

## ANNEX 16: CONSTRUCTION MANAGEMENT PLAN

---

Pioneer in integrated consulting services



March 2016

---



**PRINOS OFFSHORE  
DEVELOPMENT PROJECT  
CONSTRUCTION MANAGEMENT PLAN**

*THIS PAGE IS LEFT INTENTIONALLY BLANK*

<b>PRINOS OFFSHORE DEVELOPMENT PROJECT CONSTRUCTION MANAGEMENT PLAN</b>	
<b>Environmental Consultant:</b>	 <b>LDK Engineering Consultants SA</b>
<b>Date:</b>	04/03/2016
<b>Revision:</b>	01
<b>Description:</b>	1 <sup>st</sup> Draft interim submittal

	<b>Name – Company</b>	<b>Responsibility</b>	<b>Signature</b>	<b>Date</b>
<b>Prepared by:</b>	LDK			
<b>Checked by:</b>	Costis Nicolopoulos, LDK	Head of LDK Environment, principal, project director		
<b>Approved by:</b>	Costis Nicolopoulos, LDK	Head of LDK Environment, principal, project director		
	Vassilis Tsetoglou – Energean	HSE Director		
	Dr. Steve Moore – Energean	General Technical Director		

*THIS PAGE IS LEFT INTENTIONALLY BLANK*

## TABLE OF CONTENTS

<b>1</b>	<b><u>INTRODUCTION.....</u></b>	<b>1</b>
<b>2</b>	<b><u>SCOPE OF THE PLAN.....</u></b>	<b>1</b>
<b>3</b>	<b><u>ROLES AND RESPONSIBILITIES.....</u></b>	<b>2</b>
3.1.	OVERALL DESCRIPTION OF WORKS .....	2
3.2.	CONTRACTOR’S SCOPE OF WORK.....	8
3.2.1.	Project Management.....	8
3.2.2.	Engineering and Procedures .....	8
3.3.	ENERGEAN’S ROLES AND RESPONSIBILITIES .....	9
3.4.	CONTRACTOR’S ROLES AND RESPONSIBILITIES .....	10
3.5.	SUB-CONTRACTOR’S ROLES AND RESPONSIBILITIES .....	11
<b>4</b>	<b><u>PROJECT STANDARDS.....</u></b>	<b>12</b>
<b>5</b>	<b><u>IMPLEMENTATION SCHEDULE .....</u></b>	<b>12</b>
5.1.	BEFORE COMMENCEMENT OF CONSTRUCTION .....	13
5.2.	DURING CONSTRUCTION .....	13
<b>6</b>	<b><u>MITIGATION AND MANAGEMENT CONTROLS.....</u></b>	<b>14</b>
<b>7</b>	<b><u>MONITORING APPROACH AND LIST OF MONITORING PROCEDURES .....</u></b>	<b>17</b>
<b>8</b>	<b><u>TRAINING REQUIREMENTS.....</u></b>	<b>17</b>
<b>9</b>	<b><u>AUDITING AND REPORTING.....</u></b>	<b>18</b>

# 1 INTRODUCTION

---

This Management Plan outlines the mitigation measures and commitments and shapes the responsibilities, monitoring, auditing and implementation schedule in relation to General Construction Management for onshore works and specifically for the development of the working site for the pipeline fabrication.

The pipeline will be made up in its entirety along the onshore construction site. Pipe racks, roller stations, welding and NDT stations, a field joint completion station, pipe-handling gear, winches and crawlers, etc. will be installed at the selected site.

For the construction phase the Contractor is required to prepare its own specific Environmental and Social Management and Monitoring Plan (ESMMP) and especially the topic specific General Construction for onshore works Management Plan setting out how it intends to meet and comply with specific Project commitments and mitigation measures and in line to Energean's HSE Policy and Standards. This Management Plan shall act as a reference from which the Contractor shall prepare a General Construction Management for onshore works and specifically for the development of the working site for the pipeline fabrication.

The ESMS Framework Document provides an explanation of the linkage between Energean HSE Policy and the Monitoring Plans.

# 2 SCOPE OF THE PLAN

---

This Management Plan has been prepared to outline the mitigation measures necessary to ensure that negative impacts to environment and health & safety, focused in general construction issues for the onshore construction site for the pipeline fabrication, as a result of Project activities (only for construction phase) are prevented or, if this is not possible, reduced in terms of its magnitude and significance.

The objectives of the Management Plan are to ensure that any construction work in the pipeline fabrication onshore construction site undertaken complies with the Energean's HSE Policy, national legislations, best international practice and all relevant EBRD PRs, in order to avoid all potential damages to environment and to ensure the highest practicable level of health & safety.

More specifically this Management Plan aims at the following targets:

- Outlining how ENERGEAN will monitor and review Contractor's performance during construction
- Defining Contractor's roles and responsibilities
- Ensuring environmental protection of the highest achievable level
- Ensuring a high standard in work conditions

- Assisting the Contractor:
  - ⇒ In identifying the possible hazards that relate to the work process and to assume appropriate measures for the reduction of risks
  - ⇒ in preventing possible environmental damages or damages to third parties properties
- To anticipate and prevent possible damage of property belonging to third parties, caused by construction procedures.
- To ensure environmental protection of the highest achievable level.

This Management Plan is related to the following documents:

- ENERGEAN HSE Management Plan;
- ESMMP;
- Waste management plan;
- Pollution Prevention Management Plan;
- Emergency response plan;
- Stakeholder Engagement Plan (SEP);
- Biodiversity or Ecological and Wildlife management plan;
- Traffic management plan;
- Oil spill response plan; and
- Chance finds procedure for cultural heritage.

