥/٨٤٥ في ٢٠١٦/١/١٤

صورة للسيد المهندس / مدير عام الإشارات

رجاء العلم بأنه مدرج لإعمال سيادتكم مبلغ ٢٤٨٠٠ جنيها كخطابكم رقم ٤/٢٦/٨١ في ٢٠١٦/١/١٤

صورة للسيد المهندس / مدير عام المشروعات والمقاولين

رجاء العلم بأنه مدرج لإعمال سيادتكم مبلغ ٢٧٠٠٠ جنيها كخطابكم بدون رقم وتاريخ

صورة للسيد المهندس / مدير عام تخطيط الصيانة بهندسة السكة

رجاء العلم بأنه مدرج لإعمال سيادتكم مبلغ ٥٠٠٠ جنيها قيمة تكاليف الدراسة

صورة للسيد الأستاذ / مدير الوحدة الحسابية بهندسة السكة

رجاء العلم وطيه صورة من مقايسة والشيك المشار إليهم بعالية لتحصيل قيمته وموافاتنا برقم وتاريخ التحصيل

مرفق ١–شيك+ ١– مقايسة

والسلام عليكم ورحمة الله وبركاته "

فـــابـــز /

Public administration for Elfayoom Sewage approval for the project

وزارة الموارد المائية والري
الهيئة المصرية العامة لمشروعات الصرف
الادارة العامة لصرف شرق الفيوم

السيدة المهندسة / مدير عام الشئون الانتاجية والاقتصادية

تحية طيبة وبعد

بالاحاله الى كتاب السيد اللواء مدير عام العلاقات الحكومية بالشركة المصرية للغازات الطبيعية جاسكو رقم ٥١٦ بتاريخ ١٢/١ /٢٠١٥ بخصوص مسار خط الغاز الطبيعي دهشور / بني سويف قطر ٣٦" بطول ١٣٠ كم نتشرف بالإحاطة أن مسار هذا الخط لايتقاطع مع أي من مصارف ادارة صرف شرق الفيوم حسبما هو موضح بالخرائط المرسلة للأدارة

والأدارة العامة لصرف شرق الفيوم ليس لديها مانع من إنشاء هذا الخط بالمسار الموضح على الخرائط برجاء التفضل بالإحاطة والتنبيه باللازم

وتفضلوا سيادتكم بقبول وافر الاحترام

مدير عام
الادارة العامة لصرف شرق الفيوم
مهندس /
مدحت عبد الرحمن شحاتة

FROM : FAX NO. : 16 Dec. 2015 12:35 P 6

The Egyptian company for electricity transmission approval for the project with some precautions

Egypt ion Electricity Transmission Co.
Middle Egypt Electricity Zone
The general management of transmission

الشركة المصريه لنقل الكهرباء
منطقة كهرباء مصر الوسطى
الاداره العامه للخطوط

السيد اللواء/ احمد مصطفى ،،،
مدير عام العلاقات الحكوميه
تحية طيبة وبعد ...

بالإشارة إلي كتاب سيادتكم بالمعاينة والتنسيق لتنفيذ مشروع خطي غاز طبيعي ومعاينة مسار خطي الغاز دهشور /بني سويف & دهشور/ العاصمة الإدارية
نحيط سيادتكم انه من خلال حضور الاجتماعات في ٢٠١٥/١١/٢٩ & (٨& ٢٠١٥/١٢/٩) وبالمرور علي مسار المشروع تبين الأتي :

- خطي الغاز متوازيين مع خط الكريمات/ ٦ أكتوبر جهد ٢٢٠ ك ف ويبعد عن خط الكهرباء مسافة ١٠٠٠ متر تقريبا.
- يتقاطع خط غاز العاصمة الإدارية دهشور مع خطي كهرباء الكريمات / شرق القاهره جهد ٢٢٠ كف & الكريمات/ البساتين جهد ٢٢٠ ك ف في النقاط الاتيه .

الكريمات/البساتين جهد ٢٢٠ كف	الكريمات /شرق القاهرة جهد ٢٢٠ كف
بين البرجين(p١٥٧ -p١٥٨)	بين البرجين p١٥٨ -p١٥٩)
بين البرجين(p١٧٤ -p١٧٥)	بين البرجين(p١٧٥ -p١٧٦)
بين البرجين(p١٩٩ -p٢٠٠)	بين البرجين (p٢٠٣ -p٢٠٤)

ونفيد سيادتكم بالموافقة علي تنفيذ خطي الغاز الطبيعي مع مراعاة الآتي :

١ - البعد الأفقي بين قاعدة البرج وحافة الحفر لا يقل عن ٣٠ بمتر في كل حالات التوازي والتقاطع
٢ - إعادة وضع مدقات الصيانة إلي ما كان عليه قبل بدء المشروع
٣ - في حالة استخدام معدات تركيب (أوناش وخلافه)يجب أن يكون الخلوص الرأسي بين الموصلات واعلي نقطه في معدات التركيب لا يقل عن ٥ متر في اقرب نقطه
٤ - عند العمل في مناطق التقاطعات لخطي الكريمات/ البساتين & الكريمات /شرق القاهرة رجاء التنسيق مع الشركة قبل بدء العمل لحضور مندوبنا
٥ - المسافة بين سطح ماسورة الغاز وسطح الارض لاتقل عن ٢ متر في اماكن التقاطعات القريبه من البرج
٦ - وضع علامات تحذيريه على مسار خط الغاز حتى يتم تفاديه اثناء العمل على خطوط الضغط العالى وكذلك اثناء صلب الابراج فى حاله تدعيم القواعد
٧ - عمل الحمايه الكاثوديه فى اماكن التقاطعات بمعرفة الجهه الطالبه بما يؤمن خط الغاز من اخطار الجهد الفائق فى حاله سقوط الموصلات الحامله للجهد
٨ - تتحمل الجهه الطالبه كافه التكاليف المتمثله فى فقد الطاقة وقيمه ماتم اتلافه وقيمه المهمات والاجور وقيمه اعادة الشئ لاصله وذلك فى حاله تسبب الجهة الطالبه فى فصل اى خط كهربى اثناء تنفيذ الاعمال او الصيانات الدوريه على خط الغاز ا وفى حاله كسر اى من خطوط الغاز بعد التشغيل وتسريب الوقود السائل واندفاعة بقوة فى اتجاة الموصلات وخاصه فى اماكن التقاطعات

وتفضلوا بقبول فائق الشكر والتقدير

مدير عام خطوط الجيزة

مهندس/ محمد حسين محمود

El Fayoom Governorate approval for the project

٩٧٤
١١/٣٠

محافظة الفيوم

المحافظ

السيد المهندس/ كـــارم محمـــود

رئيس مجلس الادارة – العضو المنتدب للشركة المصرية للغازات الطبيعية جاسكو

تحية طيبة وبعد ..

بالاشاره الي كتاب سيادتكم رقم (٣٨٣٥) الوارد لنا في ٢٠١٥/١١/٢٤ م بخصوص التنسيق مع الجهات المعنية بالمحافظة لتنفيذ مشروع خط غاز طبيعي دهشور/ بني سويف ٣٦ بطول ١٣٠كم وإقامة عدد (١) غرفة بلوف بنطاق محافظة الفيوم وطلبكم موافقة المحافظة على مرور هذا الخط داخل الحدود الادارية بها.

نتشرف بالاحاطة بأن المحافظة توافق على مرور الخط بالحدود الادارية بها كونه من المشروعات القومية ذات النفع العام علماً بأن هذه الموافقة تعبر عن وجهة نظر المحافظة دون أدنى مسئولية على المحافظة في حالة ظهور أية حقوق للغير وعلى الشركة القيام بالتنسيق مع الجهات المعنية للحصول على موافقاتها.

مع خالص شكري وتقديري وتمنياتي بدوام التوفيق

وتفضلوا سيادتكم بقبول وافر الاحترام

الفيوم فى ٢٠١٥/١١/٣٠

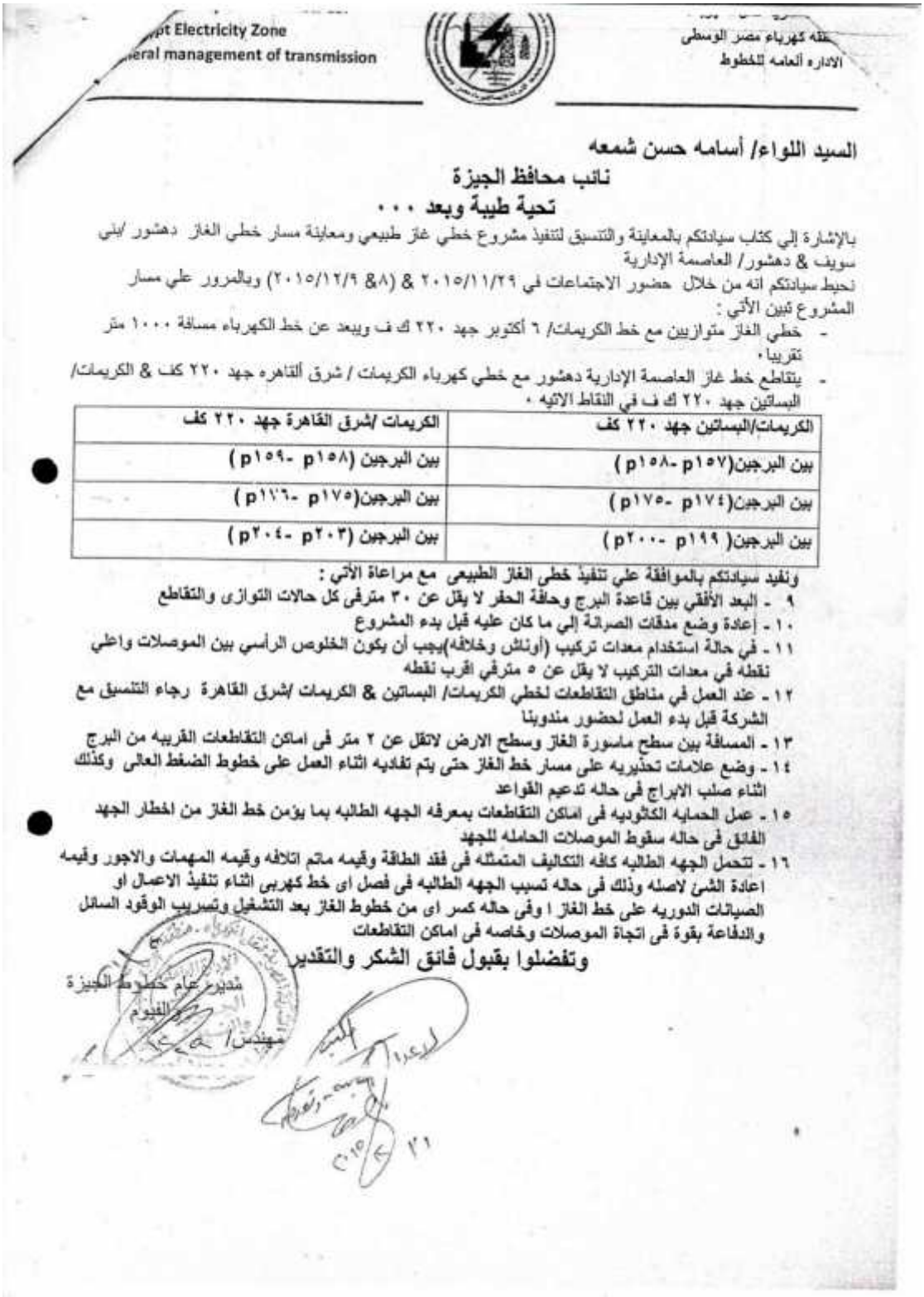
محافظ الفيوم

المستشار / وائل محمد نبيه مكرم

٢٠١٥/١٢/٢٤٩٢

الفيوم – جمهورية مصر العربية رقم بريدى : ٦٣٥١٧ ت ٦٣٣٦٥٧٧ – ٦٣٣٦٨٧٢ (٠٨٤) فاكس ٦٣٣٧٨١٠ (٠٨٤)

The Egyptian company for electricity transmission approval for the project with some precautions



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eral management of transmission

شركة كهرباء مصر الوسطى
الاداره العامه للخطوط

السيد اللواء/ أسامه حسن شمعه
نائب محافظ الجيزة
تحية طيبة وبعد ...

بالإشارة إلي كتاب سيادتكم بالمعاينة والتنسيق لتنفيذ مشروع خطي غاز طبيعي ومعاينة مسار خطي الغاز دهشور /بني سويف & دهشور/ العاصمة الإدارية
نحيط سيادتكم انه من خلال حضور الاجتماعات في ٢٠١٥/١١/٢٩ & (٨& ٢٠١٥/١٢/٩) وبالمرور علي مسار المشروع تبين الأتي :

- خطي الغاز متوازيين مع خط الكريمات/ ٦ أكتوبر جهد ٢٢٠ ك ف ويبعد عن خط الكهرباء مسافة ١٠٠٠ متر تقريبا.
- يتقاطع خط غاز العاصمة الإدارية دهشور مع خطي كهرباء الكريمات / شرق القاهره جهد ٢٢٠ كف & الكريمات/ البساتين جهد ٢٢٠ ك ف في النقاط الاتيه .

الكريمات/البساتين جهد ٢٢٠ كف	الكريمات /شرق القاهرة جهد ٢٢٠ كف
بين البرجين(p١٥٧ -p١٥٨)	بين البرجين (p١٥٨ -p١٥٩)
بين البرجين(p١٧٤ -p١٧٥)	بين البرجين(p١٧٥ -p١٧٦)
بين البرجين(p١٩٩ -p٢٠٠)	بين البرجين (p٢٠٣ -p٢٠٤)

ونفيد سيادتكم بالموافقة علي تنفيذ خطي الغاز الطبيعي مع مراعاة الأتي :

٩ - البعد الأفقي بين قاعدة البرج وحافة الحفر لا يقل عن ٣٠ مترفي كل حالات التوازي والتقاطع
١٠ - إعادة وضع مدقات الصرانة إلي ما كان عليه قبل بدء المشروع
١١ - في حالة استخدام معدات تركيب (أوناش وخلافه)يجب أن يكون الخلوص الرأسي بين الموصلات واعلي نقطه في معدات التركيب لا يقل عن ٥ مترفي اقرب نقطه
١٢ - عند العمل في مناطق التقاطعات لخطي الكريمات/ البساتين & الكريمات /شرق القاهرة رجاء التنسيق مع الشركة قبل بدء العمل لحضور مندوبنا
١٣ - المسافة بين سطح ماسورة الغاز وسطح الارض لاتقل عن ٢ متر فى اماكن التقاطعات القريبه من البرج
١٤ - وضع علامات تحذيريه على مسار خط الغاز حتى يتم تفاديه اثناء العمل على خطوط الضغط العالى وكذلك اثناء صلب الابراج فى حاله تدعيم القواعد
١٥ - عمل الحمايه الكاثوديه فى اماكن التقاطعات بمعرفه الجهه الطالبه بما يؤمن خط الغاز من اخطار الجهد الفائق فى حاله سقوط الموصلات الحامله للجهد
١٦ - تتحمل الجهه الطالبه كافه التكاليف المتمثله فى فقد الطاقة وقيمه مانم اتلافه وقيمه المهمات والاجور وقيمه اعادة الشئ لاصله وذلك فى حاله تسبب الجهه الطالبه فى فصل اى خط كهربى اثناء تنفيذ الاعمال او الصيانات الدوريه على خط الغاز ا وفى حاله كسر اى من خطوط الغاز بعد التشغيل وتسريب الوقود السائل والدفاعه بقوة فى اتجاة الموصلات وخاصه فى اماكن التقاطعات

وتفضلوا بقبول فائق الشكر والتقدير

مدير عام خطوط الجيزة
مهندس/

Public administration for councils and conferences in El-Fayoom governorate for the project

To:25384512 Page:6/6

محافظة الفيوم
الإدارة العامة لشئون
اللجان والمجالس والمؤتمرات

– هناك مشروع يعد من المشروعات القوميه الهامه والعاجلة ذات النفع العام التي تخدم الاقتصاد القومي وهو تنفيذ مشروع خط الغاز الطبيعي دهشور / بني سويف قطر ٣٦ بوصه بطول ٩٣٠ كم وعرض ٢٠متر وعمق الخط لا يقل عن ١متر من الراسم العلوي للماسورة وكذا إقامة عدد ٩ غرف بلوف اللازمة لهم بالأراضي الزراعيه بمحافظات (الجيزه / الفيوم / بني سويف) بإرتفاع أسوار ٤ متر ويمتد الخط بمحاذاة طريق أسيوط الغربي ممتداً جنوباً متقاطعاً مع الطريق الدائري الإقليمي بمسافة ٢٢.٥ كم حتي نهاية حدود المحافظه مع محافظه بني سويف وذلك داخل نطاق محافظه الفيوم وقد اسند تنفيذ المشروع للشركة المصريه للغازات الطبيعية (جاسكو) إحدي شركات قطاع البترول

وبعد مناقشات مستفيضة تقرر الآتي:–

– الموافقه علي تنفيذ المشروع بالتوازي وقيام الشركة المصريه القابضه للغازات الطبيعيه (جاسكو) بالتنسيق مع الجهات المعنيه في الحصول علي الموافقات اللازمه وكذلك استصدار قرار الإستيلاء المؤقت لمده ٢٤ شهراً او بانتهاء الغرض المستولي عليه من أحده أيهما اقرب علي الأراضي اللازمه لمسار خط الغاز المزمع تنفيذه

– تتعهد شركة جاسكو بإستيفاء كافة الإشتراطات الإداريه المطلوبة وتعويض المتضررين طبقاً للقانون والقواعد المتبعة لدي وزارة الزراعه وإستصلاح الأراضي وتسليم المساحات محل الطلب صالحه للزراعه طبقاً لحالتها التي كانت عليها قبل بدء العمليات وذلك وفقاً للقانون المعمول في هذا الشأن

وبانتهاء النظر فيما سبق انتهي الاجتماع حيث كانت الساعة الرابعة والنصف عصراً .

والله ولي التوفيق

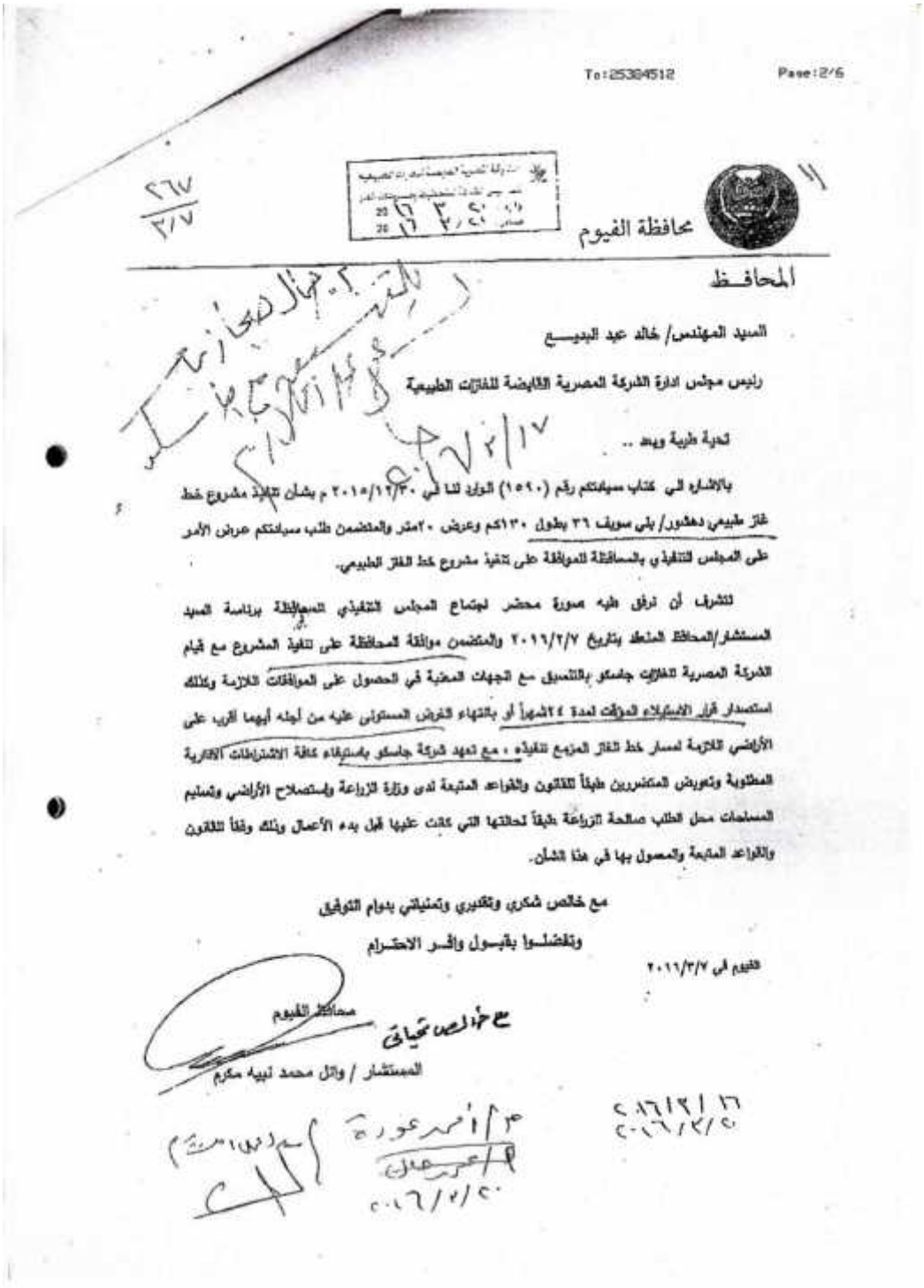
وكيل أول الوزارة السكرتير العام لواء مهندس/ خالد [illegible] جرس	وكيل الوزارة السكرتير العام المساعد لواء/ محمد [illegible]	المدير العام

يعتمد،،،،،

محافظ الفيوم

مستشار/ وائل محمد نبيه مكرم

El Fayoom governor letter to GASCO for the approval on the project



To:25384512 Page:2/6

محافظة الفيوم

المحافظ

السيد المهندس/ خالد عبد البديـــع

رئيس مجلس ادارة الشركة المصرية القابضة للغازات الطبيعية

تحية طيبة وبعد ..

بالاشارة الى كتاب سيادتكم رقم (١٥٩٠) الوارد لنا في ٢٠١٥/١٢/٣٠ م بشأن تنفيذ مشروع خط غاز طبيعي دهشور/ بني سويف ٣٦ بطول ١٣٠كم وعرض ٢٠متر والمتضمن طلب سيادتكم عرض الأمر على المجلس التنفيذي بالمحافظة للموافقة على تنفيذ مشروع خط الغاز الطبيعي.

نتشرف أن نرفق طيه صورة محضر لجتماع المجلس التنفيذي للمحافظة برئاسة السيد المستشار/المحافظ المنعقد بتاريخ ٢٠١٦/٢/٧ والمتضمن موافقة المحافظة على تنفيذ المشروع مع قيام الشركة المصرية للغازات جاسكو بالتنسيق مع الجهات المعنية في الحصول على الموافقات اللازمة وكذلك استصدار قرار الاستيلاء المؤقت لمدة ٢٤شهراً أو بانتهاء الغرض المستولى عليه من أجله أيهما أقرب على الأراضي اللازمة لمسار خط الغاز المزمع تنفيذه ، مع تعهد الشركة جاسكو باستيفاء كافة الاشتراطات الفنية المطلوبة وتعويض المتضررين طبقاً للقانون والقواعد المتبعة لدى وزارة الزراعة واستصلاح الأراضي وتسليم المساحات محل الطلب صالحة للزراعة طبقاً لحالتها التي كانت عليها قبل بدء الأعمال وذلك وفقاً للقانون والقواعد المتبعة والمعمول بها في هذا الشأن.

مع خالص شكري وتقديري وتمنياتي بدوام التوفيق

وتفضلوا بقبول وافر الاحترام

الفيوم في ٢٠١٦/٢/٧

محافظ الفيوم

المستشار / وائل محمد نبيه مكرم

Department of Agriculture - El-fayoom Governorate - approval for the pipeline route

مديريه الزراعه بالفيوم

ادارة حماية الاراضى

السيد اللواء / احمد مصطفى – مدير عام العلاقات الحكوميه للقاهره وجنوب الوادى والبحر الاحمر" الشركه المصريه للغازات الطبيعيه – جاسكو"

تحيه طيبه . . . وبعد

ايماء الى كتاب سيادتكم رقم ٥٢٨ بتاريخ ٢٠١٥/١٢/١ بخصوص الموافقه على انشاء خط غاز دهشور – بنى سويف قطر ٣٦ بطول ١٣٠ كم وعدد "١" غرفة بلوف بنطاق محافظة الفيوم

نتشرف ان نحيط علم سيادتكم

بأن مديرية الزراعه بالفيوم ليس لديها مانع من انشاء خط الغاز المنوه عنه عاليه بكتاب سيادتكم سالف الذكر وذلك بعد موافقة معالى الاستاذ الدكتور / وزير الزراعة على انشاء المشروع على ان يتم تعويض المتضررين من انشاء المشروع التعويض المناسب طبقا للوائح والقوانين المنظمه لذلك .

وتفضلوا بقبول فائق الاحترام

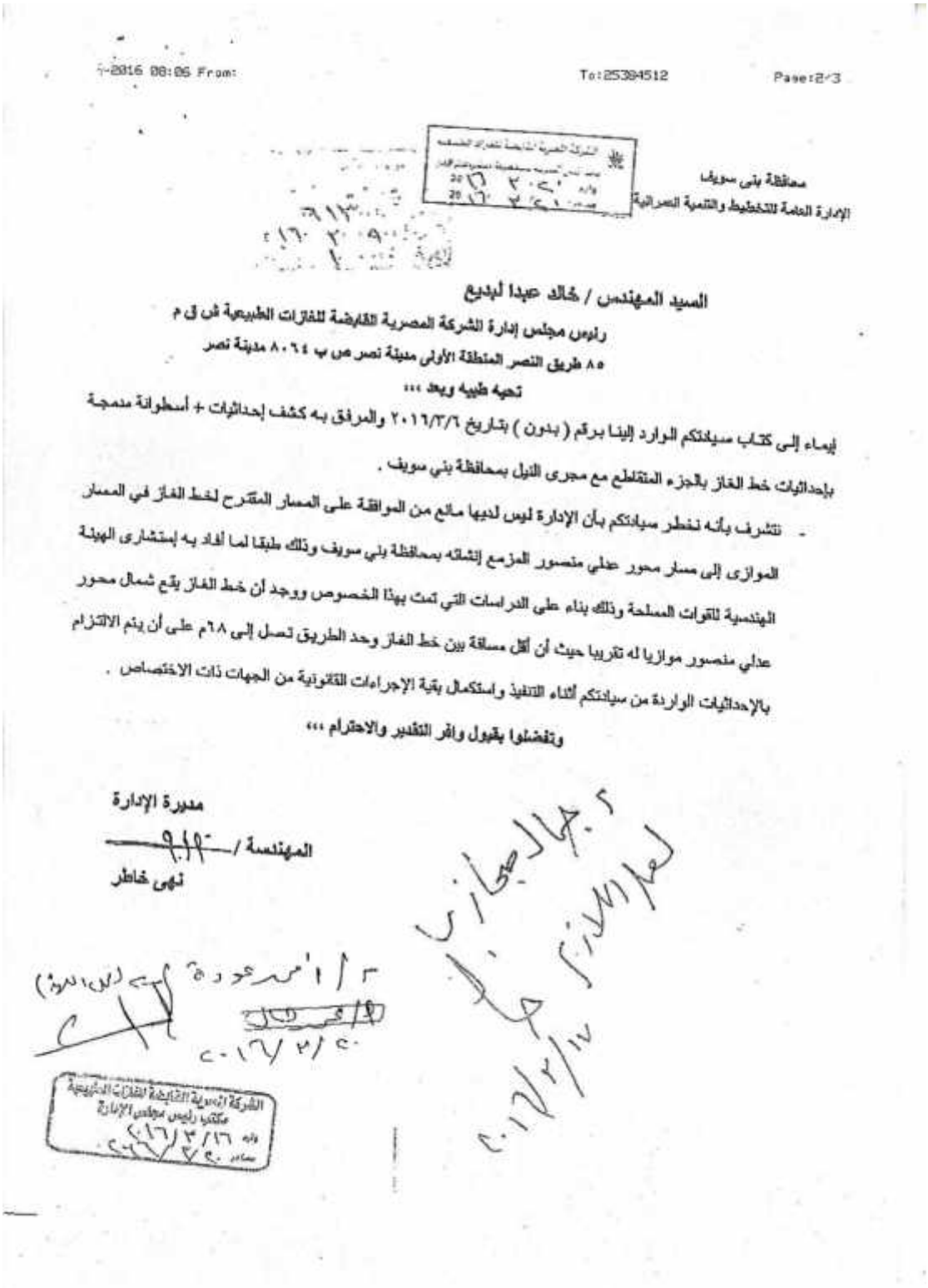
تحريرا فى ٢٠١٦/١/١٣

مدير المديريه

م / محمود على سليمان

FROM :FAX　FAX NO. :0842169105　4 Feb. 2008 4:54AM P1

General Directorate of Urban Planning – BeniSuef Governorate approval for the project



-2016 08:06 From: To:25394512 Page:2/3

محافظة بنى سويف
الإدارة العامة للتخطيط والتنمية العمرانية

السيد المهندس / خالد عبدا لبديع
رئيس مجلس إدارة الشركة المصرية القابضة للغازات الطبيعية ش ق م
٨٥ طريق النصر المنطقة الأولى مدينة نصر ص ب ٨٠٦٤ مدينة نصر

تحيه طيبه وبعد ،،،

إيماء إلى كتاب سيادتكم الوارد إلينا برقم (بدون) بتاريخ ٢٠١٦/٣/٦ والمرفق به كشف إحداثيات + أسطوانة مدمجة بإحداثيات خط الغاز بالجزء المتقاطع مع مجرى النيل بمحافظة بني سويف .

- نتشرف بأنه نخطر سيادتكم بأن الإدارة ليس لديها مانع من الموافقة على الممر المقترح لخط الغاز في الممر الموازى إلى مسار محور عدلي منصور المزمع إنشائه بمحافظة بني سويف وذلك طبقا لما أفاد به إستشارى الهيئة الهندسية للقوات المسلحة وذلك بناء على الدراسات التي تمت بهذا الخصوص ووجد أن خط الغاز يقع شمال محور عدلي منصور موازيا له تقريبا حيث أن أقل مسافة بين خط الغاز وحد الطريق تصل إلى ٦٨م على أن يتم الالتزام بالإحداثيات الواردة من سيادتكم أثناء التنفيذ واستكمال بقية الإجراءات القانونية من الجهات ذات الاختصاص .

وتفضلوا بقبول وافر التقدير والاحترام ،،،

مديرة الإدارة
المهندسة /
نهى خاطر

الشركة المصرية القابضة للغازات الطبيعية
مكتب رئيس مجلس الإدارة

General Directorate of Urban Planning -BeniSuef Governorate - approval for the project

محافظة بنى سويف
ارة العامة للتخطيط والتنمية العمرانية

السيد المهندس / خالد عبدا لبديع

رئيس مجلس إدارة الشركة المصرية القابضة للغازات الطبيعية ش ق م

٨٥ طريق النصر المنطقة الأولى مدينة نصر ص ب ٨٠٦٤ مدينة نصر

تحيه طيبه وبعد ،،،

ساء إلى كتاب سيادتكم الوارد إلينا برقم (بدون) بتاريخ ٢٠١٦/٣/٦ والمرفق به كشف إحداثيات + أسطوانة مدمجة حداثيات خط الغاز بالجزء المتقاطع مع مجرى النيل بمحافظة بني سويف .

- نتشرف بأنه نخطر سيادتكم بأن الإدارة ليس لديها مانع من الموافقة على المسار المقترح لخط الغاز في المسار الموازى إلى مسار محور عدلي منصور المزمع إنشائه بمحافظة بني سويف وذلك طبقا لما أفاد به إستشارى الهيئة الهندسية للقوات المسلحة وذلك بناء على الدراسات التي تمت بهذا الخصوص ووجد أن خط الغاز يقع شمال محور عدلي منصور موازيا له تقريبا حيث أن أقل مسافة بين خط الغاز وحد الطريق تصل إلى ٦٨م على أن يتم الالتزام بالإحداثيات الواردة من سيادتكم أثناء التنفيذ واستكمال بقية الإجراءات القانونية من الجهات ذات الاختصاص .

وتفضلوا بقبول وافر التقدير والاحترام ،،،

مديرة الإدارة

المهندسة /

نهى خاطر

٢٠١٦/٢/١٠٢٤٢٦

General Administration of Properties -BeniSuef Governorate - approval for the project

محافظه بني سويف
الإدارة العامة للأملاك
مكتب المدير العام

٤٢
٢٠١٦/١/١٢

السيد اللواء/ مدير عام العلاقات الحكومية للقاهرة وجنوب الوادي والبحر الأحمر
للشركة المصرية القابضة للغازات الطبيعية (إيجاس)
بعد التحية ،،،

إيماء إلى المكاتبة المسلمة من سيادتكم باجتماع السيد اللواء/سكرتير عام المحافظة المساعد رقم ٥٩٢ في ٢٠١٥/١٢/١١
بشأن إنشاء مشروع خط غاز طبيعي دهشور بني سويف قطر ٣٦ بطول ١٣٠ كم وإنشاء عدد خمس غرف بلوف وكذا توسيعه غرفة رقم ٢ على خط غاز بني سويف المنيا بنطاق محافظة بني سويف
نتشرف بان نحيط علم سيادتكم انه تم الاطلاع على مسار الخط الواقع على الخرائط واتضح انه يمر بحرم طريق وان الأملاك ليس لديها مانع من مرور خط الغاز في أراضى أملاك الدولة ولايتها وعلى الشركة إحضار موافقة الجهات الأخرى ورد الشئ إلى أصلة

مرسل لسيادتكم للعلم والإحاطة

وتفضلوا سيادتكم بقبول وافر التحية والاحترام ،،،

يعتمد ،،،
مدير عام الأملاك
٢٠١٦/١/١٢
م/ محاسب/ محمد عطية مرسى

وكيل الإدارة العامة
٢٠١٦/١/١١
م/ احمد عبد العليم سيد

٢٠١٦/١١/١٨ (٥٥)

Utilities network information center - BeniSuef Governorate – approval for the project

محافظة بنى سويف
مركز معلومات شبكات المرافق
خدمة العملاء
التاريخ ٢٠١٥/١٢/٢٩

الشركة المصرية للغازات الطبيعية (جاسكو)

تحيه طيبة وبعد ،،،

نحيط علم سيادتكم بأن ليس لدينا مانع من البدء فى تنفيذ الأعمال الخاصة بمشروع إنشاء خط غاز دهشور – بنى سويف بطول ١٣٠ كم وعدد (٦) غرف بلوف مع الوضع فى الاعتبار بأن مسئولية تأمين الأعمال الخاصة بالمشروع ليست من مسئولية مركز معلومات شبكات المرافق ببنى سويف داخل نطاق المحافظة .

برجاء بعد التنفيذ أمداد المركز بالخرائط الدالة على المسار الخاص بالمشروع كقاعدة بيانات بالمركز.

وتفضلو بقبول وافر الاحترام والتقدير ،،،

مدير المركز

مهندس

أحمد مدحت محمود

Department of Agriculture approval for the project

FROM :BNS-AGRICLURE FAX NO. :0822322182 13 Jan. 2016 23:10 P1

مديرية الزراعة ببني سويف
ادارة الخدمات الزراعية
الادمساد

Bani_suef Governorate
Ministry Of Agriculture

السيد اللواء المهندس/ مدير عام العلاقات الحكومة بالقاهرة وجنوب الوادي والبحر الاحمر

تحية طيبة ،،، وبعد

- بناء علي خطاب الشركة المصرية للغازات الطبيعية (جاسكو) رقم ٥٧٩ المورخ في ٢٠١٥/١٢/١٣ والخاص بالموافقة علي انشاء خط الغاز (دهشور بني سويف ٣٦) بطول ١٣٠ كيلو متر .
- نتشرف بأن نفيد سيادتكم بأن المديرية ليس لديها مانع من انشاء الخط بشرط تعويض المزارعين عن التلفيات وصرف التعويضات دون ادني مسئولية علي المديرية .

وتفضلوا بقبول وافر التحيه والاحترام ،،،

وكيل الوزارة
مديرية الزراعة ببنى سويف
صابر عبدالفتاح حسن

مكتب فنى

المراسلات: مديرية الزراعة ببنىسويف ش بورسعيد - رقم بريدى ٦٢٥١٤ - تليفون وفاكس٠٨٢/ ٢٣٢٢١٨٢،٢٣٢٣٣٦٦
E-mail: bansuif.agricture@yahoo.com

Roads and Transportation Directorate - BeniSuef Governorate – approval for the project

محافظة بني سويف
مديرية الطرق والنقل
المكتب الفني

١٦٦
٢٠١٦/٢/٢٤

السيد المهندس/ مدير عام الشركة المصرية للغازات الطبيعية (جاسكو)
الطريق الدائري - شارع التسعين - التجمع الخامس - القاهرة الجديدة

بعد التحية ...

الحاقا لكتابنا رقم ٤٢ بتاريخ ٢٠١٦/١/١٧ بخصوص مطالبة المديرية للشركة بمبلغ ٦٩٧١٦ جنيه قيمة رد الشيء لاصله لرغبة الشركة في قطع بعض الطرق التابعة للمديرية وذلك لانشاء خط غاز .. بني سويف - دهشور .

وبناء على القانون رقم ٤ لسنة ١٩٨٨ مادة ٤ باعفاء الشركة من المصاريف الادارية لتصبح المطالبة بمبلغ ٦٢٦٢٦٫٦٢ جنيه .

وبعد قيام الشركة بسداد شيك بمبلغ ٦٢٣٨٦٫٦٢ جنيه بالشيك رقم ٠٦٥٠٠٠٠٨٥٢٩٤ بتاريخ ٢٠١٦/٢/٣ ليصبح الباقي مبلغ ٢٤٠ جنيه قيمة رسم النظر يلزم سدادها في المعاينة النهائية .

نتشرف بالافادة بأن المديرية ليس لديها مانع من قطع الطرق الاتية والموضحة بالكشف المرفق بالمواقع والمواصفات المصرح بها مع الالتزام بالمواصفات المذكورة بالكشف وردم القطوع بالرمال النظيفة بعد الانتهاء من الخط، والعبرة بالمعاينة النهائية للاعمال، مع الرجوع الى شبكة معلومات المرافق لاخذ موافقتها مرة اخرى [illegible]

وتفضلوا بقبول فائق الاحترام ...

مدير المكتب الفني	المدير العام	
	م/ ناصر محمد فسراج	

١٦٧
٢٠١٦/٢/٢٤

صورة مرسلة للسيد الاستاذ / مدير مركز معلومات شبكات المرافق
مساكن الحمراية - شرق النيل

بعد التحية ...

برجاء التكرم بالعلم واتخاذ اللازم حيال سداد مستحقات المركز ومرفق طيه كشف بالمواقع

وتفضلوا بقبول فائق الاحترام ...

مدير المكتب الفني	المدير العام	
	م/ ناصر محمد فسراج	

٩٧
٢٠١٦/٢/٢٤

صورة مرسلة للسيد / رئيس قسم طرق بني سويف - ناصر
للعلم والمتابعة بناء على معاينة ادارة الصيانة بالمديرية مع مراعاة [illegible]

وتفضلوا بقبول فائق الاحترام ...

مدير المكتب الفني	المدير العام	
	...محمد فسراج	

Nile research institute letter to GASCO regarding the needed studies for the project

Ministry of Water Resources and Irrigation
National Water Research Center
Nile Research Institute

وزارة الموارد المائية والري
المركز القومي لبحوث المياه
معهد بحوث النيل

Our Ref. No. :
File No. :
Date :

رقم المكاتبة :
رقم الملف :
التاريخ :

السيد اللواء/ مدير عام العلاقات الحكومية
الشركة المصرية للغازات الطبيعية (جاسكو)

تحية طيبة وبعد....

إيماءاً إلى كتاب سيادتكم رقم ٢٦٦ بتاريخ ٢٠١٦/٣/٨ بخصوص الدراسة اللازمة لتمرير خط غاز طبيعى دهشور/ بنى سويف قطر ٣٦" بطول ١٣٠ كم بنطاق محافظة بنى سويف.

نحيط سيادتكم علماً بأن المعهد قام بعمل الدراسة اللازمة إصدار (فبراير ٢٠١٦). ومرفق لسيادتكم طيه خريطة مساحية حديثة مقياس رسم ١:٢٥٠٠ بعد توقيع خط التهذيب عليها ويوصى المعهد بالإكتفاء بالأخذ بهذا التوقيع عند السير فى إجراءات الترخيص.

فى حالة ضرورة توقيع خط التهذيب على قطاع عرضى والخريطة المساحية مقياس رسم ١:٢٥٠٠ يوصى المعهد بالتوجه إلى إدارة حماية النيل لرفع قطاع عرضى مع توقيع موقعى دخول وخروج الغاز أسفل نهر النيل على كل من القطاع العرضى والخريطة المساحية مع إعتمادهما وختمهما من إدارة حماية النيل.

وتفضلوا سيادتكم بقبول فائق الإحترام..

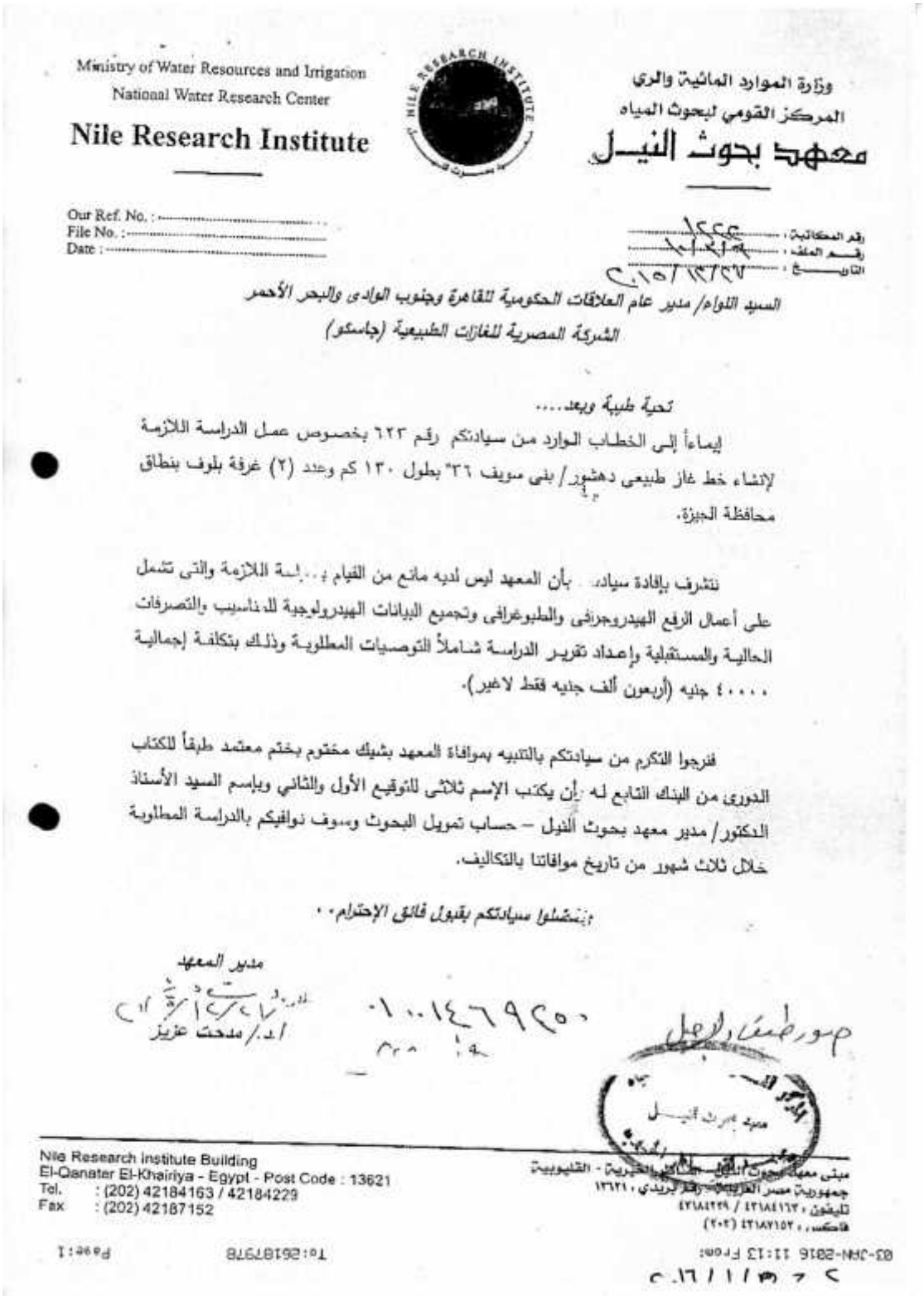
مدير المعهد
د.أ/ مدحت عزيز

مرفقات:-
عدد (٢) قطاع عرضى
عدد (٢) خريطة مساحية مقياس رسم ١:٢٥٠٠
خريطة مساحية حديثة مقياس رسم ١:٢٥٠٠
خريطة مساحية من تقرير الدراسة

Nile Research Institute Building
El-Qanater El-Kairiya - Egypt - Post Code : 13621
Tel. : (202) 42184163 / 42184229
Fax : (202) 42187152

مبنى معهد بحوث النيل - القناطر الخيرية - القليوبية
جمهورية مصر العربية - رقم بريدي ١٣٦٢١
تليفون ٤٢١٨٤١٦٣ / ٤٢١٨٤٢٢٩
فاكس ٤٢١٨٧١٥٢ (٢٠٢)

Nile research institute letter to GASCO regarding the needed studies for the project



Ministry of Water Resources and Irrigation
National Water Research Center
Nile Research Institute

وزارة الموارد المائية والري
المركز القومي لبحوث المياه
معهد بحوث النيل

Our Ref. No. :
File No. :
Date :

رقم المكاتبة :
رقم الملف :
التاريخ :

السيد اللواء/ مدير عام العلاقات الحكومية للقاهرة وجنوب الوادى والبحر الأحمر
الشركة المصرية للغازات الطبيعية (جاسكو)

تحية طيبة وبعد....

إيماءاً إلى الخطاب الوارد من سيادتكم رقم ٦٢٣ بخصوص عمل الدراسة اللازمة لإنشاء خط غاز طبيعى دهشور/ بنى سويف ٣٦" بطول ١٣٠ كم وعدد (٢) غرفة بلوف بنطاق محافظة الجيزة.

نتشرف بإفادة سيادتكم بأن المعهد ليس لديه مانع من القيام بالدراسة اللازمة والتى تشمل على أعمال الرفع الهيدروجرافى والطبوغرافى وتجميع البيانات الهيدرولوجية للمناسيب والتصرفات الحالية والمستقبلية وإعداد تقرير الدراسة شاملاً التوصيات المطلوبة وذلك بتكلفة إجمالية ٤٠٠٠٠ جنيه (أربعون ألف جنيه فقط لاغير).

فنرجوا التكرم من سيادتكم بالتنبيه بموافاة المعهد بشيك مختوم بختم معتمد طبقاً للكتاب الدورى من البنك التابع له بأن يكتب الإسم ثلاثى للتوقيع الأول والثانى وباسم السيد الأستاذ الدكتور/ مدير معهد بحوث النيل – حساب تمويل البحوث وسوف نوافيكم بالدراسة المطلوبة خلال ثلاث شهور من تاريخ موافاتنا بالتكاليف.

وتفضلوا سيادتكم بقبول فائق الإحترام،،

مدير المعهد
أ.د/ مدحت عزيز

Nile Research Institute Building
El-Qanater El-Khairiya - Egypt - Post Code : 13621
Tel. : (202) 42184163 / 42184229
Fax : (202) 42187152

مبنى معهد بحوث النيل - القناطر الخيرية - القليوبية
جمهورية مصر العربية - الرمز البريدي ١٣٦٢١
تليفون ٤٢١٨٤١٦٣ / ٤٢١٨٤٢٢٩
فاكس ٤٢١٨٧١٥٢ (٢٠٢)

Department of Agriculture - El-Giza Governorate - approval for the pipeline route

محافظة الجيزة
مكتب نائب المحافظ
للمراكز والمدن

السيد المهندس/ كارم محمود

رئيس مجلس إدارة

الشركة المصرية للغازات الطبيعية (جاسكو)

تحية طيبة وبعد ،،،

يطيب لي أن أبعث لسيادتكم بخالص التمنيات بدوام التوفيق ،،،

نُرسِل لسيادتكم رفق هذا كتاب السيد.م/ مدير مديرية الزراعة بالجيزة .. والذي

يُفيد بموافقة وزارة الزراعة واستصلاح الأراضي .. **على الآتي :-**

١) تنفيذ خط الغاز الطبيعي بدهشور/بني سويف بقطر ٣٦ بوصة وبطول ١٣٠ كم بمحافظات الجيزة والفيوم وبني سويف بالإضافة إلى إنشاء عدد (٩) غُرَف بلوف بالأماكن المُوَضَّحَة على الخريطة المساحية .

٢) تنفيذ خط الغاز الطبيعي للعاصمة الإدارية دهشور بقطر ٣٢ بوصة وبطول ١١٥ كم بمحافظات القاهرة والجيزة والفيوم بالإضافة إلى إنشاء عدد (٧) غُرَف بلوف وتوسعة الغرفة رقم (٨) بالأماكن المُوَضَّحَة على الخريطة المساحية .

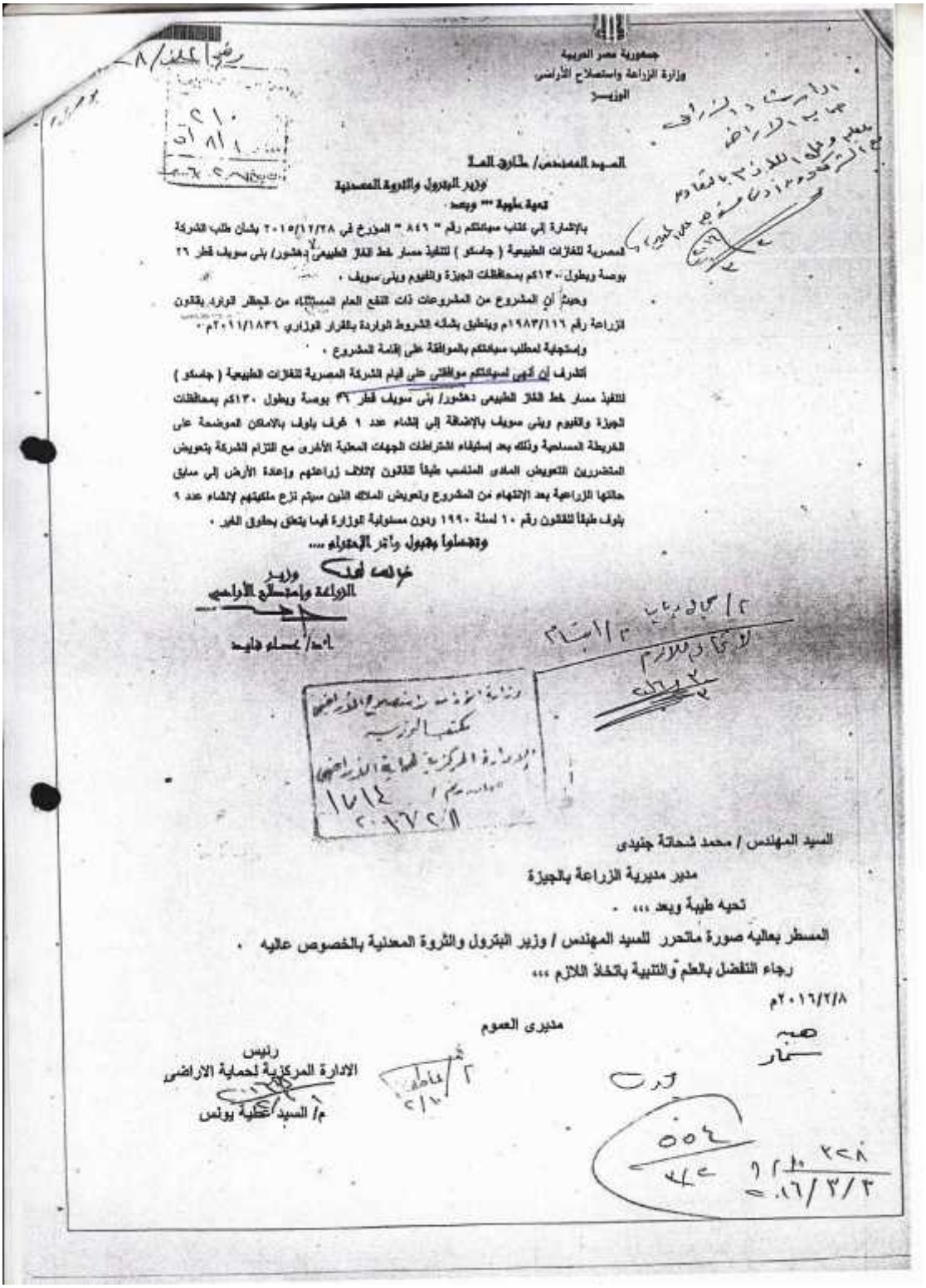
مع عظيم شكري وتقديري واحترامي ،،،

تحريراً في :٢٠١٦/٣/١٥

نائب المحافظ

لواء/ أسامة حسن شمعة

Minister of agriculture and land reclamation approval letter for the project



جمهورية مصر العربية
وزارة الزراعة واستصلاح الأراضى
الوزير

السيد المهندس/ طارق الملا
وزير البترول والثروة المعدنية
تحية طيبة ... وبعد ،

بالإشارة إلى كتاب سيادتكم رقم " ٨٤٩ " المؤرخ في ٢٠١٥/١٢/٢٨ بشأن طلب الشركة المصرية للغازات الطبيعية (جاسكو) لتنفيذ مسار خط الغاز الطبيعي دهشور/ بني سويف قطر ٣٦ بوصة وبطول ١٣٠كم بمحافظات الجيزة والفيوم وبني سويف ،

وحيث أن المشروع من المشروعات ذات النفع العام المستثناء من الحظر الوارد بقانون الزراعة رقم ١٩٨٣/١١٦م وينطبق بشأنه الشروط الواردة بالقرار الوزاري ٢٠١١/١٨٣٦م ،

وإستجابة لمطلب سيادتكم بالموافقة على إقامة المشروع ،

أتشرف أن أبدي لسيادتكم موافقتي على قيام الشركة المصرية للغازات الطبيعية (جاسكو) لتنفيذ مسار خط الغاز الطبيعي دهشور/ بني سويف قطر ٣٦ بوصة وبطول ١٣٠كم بمحافظات الجيزة والفيوم وبني سويف بالإضافة إلى إنشاء عدد ٩ كرف بلوف بالامكان الموضحة على الخريطة المساحية وذلك بعد إستيفاء الشركة الإجراءات الجهات المحلية الأخرى مع التزام الشركة بتعويض المتضررين التعويض العادل المناسب طبقاً للقانون لإتلاف زراعتهم وإعادة الأرض إلى سابق حالتها الزراعية بعد الإنتهاء من المشروع وتعويض الملاك الذين سيتم نزع ملكيتهم لإنشاء عدد ٩ بلوف طبقاً للقانون رقم ١٠ لسنة ١٩٩٠ ودون مسئولية الوزارة فيما يتعلق بحادث الغير .

وتفضلوا بقبول وافر الإحترام ...

وزير
الزراعة واستصلاح الأراضي
م/ صلاح هلال

السيد المهندس / محمد شحاتة جنيدى
مدير مديرية الزراعة بالجيزة
تحيه طيبة وبعد ،،، .
المسطر بعاليه صورة ماتحرر للسيد المهندس / وزير البترول والثروة المعدنية بالخصوص عاليه .
رجاء التفضل بالعلم والتنبية باتخاذ اللازم ،،،
٢٠١٦/٢/٨م
مديرى العموم

رئيس
الادارة المركزية لحماية الاراضى
م/ السيد عطية يونس

Egyptian Electricity Transmission Co. approval letter to Giza Deputy Governor

lectricity Transmission Co.
gypt Electricity Zone
neral management of transmission

الشركة المصريه لنقل الكهرباء
منطقه كهرباء مصر الوسطى
الاداره العامه للخطوط

السيد اللواء/ أسامه حسن شمعه

نائب محافظ الجيزة

تحية طيبة وبعد ...

بالإشارة إلي كتاب سيادتكم بالمعاينة والتنسيق لتنفيذ مشروع خطي غاز طبيعي ومعاينة مسار خطي الغاز دهشور /بني سويف & دهشور/ العاصمة الإدارية

نحيط سيادتكم انه من خلال حضور الاجتماعات في ٢٠١٥/١١/٢٩ & (٨& ٢٠١٥/١٢/٩) وبالمرور علي مسار المشروع تبين الأتي :

- خطي الغاز متوازيين مع خط الكريمات/ ٦ أكتوبر جهد ٢٢٠ ك ف ويبعد عن خط الكهرباء مسافة ١٠٠٠ متر تقريبا.
- يتقاطع خط غاز العاصمة الإدارية دهشور مع خطي كهرباء الكريمات / شرق ألقاهره جهد ٢٢٠ كف & الكريمات/ البساتين جهد ٢٢٠ ك ف في النقاط الاتيه .

الكريمات/البساتين جهد ٢٢٠ كف	الكريمات /شرق القاهرة جهد ٢٢٠ كف
بين البرجين(p١٥٧ -p١٥٨)	بين البرجين (p١٥٨ -p١٥٩)
بين البرجين(p١٧٤ -p١٧٥)	بين البرجين(p١٧٥ -p١٧٦)
بين البرجين(p١٩٩ -p٢٠٠)	بين البرجين (p٢٠٣ -p٢٠٤)

ونفيد سيادتكم بالموافقة علي تنفيذ خطي الغاز الطبيعي مع مراعاة الأتي :

٩ - البعد الأفقي بين قاعدة البرج وحافة الحفر لا يقل عن ٣٠ مترفي كل حالات التوازي والتقاطع

١٠ - إعادة وضع مدقات الصيانة إلي ما كان عليه قبل بدء المشروع

١١ - في حالة استخدام معدات تركيب (أوناش وخلافه)يجب أن يكون الخلوص الرأسي بين الموصلات واعلي نقطه في معدات التركيب لا يقل عن ٥ مترفي اقرب نقطه

١٢ - عند العمل في مناطق التقاطعات لخطي الكريمات/ البساتين & الكريمات /شرق القاهرة رجاء التنسيق مع الشركة قبل بدء العمل لحضور مندوبنا

١٣ - المسافة بين سطح ماسورة الغاز وسطح الارض لاتقل عن ٢ متر في اماكن التقاطعات القريبه من البرج

١٤ - وضع علامات تحذيريه علي مسار خط الغاز حتى يتم تفاديه اثناء العمل على خطوط الضغط العالى وكذلك اثناء صلب الابراج في حاله تدعيم القواعد

١٥ - عمل الحمايه الكاثوديه في اماكن التقاطعات بمعرفه الجهه الطالبه بما يؤمن خط الغاز من اخطار الجهد القائم في حاله سقوط الموصلات الحامله للجهد

١٦ - تتحمل الجهه الطالبه كافه التكاليف المتمثله في فقد الطاقة وقيمه ماتم اتلافه وقيمه المهمات والاجور وقيمه اعادة الشئ لاصله وذلك في حاله تسبب الجهه الطالبه في فصل اى خط كهربى اثناء تنفيذ الاعمال او الصيانات الدوريه على خط الغاز ا وفى حاله كسر اى من خطوط الغاز بعد التشغيل وتصريب الوقود السائل واندفاعة بقوة في اتجاة الموصلات وخاصه في اماكن التقاطعات

وتفضلوا بقبول فائق الشكر والتقدير

مدير عام حدود الجيزة
مهندس/ محمد حسين محمود

Minutes of coordination between GASCO and TE.

المصرية للاتصالات te

محضر تنسيق

إنه في يوم الخميس الموافق ٢٠١٥/١٢/١٧ وفي مقر مركز الصيانة الوقائية بالمنطقة الثانية التابعة للشركة المصرية للاتصالات تم التنسيق بين كل من :

ممثلين عن الشركة المصرية للاتصالات (طرف اول) و هم :

٥- م/ احمد محمد مصطفي (مدير مركز صيانة الشبكات)
٦- السيد / سامح رمضان محمد (من مركز صيانة الشبكات)
٧- السيد / حمادة صلاح احمد (رئيس قسم بمركز صيانة الشبكات)
٨- السيد / رمضان سيد عبد الخالق (مدير سنترالات العياط و التوابع)

و ممثلين عن شركة جاسكو (الشركة المصرية للغازات الطبيعية) (طرف ثاني) و هم :

٤- م/وائل علي عبد الله
٥- م/ علي السيد علام
٦- احمد إبراهيم حسن

وذلك للتنسيق علي للحفر بمشروع خطوط غاز (دهشور – بني سويف)

وقد تبين عدم وجود تعارض لأعمال الحفر بالمشروع مع كابلات الشركة الخاصة بالمصرية للاتصالات (التابعة للمنطقة الثانيه بقطاع مناطق الجيزة **فقط**) في الحيز بين (محطة الضواغط بدهشور حتي محطة الكهرباء الجديدة ببني سويف) وتم الاتفاق على أنه

لا مانع من الحفر و التنفيذ طبقا للخرائط المسلمة لمركز صيانة الشبكات بالمنطقة الثانية بقطاع مناطق الجيزة و لكن بشرط الرجوع لكافة الجهات الأخرى داخل الشركة المصرية للإتصالات (تراسل – فيبر – مناطق) للتنسيق معهم في حالة وجود كابلات تخصهم

وعليه تم التوقيع :-

الطرف الأول

الطرف الثاني

٢٠١٥/١٢/١٧

٨٧ القرية الذكية الكيلو ٢٨ طريق القاهرة أسكندرية الصحراوي الجيزة ١٢٥٧٧ مصر

Technical approval from Giza Governorate for survey work

محافظة الجيزة
الجهاز التنفيذى لمركز معلومات شبكات المرافق
إدارة خدمة العملاء

موافقة فنية

زمز ٥٩٨٨١

التاريخ : ١ / ٢ / ٢٠١٦

موافقة فنية معتمدة لمدة شهر من تاريخه

السيد رئيس حى/مدينة

تحية طيبة وبعد ،،،

إيماء إلى كتابكم رقم : بتاريخ : / / ٢٠

بخصوص :

بناسم /

نفيدكم علما بأنه لا يوجد اعتراض من الناحية الفنية للمركز على أعمال الحفر طبقا للبيانات التالية :

١ – اسم المرفق وعنوانه : الجهة المشرفة :

٢ – الشركة المنفذة وعنوانها : رقم التليفون :

٣ – مكان الحفر :

٤ –

☐ غاز ☐ كهرباء ☐ صرف صحى ☐ إنشاءات ☐ جسات

☐ مياه ☐ تليفونات ☐ صيانة / إحلال ☐ شبكات جديدة ☐ يدوى

٥ – مواصفات الحفر : العرض : الطول : العمق :

٦ – نوع المواسير : القطر : العدد :

٧ – مدة التنفيذ : ليلا / نهارا :

٨ – نوع الكابلات (جهد) : المواصفات : العدد :

٩ – ضرورة التنبيه على الجهة بامداد المركز بالرسومات التنفيذية للمشروع بعد الانتهاء ويجب الرجوع إلى الهيئات المعنية قبل بدء الحفر .

١٠ – الرأى الفنى للمركز : يقوم المركز بأعمال الكشف عن المرافق تحت الأرض ومتابعة الحفر وتعليم مسارات المرافق فوق سطح الأرض أثناء التنفيذ .

• يلزم الحى المرفق بإبلاغ مركز المعلومات بتوقيت الحفر لعمل المتابعة .
• يتم إبلاغ المركز قبل التنفيذ بـ ٤٨ ساعة على الأقل .
• أقر بأننى لن أقوم بالحفر دون إبلاغ المركز ، وأى أعطال أو إتلاف حالة القيام بالحفر دون إبلاغ المركز تكون المسئولية كاملة على عاتقنا .
• أقر بأننى لن أقوم بالحفر إلا بعد استلام الخرائط من المركز

المستلم : رقم التليفون :

بطاقة تحقيق الشخصية رقم : سجل مدنى :

مدير خدمة العملاء

مسئول خدمة العملاء

٤٠٦ ش الأهرام ديوان عام محافظة الجيزة
ت : ٣٥٨٧٦٠٠٣ / ٣٧٦٢٥٥٠٢ - فاكس : ٣٥٨٧٦٠٠٥ - خدمة ٢٤ ساعة
E-mail : Udc-giza@hotmail.com

Ministry of Defense approval

2015 5:22PM Egas 24055875 page 1

أحد شروط الموافقة

موافقة رقم (١٧٠٧ / ٢٠١٦)

إلى السيد / رئيس الإدارة المركزية لأمن قطاع البترول والثروة المعدنية

العنوان / (١) شارع أحمد الزمر – المنطقة الثامنة – مدينة نصر – فاكس ٦٧٠٦٤٢٧

تحية طيبة ... وبعد ،،،

إلحاقاً لكتابكم رقم ٢ بتاريخ ١٧/١١/٢٠١٥ بشأن طلب الموافقة للشركة المصرية للغازات الطبيعية (جاسكو) بمعرفة/على إنشاء خط غاز قطر (٣٢) بوصة بطول (١٣٠) كم دهشور / بنى سويف وكذا إنشاء عدد (٩) غرف بلوف بارتفاع أسوار (٤) م وعرض مسار الخط (٢٠) م وعمق الخط لا يقل عن (١) م من منسوب الأرض حيث يبدأ مساره بعمل غرفة بجوار السور الشرقي لمحطة الضواغط من دهشور ويتجه الخط جنوباً بمحاذاة طريق الفيوم حتى يصل إلى طريق أسيوط الغربي ويمتد جنوباً بمحاذاته من الجهة الشرقية متقاطعاً مع الطريق الدائري الإقليمي وسكة حديد (الفيوم / الواسطى) ثم ينحرف شرقاً عند قرية معصرة أبو صير ثم ينحرف بالاتجاه الجنوب الغربي بمحاذاة طريق (كوم أبو راضي – اللاهون) حتى يصل طريق (الفيوم – بنى سويف) فيتجه بمحاذاته من الجهة البحرية بالاتجاه الجنوب الشرقي ليتقاطع مع سكة حديد وطريق الصعيد الزراعي ويتقاطع أيضاً مع نهر النيل شمال مدينة بنى سويف الجديدة ثم ينحرف جنوباً ويتوازى مع طريق (بنى سويف – المنيا) ماراً أمام مصنع أسمنت بنى سويف ومدينة بنى سويف الجديدة لينتهي عند غرفة بلوف على خط غاز (بنى سويف – المنيا ٣٢ بوصة) أمام عزبة محمد رضوان بطول إجمالي ١٣٠ كم ولمدة عام من تاريخ التصديق ولمدة ٢٤ ساعة يومياً .

- نفيدكم بالموافقة من وجهة النظر العسكرية فقط علي تنفيذ العمل عاليه في المدة من ٧/٥/٢٠١٦ إلى ٦/٥/٢٠١٧ مع عدم ترتيب أى حقوق ملكية للجهة الطالبة على الجزء المار بأراضي القوات المسلحة واحتفاظ القوات المسلحة بملكيتها للأرض مع الالتزام بالحصول على موافقة الوزارات والهيئات المعنية قبل التنفيذ والشروط الآتية :

١- الالتزام بتنفيذ العمل في المناطق والمسارات المحددة والملونه باللون الأزرق والأخضر والبرتقالي والأحمر فقط على الخريطة المعتمدة المرفقة ،
٢- الالتزام بالقرار الوزاري رقم ١٤٦ لسنة ٢٠٠٢ .
٣- الالتزام بقانون البيئة رقم ٤/٩٤ ولائحته التنفيذية ،
٤- الالتزام بالحصول على موافقة الجهات المعنية بالدولة واستكمال التنسيقات بشأن العمل عاليه دون أدنى مسئولية على القوات المسلحة وقبل تنفيذ العمل عاليه .
٥- الالتزام بعدم استخدام المفرقعات أثناء تنفيذ العمل المشار إليه بعالية .
٦- الالتزام بالبعد عن المواقع العسكرية (المشغولة / الغير مشغولة) وعدم المساس أو الاقتراب من الطرق والمدقات العسكرية بمنطقة العمل ،
٧- الالتزام بإعادة الشيء لأصله فور تهو الأعمال ،
٨- الالتزام بأن يكون خط الغاز المشار إليه بعاليه مدفون تحت سطح الأرض بعمق لايقل عن (١.٥) م (فقط واحد ونصف المتر) وبمواصفات تتحمل المركبات والمجنزرات حمولة (٩٠) طن (فقط تسعون طن) .
٩- الالتزام بوضع العلامات الفسفورية على طول مسار الخطوط بعاليه .
١٠- الالتزام بعدم زيادة قيد الارتفاع عن (٤) م (فقط أربعة متر) لعدد (٩) غرفة البلوف (فقط تسعة) بعاليه .
١١- التزام الجهة الطالبة بالتقدم بطلب لدراسة أى كابل الياف ضوئية سيتم إنشاؤه بجوار الخط عاليه إن وجد وقبل تنفيذ العمل عاليه.
١٢- إلتزام الجهة الطالبة بدفع طاقم مساحي مدني على نفقتها لتحديد المساحة الموافق عليها على الطبيعة.
١٣- إلتزام الجهة الطالبة بالتنسيق مع الشركة الوطنية لإنشاء وتنمية وإدارة الطرق قبل تنفيذ العمل عالية .
١٤- الالتزام بجميع بنود محضر التنسيق المبرم مع إدارة الإشارة .
١٥- التنسيق قبل وأثناء العمل مع كل من [قيادة قوات الدفاع الجوى – قيادة المنطقة المركزية العسكرية – إدارة الاشارة] بشأن الآتي:
أ- تحديد منطقة العمل الموافق عليها على الطبيعة وتحديد المناطق الغير مسموح العمل بها .
ب- تأمين الكوابل الإشارية وخطوط المياه العسكرية بمنطقة العمل .
ج- إعادة الشيء لأصله فور تهو الأعمال .
د- تقديم إقرار لقيادة المنطقة المركزية العسكرية يتضمن أن الأرض الواقع بها أجزاء من مسار الخط عاليه داخل أراضي القوات المسلحة هي مملوكة للقوات المسلحة وليست ملكاً للشركة وذلك قبل تنفيذ العمل عاليه .
هـ- عمل محضر تنسيق بذات الشأن .
و- أى مطالب أخرى مطلوب التنسيق بشأنها .
١٦- الالتزام بدفع التعويضات التى تحددها القوات المسلحة في حالة تحويل مسارات الكابلات الإشارية أو خطوط الكهرباء أو المياه العسكرية وذلك بشيك مقبول الدفع باسم السيد / مدير عام جهاز مشروعات أراضي القوات المسلحة .
١٧- لا تضمن خلو منطقة العمل من مخلفات الحروب السابقة ويلزم التنسيق مع جهاز مشروعات الخدمة الوطنية بخصوص هذا الشأن مع عدم مسئولية القوات المسلحة عن حدوث أي أخطار نتيجة حدوث أى إنفجار بمناطق العمل .
١٨- التنسيق قبل بدء العمل مع مكاتب المخابرات الحربية بمنطقة العمل بشأن استخراج تصاريح العمل اللازمة .
١٩- في حالة تواجد أجانب يلزم استخراج تصاريح لهم من إدارة المخابرات الحربية والاستطلاع (مج ٢٦) .
٢٠- عدم مسئولية القوات المسلحة عن بحث موقف المخصصات الصادرة من أجهزة الدولة حيث تعتبر الموافقة من وجهة النظر العسكرية فقط بالشروط والضوابط بما لا يتعارض مع شئون الدفاع عن الدولة للأراضي خارج أراضي القوات المسلحة .
٢١- عدم مسئولية القوات المسلحة عن أى نزاعات قضائية قد تنشأ عن موقف العمل بأرض المشروع عاليه .
٢٢- تحتفظ القوات المسلحة بحقها في إيقاف العمل عند مخالفة الشروط أو عند الضرورة التى تراها .
٢٣- الرأي عالية وجهة نظر القوات المسلحة فقط ويلزم الحصول على موافقة الوزارات والهيئات المعنية قبل التنفيذ .

وتفضلوا بقبول فائق الاحترام ،،،

تعتبر الموافقة لاغيه فى حالة عدم الالتزام بالتنسيقات المشار إليها بعاليه .

التوقيع /
لواء أ.ح / عماد حمدي العطار
نائب رئيس هيئة عمليات القوات المسلحة

٢٠١٦ ٤٨

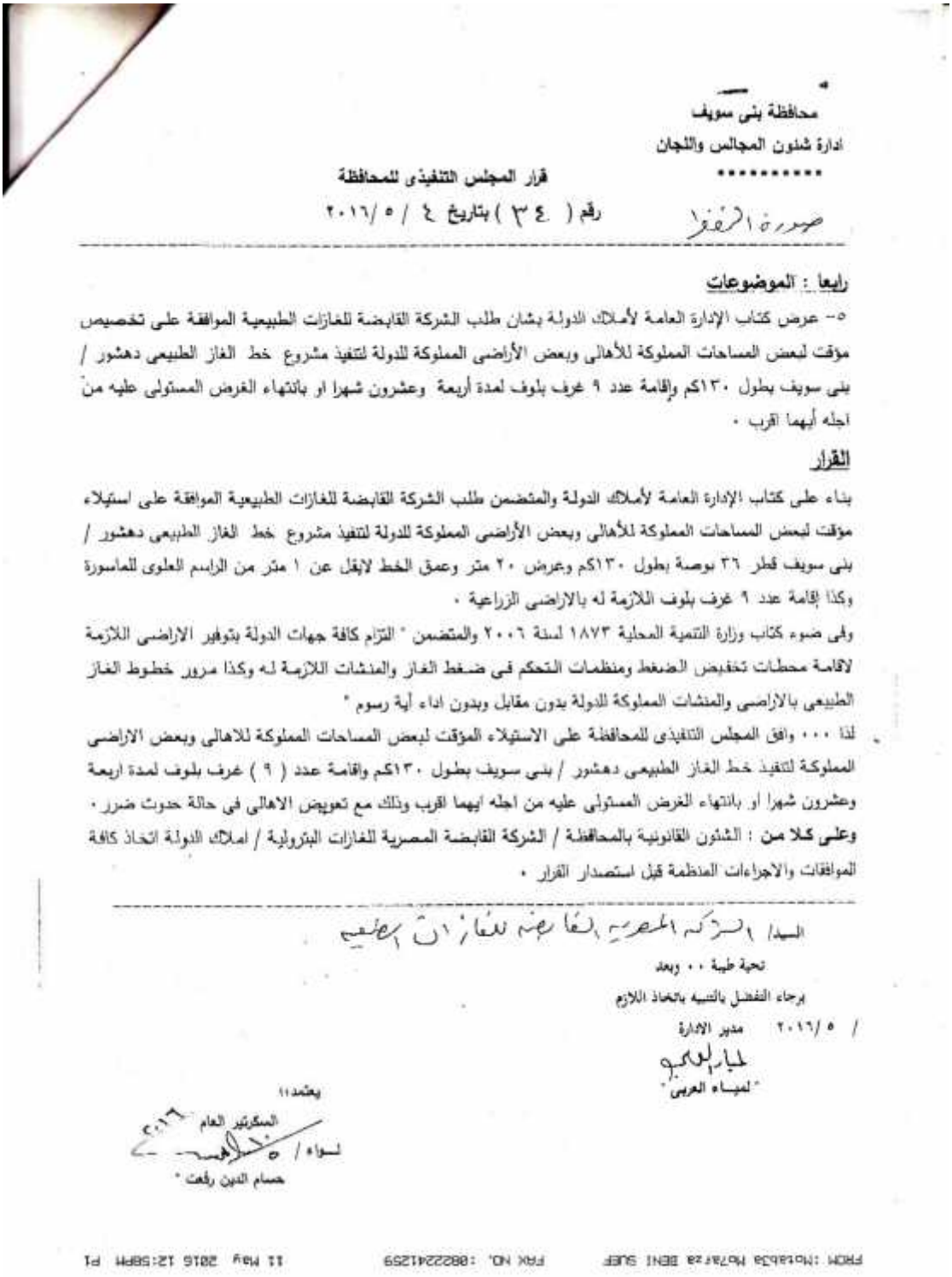
السيد اللواء / مساعد رئيس الشركة للعلاقات الحكومية

السيد / مدير عام العلاقات الحكومية

٢٠٥٢٨٤٥٠٠٥

الشركة المصرية القابضة للغازات الطبيعية
نائب رئيس الشركة للتخطيط ومشروعات الغاز
وارد : ٥ / ٥ / ٢٠١٦
صادر : / / 20

BeniSuef Governorate approval for temporarily land acquisition



محافظة بنى سويف
ادارة شئون المجالس واللجان
****

قرار المجلس التنفيذى للمحافظة
رقم (٣٤) بتاريخ ٤ / ٥ / ٢٠١٦

رابعا : الموضوعات

٥- عرض كتاب الإدارة العامة لأملاك الدولة بشان طلب الشركة القابضة للغازات الطبيعية الموافقة على تخصيص مؤقت لبعض المساحات المملوكة للأهالى وبعض الأراضى المملوكة للدولة لتنفيذ مشروع خط الغاز الطبيعى دهشور / بنى سويف بطول ١٣٠كم وإقامة عدد ٩ غرف بلوف لمدة أربعة وعشرون شهرا او بانتهاء الغرض المستولى عليه من اجله أيهما اقرب .

القرار

بناء على كتاب الإدارة العامة لأملاك الدولة والمتضمن طلب الشركة القابضة للغازات الطبيعية الموافقة على استيلاء مؤقت لبعض المساحات المملوكة للأهالى وبعض الأراضى المملوكة للدولة لتنفيذ مشروع خط الغاز الطبيعى دهشور / بنى سويف قطر ٣٦ بوصة بطول ١٣٠كم وبعرض ٢٠ متر وعمق الخط لايقل عن ١ متر من الرامم العلوى للماسورة وكذا إقامة عدد ٩ غرف بلوف اللازمة له بالاراضى الزراعية .

وفى ضوء كتاب وزارة التنمية المحلية ١٨٧٣ لسنة ٢٠٠٦ والمتضمن " التزام كافة جهات الدولة بتوفير الاراضى اللازمة لاقامة محطات تخفيض الضغط ومنظمات التحكم فى ضغط الغاز والمنشات اللازمة له وكذا مرور خطوط الغاز الطبيعى بالاراضى والمنشات المملوكة للدولة بدون مقابل وبدون اداء أية رسوم "

لذا ... وافق المجلس التنفيذى للمحافظة على الاستيلاء المؤقت لبعض المساحات المملوكة للاهالى وبعض الاراضى المملوكة لتنفيذ خط الغاز الطبيعى دهشور / بنى سويف بطول ١٣٠كم واقامة عدد (٩) غرف بلوف لمدة اربعة وعشرون شهرا او بانتهاء الغرض المستولى عليه من اجله أيهما اقرب وذلك مع تعويض الاهالى فى حالة حدوث ضرر .

وعلى كلا من : الشئون القانونية بالمحافظة / الشركة القابضة المصرية للغازات البترولية / املاك الدولة اتخاذ كافة الموافقات والاجراءات المنظمة قبل استصدار القرار .

السيد / الشركة المصرية القابضة للغازات الطبيعية

تحية طيبة .. وبعد

برجاء التفضل بالتنبيه باتخاذ اللازم

/ ٥ / ٢٠١٦ مدير الادارة

" لمياء العربى "

يعتمد،،

السكرتير العام

لسواه / ٥ / ٢٠١٦

" حسام الدين رفعت "

FROM :Mohab Mostafa BENI SUEF FAX NO. :0822241259 11 May 2016 12:58PM P1

Ministry of Defense approval

وزارة الدفاع
هيئة عمليات القوات المسلحة
القيد: ١١٦٩٨١ / ١ / ٢٠٨ / ٤
التاريخ: ٢٠١٦/٣/١٩

موافقة رقم (١٠٦٧ / ٢٠١٦)

إلى السيد / رئيس الإدارة المركزية لأمن قطاع البترول والثروة المعدنية

العنوان/ ٢ (أ) شارع أحمد الزمر – المنطقة الثامنة – مدينة نصر –فاكس ٢٢٧٠١٤٢٧

تحية طيبة ... وبعد ،

إيماء لكتابكم رقم ١٨ بتاريخ ٢٠١٦/٢/٤ بشأن طلب الموافقة للشركة المصرية للغازات الطبيعية (جاسكو) (مصرية) على القيام بإنشاء خط غاز طبيعي العاصمة / دهشور قطر ٣٢ بوصة بطول ٧٠ كم وكذا إنشاء عدد (٦) غرف بلوف بإرتفاع أسوار (٤) متر وعرض مسار الخط ٢٠ متر وعمق الخط (١) متر ويبدأ مسار الخط من غرفة بلوف داخل محطة كهرباء العاصمة الإدارية الجديدة ويتجه غرباً في الجهة الشمالية من طريق السخنة الجديدة لمسافة ١٨ كم ومتقاطعاً مع الطريق الدائري الإقليمي ثم ينحرف جنوباً ليقطع طريق السخنة الجديد ويستمر غرباً في الجهة الجنوبية ماراً أمام مصنع أسمنت السويس ثم ينحرف بإتجاه الجنوب الغربي في المنطقة الصحراوية لمسافة ٢٥ كم بجوار خط اليوب حتى يصل إلى نقطة تقاطع طريق الأوتوستراد مع طريق الكريمات الجديد ثم ينحرف بإتجاه الغرب متقاطعاً مع طريق الأوتوستراد بجوار خطوط شركة سويد ماراً بالقومية للأسمنت والمنطقة الجنوبية بكفر العلو حتى يتقاطع مع نهر النيل بطول إجمالي حوالي (٦٠) كم داخل محافظة القاهرة ثم يمتد بمحافظة الجيزة بعد التقاطع مع نهر النيل غرباً في المناطق الزراعية متقاطعاً مع سكة حديد الواحات وطريق الصعيد الزراعي وترعة الجيزاوية وسكة حديد قبلي ومصرف المحيط حتى يصل إلى غرفة بلوف بمنطقة تسهيلات شركة خالدة للبترول بمنطقة دهشور بإجمالي طول (١٠) كم داخل محافظة الجيزة ليصل الطول الإجمالي حوالي (٧٠) كم ولمدة ٢٤ ساعة يومياً ،

–نفيدكم بالموافقة من وجهة النظر العسكرية فقط على تنفيذ العمل عاليه في المدة من ٢٠١٦/٣/٢٢ الى ٢٠١٧/٣/٢١ وبقيد إرتفاع (٤)م (فقط أربعة متر) من مستوى سطح الأرض لعدد (٦) غرفة بلوف مع عدم ترتيب أي حقوق ملكية للجهة الطالبة على الجزء المار بأراضي القوات المسلحة وإحتفاظ القوات المسلحة بملكيتها للأرض مع الإلتزام بالحصول على موافقة الوزارات والهيئات المعنية قبل التنفيذ وبالشروط الآتية :

١– الإلتزام بتنفيذ العمل في المنطقة المحددة بالإحداثيات والملونة باللون الاصفر والاحمر والبرتقالي والاسود على الخريطة المعتمدة المرفقة .
٢– الإلتزام بالقرار الوزاري رقم ١٤٦ لسنة ٢٠٠٢ .
٣– الإلتزام بقانون البيئة رقم ٩٤/٤ ولائحته التنفيذية ،
٤– إلتزام الجهة الطالبة بإستكمال التنسيقات مع الجهات المعنية بالدولة للحصول على موافقتها ودون أدنى مسئولية على القوات المسلحة قبل تنفيذ العمل عاليه ،
٥– إلتزام الجهة الطالبة بالتقدم بطلب لدراسة أي كابل الياف ضوئية سيتم إشارة بجوار الخط عالية (إن وجد) وقبل تنفيذ العمل عالية .
٦– الإلتزام بعدم إستخدام المتفجرات في تنفيذ العمل عاليه ،
٧– الإلتزام بأن يكون خط الغاز المشار إليه بعاليه مدفون تحت سطح الأرض بعمق لا يقل عن (١,٥)م (فقط واحد متر ونصف المتر) وبمواصفات تتحمل المجنزرات والمركبات حمولة (٩٠) طن (فقط تسعون طن) ،
٨– الإلتزام بوضع العلامات الفسفورية على طول مسار الخط المشار إليه بعاليه ،
٩– الإلتزام بإعادة الشيء لأصله فور نهو العمل عاليه ،
١٠– الإلتزام بعدم زيادة قيد الإرتفاع عن (٤)م (فقط أربعة متر) من مستوى سطح الأرض لعدد (٦) غرف بلوف المشار اليها بعالية ،
١١– الإلتزام بالبعد عن المواقع العسكرية المشغولة والغير مشغولة بمسافة لا تقل عن (١)كم ،
١٢– الإلتزام بجميع بنود محضر التنسيق المبرم مع إدارة الإشارة ،
١٣– التزام الجهه الطالبة بالتنسيق مع الشركة الوطنية لإنشاء وتنمية وإدارة الطرق وقبل تنفيذ العمل عالية ،
١٤– التنسيق قبل وأثناء العمل مع كل من (قيادة قوات الدفاع الجوي – قيادة المنطقة المركزية العسكرية– إدارة الإشارة) بشأن :
أ– تحديد منطقة العمل الموافق عليها على الطبيعة والمناطق الغير مسموح العمل بها ،
ب– موافاتها بخطة زمنية محددة للعمل عاليه وإعادة الشيء لأصله فور نهو الأعمال ،
ج– تقديم إقرار لقيادة المنطقة المركزية العسكرية يتضمن أن الأرض الواقع بها أجزاء من مسار الخط عاليه داخل أراضي القوات المسلحة هي مملوكة للقوات المسلحة وليست ملكاً للشركة وذلك قبل تنفيذ العمل عاليه ،
د– عمل محضر تنسيق بلدات الشأن وأي مطالب أخرى مطلوب التنسيق بشأنها ،
١٥– الإلتزام بدفع التعويضات التي تحددها القوات المسلحة في حالة تحويل مسارات الكابلات الإشارية أو خطوط الكهرباء أو المياه العسكرية أو إحداث خسائر بالمنشآت والوحدات العسكرية وذلك بشيك مقبول الدفع برسم السيد / مدير عام جهاز مشروعات أراضي القوات المسلحة ،
١٦– عدم مسئولية القوات المسلحة عن بحث موقف التخصيصات الصادرة من أجهزة الدولة حيث تعبر الموافقة من وجهة النظر العسكرية فقط بالشروط والضوابط بما لا يتعارض مع شئون الدفاع عن الدولة للاراضي الواقعة خارج اراضي القوات المسلحة .
١٧– عدم مسئولية القوات المسلحة عن أي نزاعات قضائية قد تنشأ عن موقف دراسة إستغلال أرض المشروع الواقعة خارج اراضي القوات المسلحة ،
١٨– التنسيق قبل بدء العمل مع مكاتب المخابرات الحربيه بمنطقة العمل بشأن إستخراج تصاريح العمل اللازمة ،
١٩– في حالة تواجد أجانب يلزم إستخراج تصاريح لهم من إدارة المخابرات الحربية والإستطلاع (مع ٢٦) ،
٢٠– لا نضمن خلو منطقة العمل من مخلفات الحروب السابقة ويلزم التنسيق مع جهاز مشروعات الخدمة الوطنية بخصوص هذا الشأن مع عدم مسئولية القوات المسلحة عن حدوث أي أخطار نتيجة حدوث أي إنفجار بمناطق العمل ،
٢١– تحتفظ القوات المسلحة بحقها في إيقاف العمل عند مخالفة الشروط أو عند الضرورة التي تراها ،
٢٢– الرأى عالية وجهة نظر القوات المسلحة فقط ويلزم الحصول على موافقة الوزارات والهيئات المعنية قبل التنفيذ ،

وتفضلوا بقبول فائق الإحترام ،،،

تعتبر الموافقة لاغيه في حالة عدم الإلتزام بالتنسيقات المشار إليها بعاليه ،

التوقيع /
لواء أ.ح/ عماد حمدي العطار
نائب رئيس هيئة عمليات القوات المسلحة

General Authority for roads, bridges and land transportation approval

الطرق و الكباري و النقل البري
قطاع المركزية
المنطقة السادسة بني سويف

رقم الملف : (٢٧/ ١١٧/٤٠)

تصريح رقم (٢٠١٦/١٠)

السيد المهندس / مدير عام العلاقات الحكومية للقاهرة وجنوب الوادي والبحر الأحمر الشركة المصرية للغازات الطبيعية

تحيه طيبه ... وبعد

إيماء لكتاب سيادتكم بخصوص الموافقة علي إنشاء خط غاز دهشور / بني سويف ٣٦ " بطول ١٣٠ كم و عدد (٦) غرف بلوف وبناء علي المعاينة علي الطبيعة التي تمت بمعرفه مهندس من المنطقة و مهندس من الشركه بتاريخ ٢٠١٦/٣/١والتي تفيد أن أولا التنفيذ بالنسبه للحفر الطولي بجوار الطرق الاتيه ١- طريق القاهرة / أسيوط الصحراوي الغربي و يكون الحفر علي مسافه اكثر من ٦٥ م من حد الاسفلت الشرقي للطريق في الاتجاه من أسيوط الي القاهرة وذلك بطول ٢٥ كم ٢- وصله ابو صير ويكون الحفر علي مسافة اكثر من ٣٥ م من الاسفلت للطريق وذلك بطول ٤ كم ٣- طريق بني سويف / دمو ويكون الحفر علي مسافه اكثر من ٦٠ م من حد الاسفلت للطريق فيما عدا المناطق السكنية والتي تقدر بحوالي ١ كم و عرض ٢ م و عمق حفر ٢ م في الطبان الترابي للطريق دون المساس بالإسفلت وعلي بعد ١ م من حد الإسفلت ٤- طريق بني سويف / الشيخ فضل و يكون الحفر بجوار خط غاز القديم من الجهه الشرقيه وذلك بطول ٢٢ كم و عرض ٢ م و عمق حفر ٢ ثلثيها

التنفيذ العدايات يتم التنفيذ بالدفع النفقي الموجه اسفل الطرق الاتيه : ١ – وصله جرزا ٢ – وصله ميدوم ٣- وصله الواسطى ٤- وصله ابو صير ٥- طريق بني سويف / العياط الزراعي عند مدخل شريف باشا ٦- طريق بني سويف / الكريمات وان يتم الإمرار بالدفع النفقي داخل قاروعه ولا يسمح بالحفر المكشوف **بناء علي** : تقديم خطاب ضمان رقم /١٦ IGT ٠٢٠/٠٨١٤٤ الصادر من البنك التجاري الدولي ا الساري مفعوله حتي ٢٠١٧/٥/١١ بمبلغ ٤٤٤٠٧٠٠ جنيها (اربعه مليون و اربعمائه و اربعون الف وسبعمائه جنيها لا غير) قيمه تامين رد الشئ لاصله

تفيد بأن المنطقة ليس لديها مانع من التنفيذ وبالشروط الآتية: -

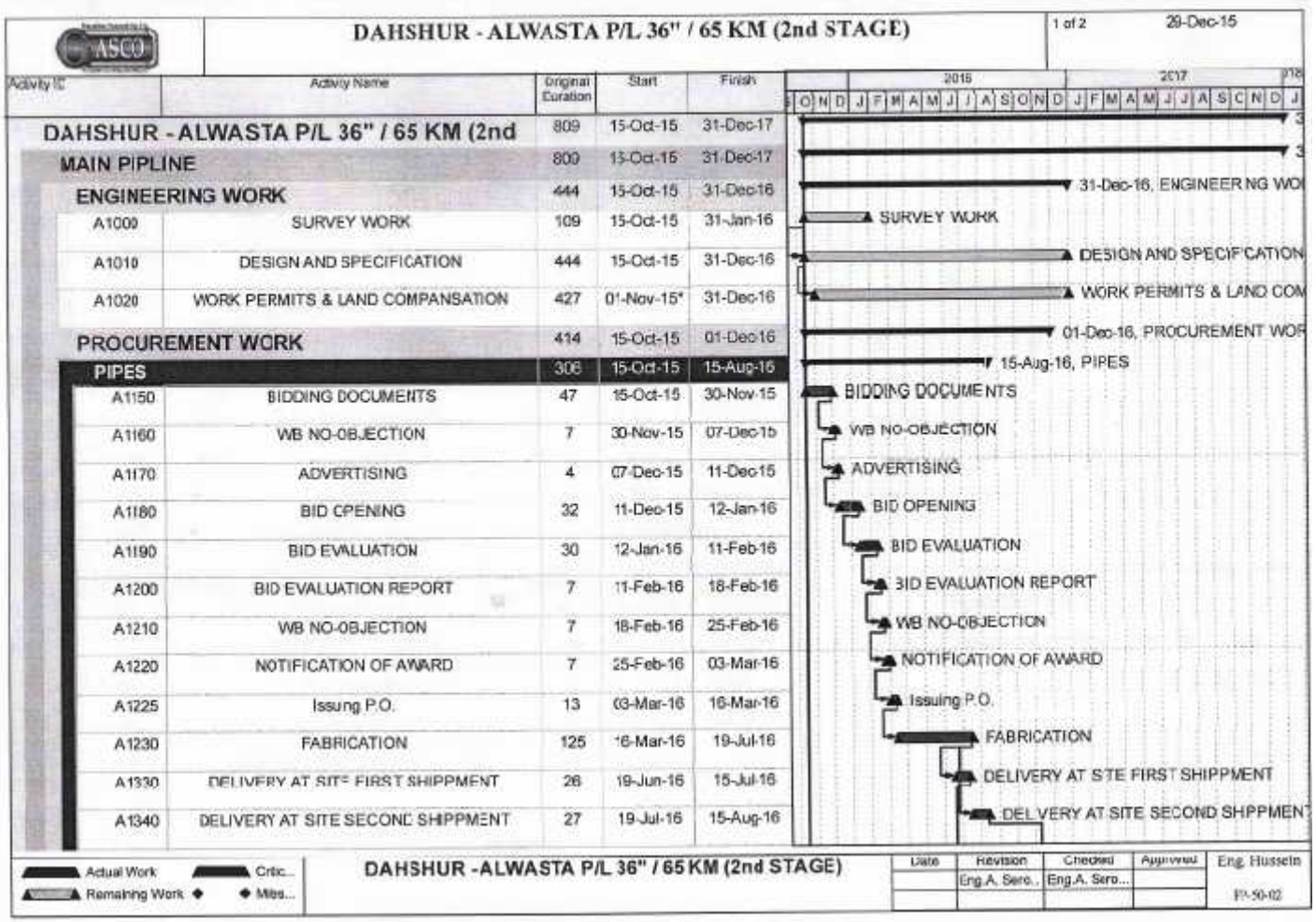
١. إخطار المنطقة قبل البدء في التنفيذ بـ ٤٨ ساعة علي الأقل
٢. أن يتم التنفيذ بطريقه الدفع النفقي ولا يسمح بالقطع العرضي للطرق و ان يتم امرار خط الغاز داخل قاروعه
٣. ضرورة عمل محضر التنسيق الالتزام مع أدارة المرور المختصة قبل البدء في التنفيذ
٤. الحصول علي الموافقة الفنية من مركز معلومات شبكات المرافق
٥. الحصول علي موافقات الجهات المعنية الاخري (كالقوات المسلحة - سلاح الإشارة - مياه - وخلافه---) قبل الشروع في التنفيذ
٦. التنسيق مع الجهات المعنية الاخري مع ضرورة تواجد مندوبيها أثناء التنفيذ او ما ازاء كل جهة مناسبا
٧-المحافظة علي سلامة جميع المرافق المارة بالطريق مع تحميل الجهة الطالبة مسئولية كافة الاتلافات التي قد تحدث لها إثناء التنفيذ والمسئولية المدنية والجنائية الكاملة تجاه كل مرفق بصفة مباشرة
٨-عدم ترك اى معدات أو تشوينات علي الطريق من شانها تعريض سلامة المرور للخطر
٩- عدم العمل يوما قبل الغروب بساعة علي الأقل
١٠- وضع العلامات الإرشادية والتحذيرية اللازمة أثناء التنفيذ
١١ - أن يتم إعادة الشيء لأصله كما يلي :
- إلقاء ناتج الحفر بعيدا عن الموقع وعدم استخدامه في الردم
- الردم بالرمال النظيفة الجافة
١٢- إن يتم التنفيذ تحت إشراف المهندس رئيس وحدة بني سويف
١٣- للهيئة الحق في تركيب وسائل تامين سلامة المرور المختلفة بطبان الطريق في المسافة المذكورة دون الرجوع اليكم
١٤- مدة هذا التصريح شهرين من تاريخه
١٥- يلغي هذا التصريح في حالة مخالفة أي بند من البنود السابقة

تفضلوا بقبول فائق الاحترام،،،

تحريراً في ٢٠١٦/٥/٢٤

رئيس الإدارة المركزية
ورئيس قطاع الصعيد
مهندس /
حسين سعد وحيد

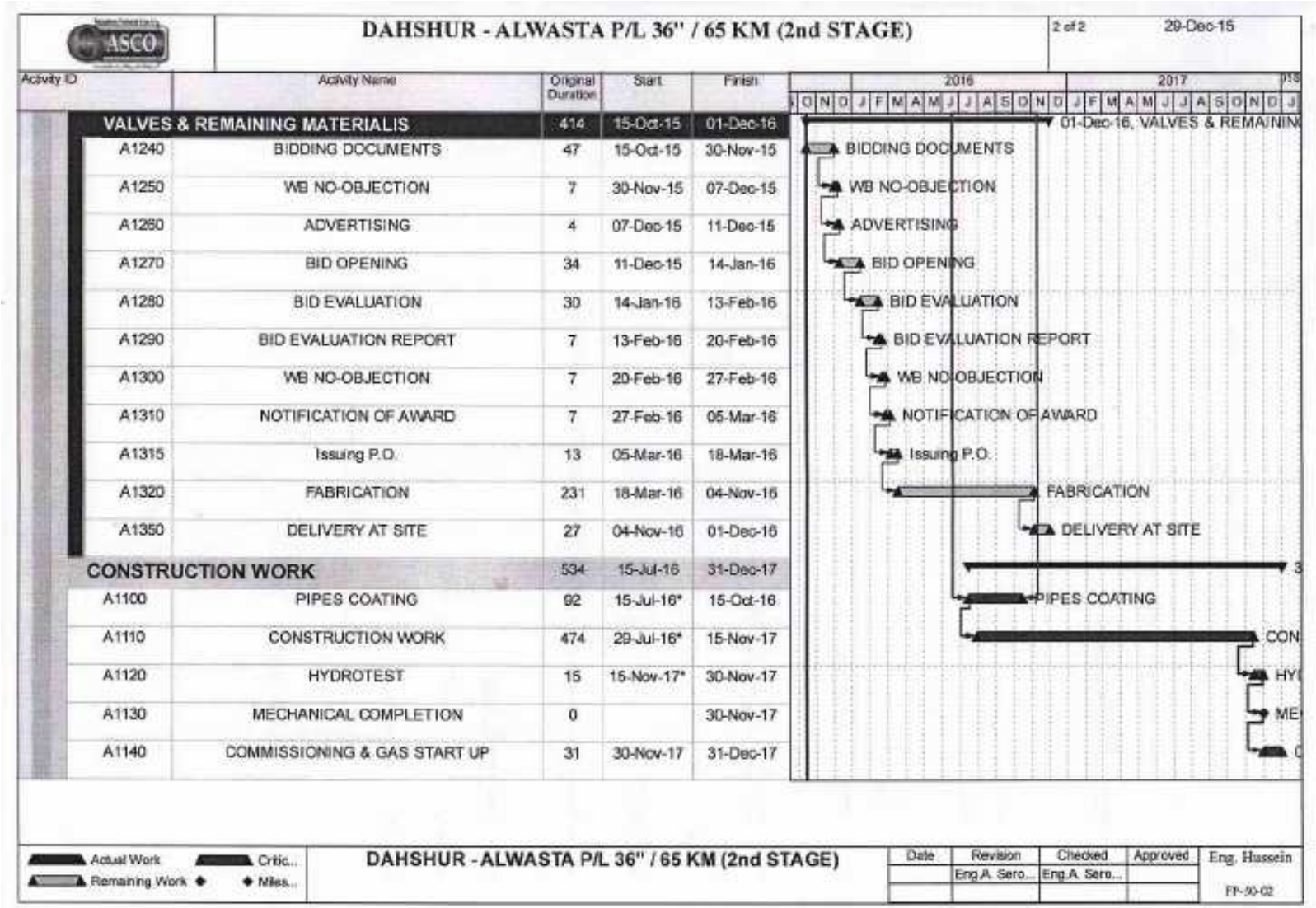
Annex 3: Timeline Plan of the Project



DAHSHUR - ALWASTA P/L 36" / 65 KM (2nd STAGE)

1 of 2 — 29-Dec-15

Activity ID	Activity Name	Original Duration	Start	Finish
DAHSHUR - ALWASTA P/L 36" / 65 KM (2nd		809	15-Oct-15	31-Dec-17
MAIN PIPLINE		809	15-Oct-15	31-Dec-17
ENGINEERING WORK		444	15-Oct-15	31-Dec-16
A1000	SURVEY WORK	109	15-Oct-15	31-Jan-16
A1010	DESIGN AND SPECIFICATION	444	15-Oct-15	31-Dec-16
A1020	WORK PERMITS & LAND COMPANSATION	427	01-Nov-15*	31-Dec-16
PROCUREMENT WORK		414	15-Oct-15	01-Dec-16
PIPES		306	15-Oct-15	15-Aug-16
A1150	BIDDING DOCUMENTS	47	15-Oct-15	30-Nov-15
A1160	WB NO-OBJECTION	7	30-Nov-15	07-Dec-15
A1170	ADVERTISING	4	07-Dec-15	11-Dec-15
A1180	BID OPENING	32	11-Dec-15	12-Jan-16
A1190	BID EVALUATION	30	12-Jan-16	11-Feb-16
A1200	BID EVALUATION REPORT	7	11-Feb-16	18-Feb-16
A1210	WB NO-OBJECTION	7	18-Feb-16	25-Feb-16
A1220	NOTIFICATION OF AWARD	7	25-Feb-16	03-Mar-16
A1225	Issuing P.O.	13	03-Mar-16	16-Mar-16
A1230	FABRICATION	125	16-Mar-16	19-Jul-16
A1330	DELIVERY AT SITE FIRST SHIPPMENT	26	19-Jun-16	15-Jul-16
A1340	DELIVERY AT SITE SECOND SHIPPMENT	27	19-Jul-16	15-Aug-16



DAHSHUR - ALWASTA P/L 36" / 65 KM (2nd STAGE) — 2 of 2 — 29-Dec-15

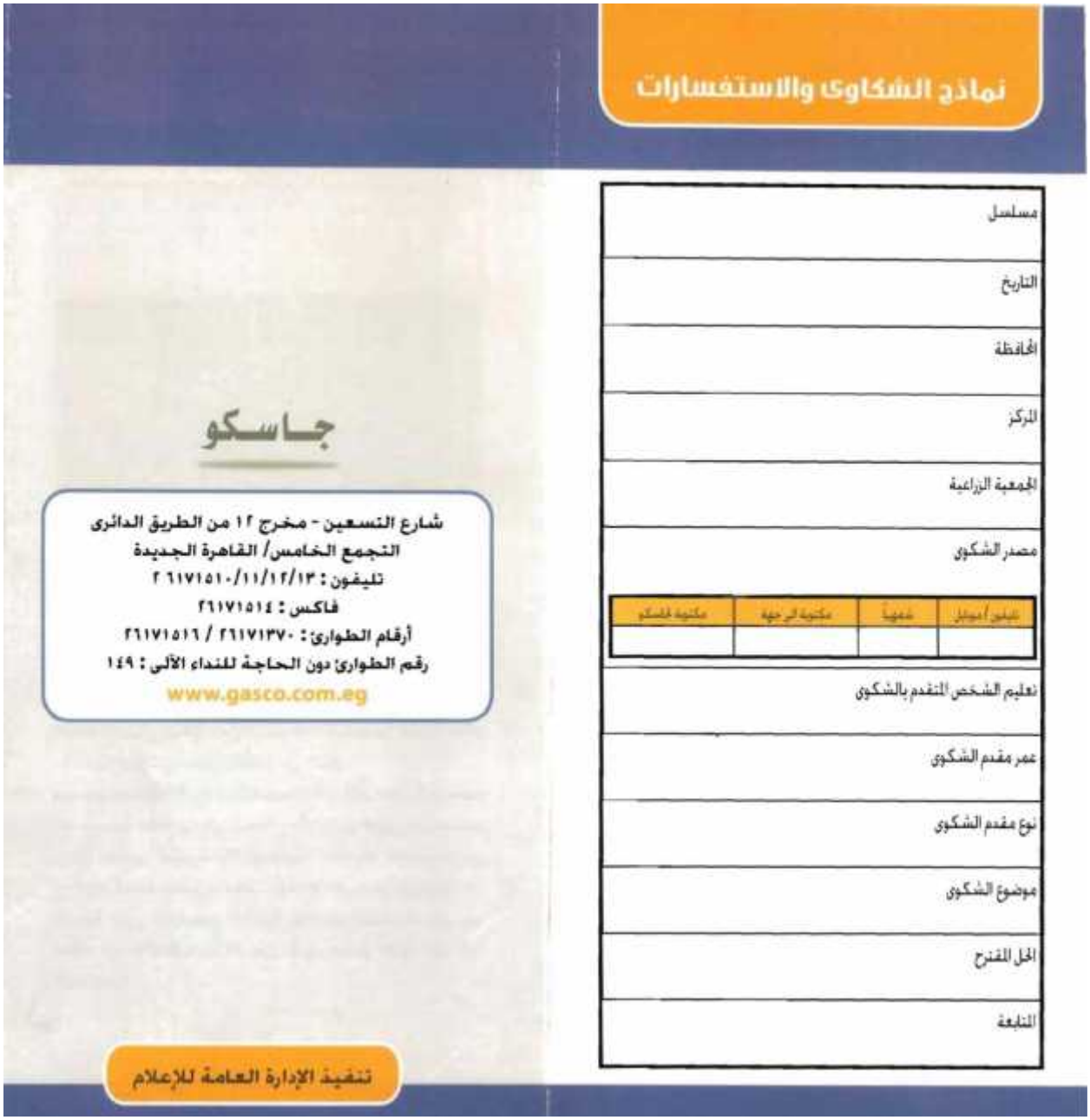
Activity ID	Activity Name	Original Duration	Start	Finish
VALVES & REMAINING MATERIALIS		414	15-Oct-15	01-Dec-16
A1240	BIDDING DOCUMENTS	47	15-Oct-15	30-Nov-15
A1250	WB NO-OBJECTION	7	30-Nov-15	07-Dec-15
A1260	ADVERTISING	4	07-Dec-15	11-Dec-15
A1270	BID OPENING	34	11-Dec-15	14-Jan-16
A1280	BID EVALUATION	30	14-Jan-16	13-Feb-16
A1290	BID EVALUATION REPORT	7	13-Feb-16	20-Feb-16
A1300	WB NO-OBJECTION	7	20-Feb-16	27-Feb-16
A1310	NOTIFICATION OF AWARD	7	27-Feb-16	05-Mar-16
A1315	Issuing P.O.	13	05-Mar-16	18-Mar-16
A1320	FABRICATION	231	18-Mar-16	04-Nov-16
A1350	DELIVERY AT SITE	27	04-Nov-16	01-Dec-16
CONSTRUCTION WORK		534	15-Jul-16	31-Dec-17
A1100	PIPES COATING	92	15-Jul-16*	15-Oct-16
A1110	CONSTRUCTION WORK	474	29-Jul-16*	15-Nov-17
A1120	HYDROTEST	15	15-Nov-17*	30-Nov-17
A1130	MECHANICAL COMPLETION	0		30-Nov-17
A1140	COMMISSIONING & GAS START UP	31	30-Nov-17	31-Dec-17

Annex 4: Baseline Measurements

Annex 5: Emergency Response Plan

Annex 6: Solid Waste Management Plan

Annex 7: Grievance Form



نماذج الشكاوى والاستفسارات

مسلسل
التاريخ
المحافظة
المركز
الجمعية الزراعية
مصدر الشكوى

تليفون / موبايل	شفهية	مكتوبة الى جهة	مكتوبة للشركة

تعليم الشخص المتقدم بالشكوى
عمر مقدم الشكوى
نوع مقدم الشكوى
موضوع الشكوى
الحل المقترح
المتابعة

جاسكو

شارع التسعين - مخرج ١٢ من الطريق الدائرى
التجمع الخامس/ القاهرة الجديدة
تليفون : ٢٦١٧١٥١٠/١١/١٢/١٣
فاكس : ٢٦١٧١٥١٤
أرقام الطوارئ : ٢٦١٧١٣٧٠ / ٢٦١٧١٥١٦
رقم الطوارئ دون الحاجة للنداء الآلى : ١٤٩
www.gasco.com.eg

تنفيذ الإدارة العامة للإعلام

Annex 8: Scoping Meeting Participants list

No.	Name	Job	Telephone
1.	Mohammed SolimanIsmaiel	-	01112007557
2.	Mohammed Sayed	General Waste Management	01005531991
3.	Esraa Tawfik Ahmed	Environmental Expert (Consultant)	01288688620
4.	Ramdan Abd El-Wahab Hassan	Head of Environment Department - Elchentor	01276584264
5.	Hessian Abd El-Azim Hassan	Village secretary - Elchentor	01220302975
6.	Hany El-Khoderi	Chairman of News Egypt Free	01227218282
7.	Sahar Seif	Chairman of the Board of Directors	01224207746
8.	Hoda Youssef	Head of the local unit	01229675900
9.	Zienab Mohammed Hamada	Department of Environmental Affairs	01146795651
10.	Wael Abd Alrahman Ahmed	Department of Environmental Affairs	01228709830
11.	Mahmoud Habashy	Secretary of the local community association	01286053971
12.	Mohammed Ali Wahedi	Assistant Director-General GASCO	01011303702
13.	Abd Al-Rahman Hassan Ahmed	Technician engineer at the local unit	01210107159

14.	Emad Kamal El-Sayed	6 October Association	01224045073
15.	Mahmoud Mohammed Kahawy	6 October Association	01126890601
16.	Hassan El-Khodary	Journalist	01005856476
17.	Medhat Ibrahim Awad	Environmental Consultant	01006832807
18.	Adel Aziz Faragallah	Environment Protection Association	01281046110
19.	Azza Bas Al-Trabeli	Executive General Manager of the Environmental Protection - GASCO	01224566425
20.	Mohammed Atef Ali Hassan	The first chemical inspections - GASCO	01061487775
21.	AbeerZakria Ali	Environmental Management	-
22.	MozzaFekry Ahmed	Environmental Management	01227548424
23.	Youssef Adly Farhan	Free civil engineer	01207701243
24.	Farag Mohammed Farag	Minya environment device manager	01002752615
25.	Nabil Mohammed Zaki	Employee at the local unit	01000968690
26.	Tarek Samir Kamel	Director General of the Environment in BeniSuef	01222597103
27.	Abd El-Aziz Zied Abd El-Aziz	Chairman of the Board of Directors	01227929047
28.	SamyMoheb	Treasurer services and Development	-

		Association	
29.	Laila NadyAlaam	EzbetYacoub Association	01152670315
30.	NeamaNour El-Dien Gad	EzbetYacoub Association	01119829838
31.	Ramadan abo Ismaiel	Head of the local Community Development Association Editor of the newspaper vibrated BeniSuef	01220301557
32.	Ahmed Saied	Kenoz Al-Rahmaassociation	01224946223
33.	Gaber Fathy	Directorate strong workforce	01282466122
34.	Mohsen Eid Mohsen	Journalist - TV reporter	01225879680
35.	MoustafaFahim Mohammed	Assistant chief of the company's operations networks - GASCO	01062222371
36.	Ahmed Taha Bayoumi Ali	Lawyer	01151672232
37.	Abdullah Ewees Mohammed	Pension	490905228716
38.	Ashraf Mohammed Sayed Hassan	Teacher	27201032202273
39.	Ahmed Abd Al-Basset Mohammed	Director general	01272058430
40.	Ibrahim Ali Ibrahim	President of the Local Development Association	01222363896

41.	Amr Ahmed Ragaa Hassan	Excellent Engineer – GASCO	01002849648
42.	Eid Abd El-Meged Mahdi	Social worker	01225047805
43.	Hassan Ali Lotfy	Vice President Center	01229533805
44.	Hatem Abdullah	Vice President Center	01116611406
45.	Mohammed Ahmed Moustafa	Chairman of the Community Development Association	01210018119
46.	Mohammed Ali DarawishEmam	Accountant Community Development Association	01284360005
47.	Mohammed Fawzy Shaker Ahmed	Contact the local Community Development Association official	01226240451
48.	Kamal Ali Ewis	Community Development Association - Nasser - BeniSuef	01273448828
49.	Tarek Moatasem Mohammed	Senior Engineer	01005398825
50.	Ahmed Hassan	Engineer Environment Friends Society	01112109558
51.	Ahmed Sayed Lotfy	Development Association - BaniBakhit	01229913181
52.	Raghda Abd El-Shafy Abd El-Samie	Engineer - Deputy Directorate of Roads Maintenance Management	01120728222
53.	Mohammed Abd El-GHany Mohammed Ibrahim	Director General of the Regional	01100839348

54.	Mohammed Ahmed Abd El-Aliem	Director of Community Development Association	01145124786
55.	AmgadAttiaAskandar	The first Social Affairs Development Specialist	-
56.	Mohammed Abd El-Mwgood	Operating Coordinator	01111600022
57.	Eyad Mohammed Hemeda	Community Development Association – BaniAdi	01282240128
58.	Nabil Hessien Hassan	Community Development Association –Haron	01063673107
59.	SamehThabet Habib	Director of Community Development Association – Zawyet El-Matlob	01225654173
60.	Hany Mohammed Abd El-Azim	AssociationKenoz El-Rahma for Development	01276939896
61.	Ali Sayed Hessien	-	01064004565
62.	Ossama Moustafa Ahmed	Al-Masaa Newspaper journalist	01004666309
63.	Gomaa Abd El-Meged Youssef	Community Development Association	01224910139
64.	Abdullah El-Sayed Ali	Director General of the southern region - GASCO	01006217549
65.	FifiGerges	Director of Development Administration Directorate of Solidarity	01006489639
66.	Abdullah Abdullah	Director of Operation electricity sector BeniSuef management	01002161088

67.	NahedZaher	Better Life Association	01006394482
68.	Rabie Mohammed	Community Development Association	01210311880
69.	Mohammed El-Saadny	Community Development Association	01141639648
70.	Moaaz Ali Hassan	Executive Director	01120022526
71.	Hessian GamasaHessien	Director General of AwqafBeniSuef	01143177290
72.	Ossama Krany Abd El-Aziz	First Health Monitor	01143232862
73.	Adel Abdo	First Health Monitor	01005801446
74.	Ahmed Fathy Mostafa	Director of the Environmental Impact Management - the Department of Environmental Affairs	01004023040
75.	Hoiam Ossama Moustafa	Archives	-
76.	Sayed Mohammed	ChairmanDevelopment and Services Association	01004040541
77.	Mahmoud Ali Mahmoud	6 October Association	01222739758
78.	Magda Mohammed Amin	Director General of Environmental Protection-GASCO	01099917122
79.	Mohammed Moustafa Abd-Alwahab	Director of the Department	01282059635
80.	Doha Talaat Mohammed	General Directorate of Environmental Affairs	01220826556

81.	Hoiam Ossama Moustafa	General Directorate of Environmental Affairs	-
82.	Alaa Sayed Ahmed	Community Development Association	01211253331
83.	Ahmed Souliman	Agent Environmental Management	01228703702
84.	Megahd Abo El-Magd	Director General of the safety lines - GASCO	01001729876
85.	Farid Ibrahim Sabry Ahmed	Director General of the Agricultural Affairs Department	01061564445
86.	Ibrahim Mahmoud Ahmed	General Manager of Safety - GASCO	-
87.	MoustafaMedhat Mohammed	The first engineer - EGAS company	01002091618
88.	Khairy Hassan Abd Elhamid	Chairman of the Association of Friends of the Environment	01111817481
89.	Ibrahim Seri	General Directorate of Environmental Affairs	-
90.	Magdy Hassan Rezq	Community Development Association	01225231956

Annex 9: Public Consultation Participants list

No.	Name	Job	Telephone
1.	Mohammed Mahmoud Abd El-Meged	GASCO	01006752758
2.	Moustafa Nabil MoustafaNagi	GASCO	01000858788
3.	MagedAfifi	SOUMID	01120118111
4.	Ismaiel Ibrahim	Executive Director of the Department of Environment	01000461237
5.	Ahmed Souliman Mohammed	Executive Director	01228703702
6.	Gaber Hamid Ali	Farmer	01140761885
7.	Mohammed Gamal El-Dien Mohammed	Government relations - GASCO	01020008598
8.	Hossam Souliman Mohammed	EEAA	01004850928
9.	Tarek Samir Kamel	Director General of Environmental Affairs	01222597103
10.	ReyadBadr	Director of Environmental Affairs local unit in BeniSuef	01062426615
11.	Gamal Ahmed Ali	Director general	01002612604
12.	AmaarAabasAmran	Director General of the Department of Agricultural Nasser	01004378946

13.	Nagah Mohammed	Driver	01281916945
14.	Mohammed EssamAshour	Environmental Protection Engineer - EGAS	01008993058
15.	Alaa Aziz Faragallah	Environmental Researcher - Environmental Affairs Agency	01005243301
16.	Abd Al-Nasser Mohammed Abd El-Baey	Financial Affairs Specialist	01225902235
17.	Ahmed Mohammed Hmeida	Community Development Association – BaniAdi	01282240128
18.	Mohammed Hassan El-Gendi	Renaissance Society of BeniSuef	01040551366
19.	Khaled Mohammed Souliman	Renaissance Society of BeniSuef	01111451432
20.	Maha Mansour Shuman	Director General of Environmental Affairs - 6 October apparatus	01007310613
21.	Qoutb Mohammed	GASCO	01111117376
22.	Mohammed Ibrahim	GASCO	01017691870
23.	Bassem Hatem Marwan	Member of the Environmental Inspection – BaniSwaif Governorate	01000070985
24.	Mohammed Hafez Mohammed	Director General of the Department of Agriculture to protect land – Al-Fayoum	01095045067
25.	Ewes Saied Abdullah	General Manager of EEAA - Al-Fayoum	-

26.	Ali Abd El-Hamid Ismaiel	The Department of Environmental Affairs inspector	01002749510
27.	Eid Hameed Ali	Farmer	-
28.	Ali Ahmed Ali	Deputy Managing Director of Environmental Affairs - Nile Valley	01001990366
29.	Bekhit Sayed Abd Al-Aziz	Nile Valley company	01002582225
30.	Mohammed Khamis Abd Al-Azim	Media and Public Relations Specialist - Fayoum governorate	01006160989
31.	Ali Ismaiel Abu Khatwa	-	01115620232
32.	Fareed El-Sayed Amin Moustafa	General Directorate for the Protection of the Nile	010100402010
33.	Hossam El-Dien Mohammed Amin	General Directorate for the Protection of Neil Greater Cairo - Ministry of Irrigation	01010694821
34.	Ashraf Hassan	Property Management	01281913303
35.	MoustafaMedhat Mohammed	EGAS	01002091618
36.	Shaaban Mahmoud Sayed	Head of El-Borg Agricultural	01288937146
37.	Ramadan Abd Al-Halim Ahmed	Head of Abu Khallad Local Unit	01229762180
38.	Ismail Hameed Ali Morsy	Farmer	01114229057

39.	Hassan El-Khedry	Journalist	01015540006
40.	Medhat Ibrahim Awad	Environmental Consultant - Environmental Affairs Agency	01006832807
41.	Sayed Salah Mohammed Saleh	The head of Bahshin agricultural	01220793624
42.	Mohammed Salah Farouk	Roads and Bridges Directorate	01225425788
43.	Akram Hassan	Roads and Bridges Directorate	0128406141
44.	Kareem Mohammed Mahmoud	General Department of Sanitation Engineer	01141699961
45.	Nasser Sedek	Department of Environmental Affairs – Giza Governorate	01154442927
46.	Fatma Bahaa El-Dien	Department of Environmental Affairs – Giza Governorate	01006724559
47.	Mohammed SabryHessien	Assistant Director General of the company Gasco	01117079086
48.	Slama Salah El-Dien Sayed	Director of the State Property Management	01007330223
49.	Ali Abd El-KhalieEid	Directorate of Roads and Transportation - Giza Governorate	01228408167
50.	Moustafa Abd El-Azim	Occupational health and safety and environmental protection director – Wadi El-Nile	01000016766

51.	Sami El-Sayed	Roads Directorate – Al-Fayoum	01005194897
52.	Abd El-Raouf Mahmoud Mohammed	Department of Environmental Affairs Delegate – FayoumGovernorate	01020853317
53.	Saleh Ezzat Mohammed	State Property apparatus – Giza Governorate	01125376590
54.	Ahmed Mohammed Abd El-Khalee	EEAA	01005688274
55.	Mohammed Nabil	EEAA	01001503436
56.	Hassan Darwish Mohammed	Environmental Affairs- 6 October	01149181411

Annex 10: Applying the Rating Matrix Method to Assess the Environmental Impacts in the Construction and Operation Phases

Annex 10 Table 1 - Impact assessment for construction stage environmental aspects

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
Air Quality	Dust emissions are expected to occur during the construction phase due to on-site activities and from trucks fugitive dust.	Adverse health impact on the respiratory system of the workers	4	4	16	✓
Aquatic Environment	Improper disposal of the wastewater resulting from the testing activities	Negative impact on the water bodies receiving this wastewater	4	2	8	✓
Noise and vibration	Noise arising from the operation of construction equipment and machinery	adverse health impacts on the auditory system of the workers	4	4	16	✓
Flora and Fauna	The project site is a desert area with no Significant flora and fauna	No flora and fauna will be affected during the project construction.	2	2	4	
Land use, Landscape and Visual Impact	There is no use for the route area as it is located in a		-	-	-	

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
	desert area.					
Soils, Geology and Hydrogeology	The excavation activities will result in disturbance of the soil and geological characteristics	Negative impact on the soil and geology during the construction phase	2	2	4	
Traffic	Traffic and delivery of construction materials and equipment to the project site, in addition to rerouting the small secondary/ internal roads of which the pipeline route passes under for 1-2 days, when either boring or open cut excavation methods are used. .	Minimal adverse impact concerning the traffic during the construction phase. Rerouting will also lead to reduction in the average speed of the vehicles on the road and the number of operating lanes, and may affect the areas devoted for parking. This may also increase the probability of having car accidents.	4	4	16	✓
Archaeological, Historic and	The project passes by	Archaeological artifacts	3	3	9	

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
Cultural Heritage	Dahshour area which is close to (but not inside) the Dahshour pyramid archeological site	might be discovered during the construction phase				
Natural Disaster Risk	Earthquake and floods may disturb the construction activities	Negative impact on the time schedule of the construction activities	3	4	12	✓
Major Accidents and Hazards	The construction activities may include leaks of the oil equipment and machinery	Negative impacts on the soil and generation of hazardous waste	3	4	12	✓
Solid Waste Management	Generation of construction waste e.g. Soil Concrete; Welding belts Used oils	Adverse impacts on the environment from the possible improper disposal of the solid wastes. Furthermore, adverse impacts from increased traffic load when	4	4	16	✓

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
		transporting waste to designated landfills and/or disposal sites are expected.				
Public Health	Since the pipeline route is located in a desert area, the construction activities will not have any effect concerning the public health	No public health impact during the construction phase	2	2	4	
Occupational Health and Safety	Health and safety hazards during the construction phase from the on-site construction activities.	Adverse impacts on occupational health & safety of the workers	4	3	12	✓
Associated Infrastructure	The construction phase may lead to breaking any of the underground infrastructure pipeline (water, sewerage or telecommunication)	Negative impacts on the water supply or the telecommunication service for the surrounding areas	3	4	12	✓
Energy Use	Fuel	Air pollution	2	3	6	

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
	consumption by vehicles and equipment	and the associated health effects				

Annex 10 Table 2 - Impact assessment for operation stage environmental aspects

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
Air Quality	Gaseous emissions form maintenance activities, No gaseous, dust or odor emissions are expected during the operation of the line.	Small amounts of CH_4 release during maintenance. General decrease in gaseous emissions from power plants due to fuel switch.	2	1	2	
Aquatic Environment	The project operation will not affect the aquatic environment	The project will not impact in this regards	-	-	-	
Noise and vibration	Minimal noise will be generated from the valve rooms	Noise resulting from the valve rooms is not considered to be significant	2	2	4	
Ecology (Flora and Fauna)	The pipeline is laid underground with minimal maintenance activities	The project will not impact the flora and Fauna	2	1	2	
Land use,	The pipeline	The project	3	2	6	

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
Landscape and Visual Impact	is laid underground with minimal maintenance activities	will not impact the land use				
Soils, Geology and Hydrogeology	The operation of the pipeline will not affect the soil or the geology of the land	No geological impact will occur during the operation phase	-	-	-	
Traffic	The operation of the pipeline does not include anytruck movement except during maintenance and inspection	Very small increase in traffic volume during the operation except during maintenance	1	2	2	
Natural Disaster Risk	Earthquakes may lead to pipeline breakage	Negative impact on the gas network connections	4	1	4	✓
Major Accidents and Hazards	Release of significant amounts of natural gas due to any failure in the pipeline or during the maintenance activities in the valve	Adverse impact on the surrounding environment	4	1	4	✓

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
	rooms					
Public Health	Apart from the release of significant amounts of natural gas discussed above, The project operation will not affect the public health	The project activity will not have a negative impact in that regards	1	1	1	✓
Occupational Health and Safety	The pipeline operation will not affect the occupational health and safety as there will be a small number of workers during the inspection and maintenance activities	The project activity will not have a negative impact in that regards	1	1	1	
Solid Waste Management	The pipeline operation will not dispose any type of solid waste except occasionally during maintenance.	The project activity will not have a negative impact in this regards.	1	1	1	
Existing Infrastructure	The project operation will not affect the	No significant impact concerning the	-	-	-	

Aspect	Description	Impact	Severity Ranking (S)	Frequency Ranking (F)	$S \times F$	Significant
	existing infrastructure	existing infrastructure				
Archaeological, Historic and Cultural Heritage	The project operation will not include any activities affecting the historic heritage	There is no negative impact concerning the historic heritage during the operation	-	-	-	
Energy Use	This project will help in supplying the region with natural gas for generation of electricity which will enrich the national electricity grid	Positive impact on the energy resources	3	4	12	✓

Annex 11: Occupational Health and Safety Plan for Construction

Annex 12: Emissions Reductions Calculations

The pipeline will serve new Beni Suef Power Plant. The power plant will utilize natural gas to generate 4800 MW electricity per year that would have otherwise be generated using a mix of more carbon intensive fuels (Heavy fuel oil, Light fuel Oil and Coal).

1. Baseline Emissions:

The following equation has been used to estimate the baseline emissions:

$BE_{CO2,elec,y} = EC_{,y} * EF_{grid,y}$

Where:

$BE_{CO2,elec,y}$ are the baseline emissions from electricity generated by the power plant during the year *y* (tCO_2/yr);

$EC_{PJ,y}$ is the quantity of electricity that would have been generated by the project activity during the year *y* (MWh);

$EF_{grid,y}$ is the emission factor for the grid in year *y* (tCO_2/MWh)

The emission factor of the grid is calculated as follows:

$$EF_{grid,,y} = \frac{\sum_{i,} FC_{i,,y}.NCV_{i,y}.EF_{CO2,i,y}}{EG_y}$$ [9]

Where:

$EF_{grid,OMsimple,y}$ = CO2 emission factor in year y (tCO_2/MWh)

$FC_{i,,y}$ = Amount of fossil fuel type i consumed by power plant / unit m in year y (mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)

$EF_{CO2,i,y}$ = CO2 emission factor of fossil fuel type i in year y (tCO2/GJ)

$EF_{,y}$ = Net electricity generated and delivered to the grid by all power sources serving the system in year y (MWh)

[9] The methodological "Tool to calculate the emission factor for an electricity system" (Version 2.1), Clean development mechanism

i = All fossil fuel types combusted in power plant / unit m in year y

In order to estimate the Emission factor of the grid, data from the latest report issued by the Ministry of Electricity & Renewable Energy (2013/2014) has been used. Additionally, data from the MoEE regarding the future energy mix that will be used to generate electricity in 2022 has been used to estimate the future EF of the grid. The values of grid emission factor in the years between 2014 and 2022 and post 2022 have been estimated.

Table 5: Net Electricity Production in year 2013/2014 [10]

Net Electricity Production in year 2013/2014	
Hydro	13,352
Thermal	138,795
Generated Energy from Wind (Zafarana)	1,446
Purchased Energy from IPPs	62
Generated from private sector (BOOT)	14,154
Total Net electricity generated (excluding isolated units), (GWh)	167809

Table 6: Fossil fuels amounts consumed in the electricity system in year 2013/2014 [11]

Fuel type	Units	2013/2014
Heavy Fuel Oil (HFO)	Tonnes	7,809,000
Natural Gas (NG)	m3	28,263,000,000
Natural Gas (NG)	tonnes *	21,994,553
Liquid Fuel Oil (LFO)	Tonnes	56,600
Special Liquid Fuel Oil (LFO)	Tonnes	76,800

[10] Egyptian Holding Electricity Company, Annual Report, 2014
[11] Egyptian Holding Electricity Company, Annual Report, 2014

Table 7: CO2 emissions per ton of fuel

Fuel type	Fuel Consumption	Units	NCV TJ/Tonne[12]	CO_2 emisisons factor (tCO_2/TJ) [13]	CO_2 Emissions (tCO_2/t fuel)
HFO	7809000	Tonnes	0.0404	75.5	23,819,012
NG	28263000000	m3			-
NG	21994553	tonnes	0.0480	54.3	57,326,602
LFO	56600	Tonnes	0.0430	72.6	176,694
Special LFO	76800	Tonnes	0.0430	72.6	239,754
CO_2 emissions, 2013/2014 (tCO_2)					81,562,062
CO_2 emission factor 2013/2014 (tCO_2/MWh)					0.5874

Table 8: Anticipated Net electricity production for Year 2022[14]

Net Electricity Production in year 2022	
Hydro	13,519
Thermal (NG + HFO)	256,865
Wind and solar	112,660
Coal	67,596
Total Net electricity generated (GWh)	450640
Total installed capacity (MW)	86000

[12] IPCC Guidelines 2006 - Part 2 - Energy
[13] ibid
[14] "Addressing Egypt's Electricity Vision, Minister of Electricity & Renewable Energy: Dr. Mohamed Shaker El-Markabi

Table 9: Anticipated Fossil fuels amounts to be consumed in the electricity system in year 2022 [15]

Fuel type	Units	2013/2014
Heavy Fuel Oil (HFO)	Tonnes	9,441,689
Natural Gas (NG)	tonnes *	45,031,610
Liquid Fuel Oil (LFO)	Tonnes	-
Coal	Tonnes	31,271,047

Table 10: CO2 emissions per ton of fuel

Fuel type	Fuel Consumption	Units	NCV TJ/Tonne[16]	CO_2 emisisons factor (tCO_2/TJ) [17]	CO_2 Emissions (tCO_2/t fuel)
HFO	9441689	Tonnes	0.0404	75.5	28,799,039
NG	45,031,610	tonnes	0.0480	54.3	117,370,389
LFO	-	Tonnes	0.0430	72.6	-
Coal	31,271,047	Tonnes	0.035	94.6	103,538,436
CO_2 emissions, 2022 (tCO_2)					249,707,864
CO_2 emission factor 2022 (tCO_2/MWh)					0.5541

2. Project Emissions:

The project emissions are calculated based on the following equation:

$PE_{CO2,elec,y} = EC_{PJ,y} * EC_{NG,y}$

[15] Egyptian Holding Electricity Company, Annual Report, 2014
[16] IPCC Guidelines 2006 - Part 2 - Energy
[17] ibid

Where:

$PE_{CO2,elec,y}$ are the project emissions from electricity generated by the power plant during the year *y* (tCO_2/yr);

$EC_{PJ,y}$ is the quantity of electricity that would have been generated by the project activity during the year *y* (MWh);

$EF_{NG,y}$ is the emission factor of the power plant that utilizes natural gas in year *y* (0.51 tCO_2/MWh)[18]

The following table summarizes the baseline emissions, the project emissions and the emission reductions generated by the project.

Year	Electricity generated by Beni Suef Power Plant (MWh)	EF grid (**tCO_2/MWh**)	Baseline Emissions (t CO2/y)	Project Emissions (t CO2/y)	Emissions Reductions (t CO2/y)
2014	-	0.5874	-	-	-
2014	-	0.5832	-	-	-
2016	-	0.5791	-	-	-
2017	38016000	0.5749	21,855,439	19,388,160	2,467,279
2018	38016000	0.5707	21,697,284	19,388,160	2,309,124
2019	38016000	0.5666	21,539,130	19,388,160	2,150,970
2020	38016000	0.5624	21,380,975	19,388,160	1,992,815
2021	38016000	0.5583	21,222,820	19,388,160	1,834,660
2022	38016000	0.5541	21,064,666	19,388,160	1,676,506
2023	38016000	0.5499	20,906,511	19,388,160	1,518,351

[18] US Energy Information Administration (EIA)

2024	38016000	0.5458	20,748,356	19,388,160	1,360,196
2025	38016000	0.5416	20,590,202	19,388,160	1,202,042

Annex 13: HSE Management Procedure for Oil spill

HSE Management procedure for accidental oil or leak for chemicals or oil

GASCO	HSE MANAGEMENT SYSTEM	GASCO-HSE-WI-061

تعليمات السلامة والبيئة للتعامل مع حالات تسريب وانسكاب الزيوت و المواد الكيماوية

الإدارة المصدرة : الإدارة العامة للسلامة والصحة المهنية وحماية البيئة
مجال التطبيق: جميع المناطق
التعليمـــات:

اولاً : في حالة حدوث تسريب أو انسكاب من الزيوت أو المواد الكيماوية بكميات بسيطة يجب عمل الآتي:-

1- يجب وقف مصدر التسريب .
2- يجب إبلاغ إدارة السلامة.
3- يتم تغطية المنطقة الملوثة برمال جافة لتتشرب الكمية المنسكبة.
4- يتم تجميع الرمال الملوثة بنتائج المعالجة في أوعية خاصة مكتوب عليها مخلفات خطرة و نقلها إلى الـ Segregation area.

ثانياً في حالة حدوث تسريب أو انسكاب من الزيوت أو المواد الكيماوية بكميات كبيرة يجب عمل الآتي:-

1- يجب على جميع العاملين إخلاء المكان باستثناء فريق الطوارئ .
2- يجب على فريق الطوارئ ارتداء جهاز التنفس.
3- يجب وقف مصدر التسريب .
4- يتم إحاطة المنطقة الملوثة برمال جافة أو نشارة خشب لمنع انتشار المادة المنسكبة.
5- يتم تغطية المنطقة الملوثة بـ Fire fighting foam للحد من تطاير المادة المنسكبة.
6- يتم شفط المادة المنسكبة بواسطة Vacuum pump و وضعها في أوعية خاصة لأعادتها للتانك في حالة صلاحيتها أو إرسالها للمهمات تمهيداً لإرسالها لشركة سيدبك.
7- يتم تجميع الرمال الملوثة بنتائج المعالجة في أوعية خاصة مكتوب عليها مخلفات خطرة و نقلها إلى الـ Segregation area طبقا لإجراء GASCO-HSE-P-014 .

إعداد	مراجعة	اعتماد
( ) الإدارة المصدرة	مدير الإدارة المصدرة	( ) مدير عام السلامة والصحة المهنية وحماية البيئة

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HSE Management procedure for oil change and greasing of equipment or valves

ASCO	HSE MANAGEMENT SYSTEM	GASCO-HSE-WI-012

تعليمات السلامة أثناء عملية تغيير أو تزويد زيوت التشحيم للماكينات وتشحيم البلوف

الإدارة المصدرة : الإدارة العامة للسلامة والصحة المهنية وحماية البيئة
مجال التطبيق : جميع المناطق
التعليمات :

1. يجب إرتداء مهمات الوقاية المناسبة (خوذة – نظارة واقية – حذاء – قفاز)
2. يجب استخراج تصاريح اللأعمال اللازمة من إدارة السلامة و الصحة المهنية .
3. تأكد دائماً من نوع الزيت المستخدم فى الماكينة أو المعدة وكذلك من نوع الشحم المستخدم لتشحيم البلوف.
4. تأكد من منسوب الزيت جيداً قبل الإضافة حتى لا عن الحد فيسبب ضرراً للماكينة .
5. تلافى إهدار الزيت أثناء التزويد أو التغيير على جسم الماكينة أو الأرض و ذلك بوضع وعاء مناسب لتجميع أى كمية زيت قد تنسكب .
6. حافظ على نظافة مكان العمل و ترتيبه .
7. أحترس من الأجزاء الدوارة بالماكينة و كذلك الأسطح الساخنة .
8. بعد انتهاء العمل يجب تجميع الزيوت المستعملة فى وعاء مناسب و إرساله إلى إدارة المهمات و ذلك للتخلص منها تبعاً للـ Waste Management Procedure.
9. يجب نقل البراميل بحرص و بحذر حتى لا تنسكب .
10. تجنب ملامسة الزيت للأيدي و العين .
11. يراعى مراجعة الـ MSDS الخاص بزيوت التشحيم أو الشحم قبل التعامل معها بحيث يتم التعامل مع المادة في التخزين و المداولة و أثناء الطوارئ طبقاً لما ورد بالـ MSDS.
12. فى حالة انسكاب الزيوت يتم التعامل معها طبقا لـ GASCO-HSE-WI-061 .

إعداد	مراجعة	اعتماد
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