## 3 ROLES AND RESPONSIBILITIES

---

### 3.1. OVERALL DESCRIPTION OF WORKS

---

ENERGEAN Oil and Gas intends to increase production from its Prinós concession area and has therefore initiated the Prinós Exploration Area field development project, comprising of an additional wellhead platform with interconnecting flow lines and associated risers and topsides. The platform, Lamda, (for the Epsilon field) will be sited approximately 4km west of the existing Prinós Delta complex, which will supplement the production from the existing facilities at the Delta complex. ENERGEAN are operators of the field, and processing plant in KAVALA.

Crude oil from Lamda will be transported via a 10" nominal bore (NB) pipeline to the new Mezzanine Deck to be installed on the Prinós Delta Platform. Lift gas and Injection water will be delivered from Prinós Delta to Lamda in two further dedicated 6" NB pipelines. An umbilical from the existing DELTA platform to the new Lamda platform is required to provide power, communications and chemical injection to the new platform.

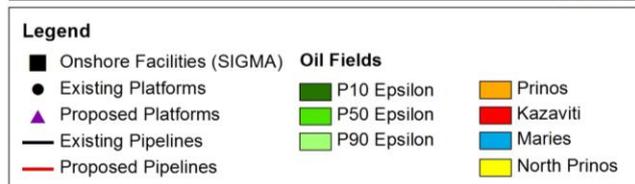
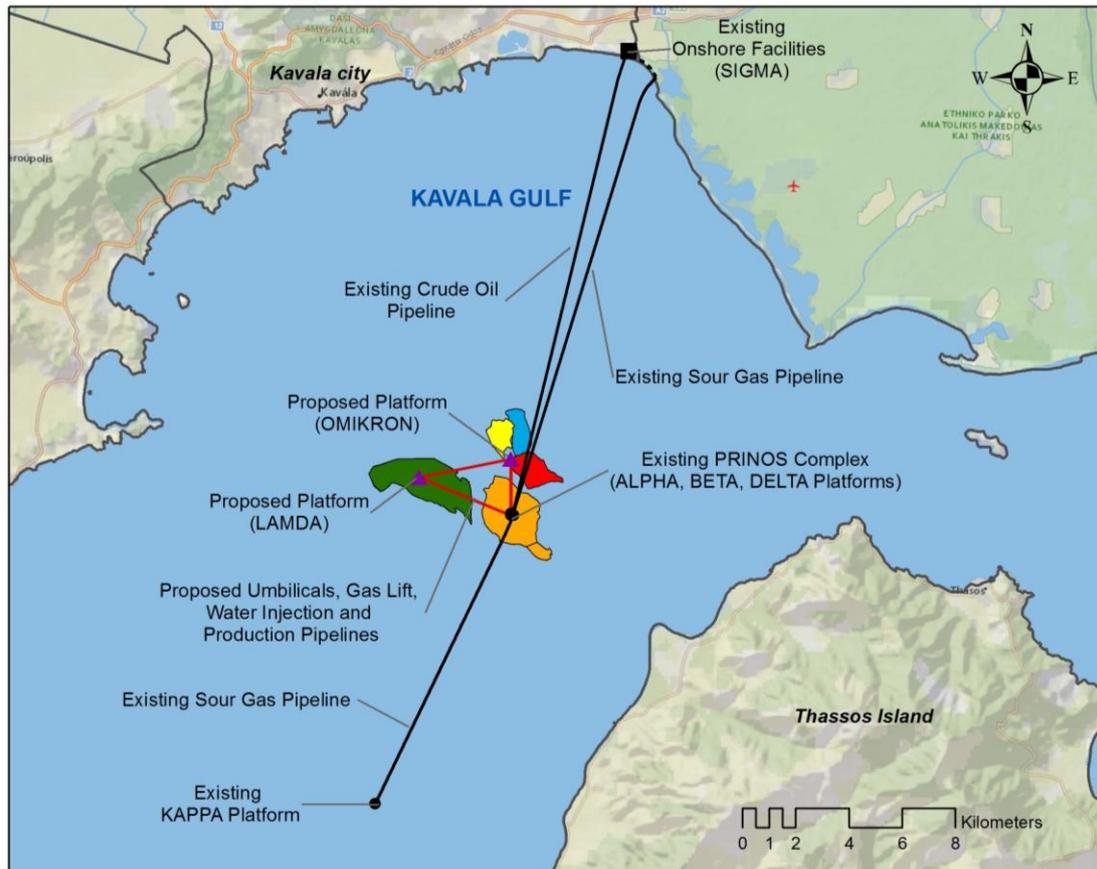
ENERGEAN will appoint a CONTRACTOR to set up the temporary string yard site, and perform the construction work required to prepare for the pipelines to be towed to the field. The CONTRACTOR will be required to provide information prior to award, regarding technical competency, track record, QHSE policy and financial standing. It is anticipated that the installation will be performed in Q2 2017.

ENERGEAN have a project management team (EPMT) in place, based in Athens and Kavala, which will oversee the design, fabrication and installation of the new development. A significant portion of the new development is the pipelines and umbilical installation scope. Preliminary cost analyses have been performed identifying that a towed pipeline installation solution may be favorable over traditional pipeline installation methods i.e.S-lay or reeling, given the following criteria:

- The pipelines and umbilical are short sections;
- Metocean conditions are generally benign, 90% of the time, Hs is less than 1m, due to the sheltered nature of the area, with minimal seasonal variation;
- There is very little marine traffic in the area;
- Shallow water, the field water depth ranges from 30m at the Delta platform to 40m at the new LAMDA platform;
- Availability of land near the onshore Sigma plant to set up a temporary string yard, where the pipeline sections will be welded and assembled in readiness for the towing;
- Skilled local labor and equipment, which can set up the string yard and perform the pipeline welding and preparations for towing; and
- Good availability of reliable marine equipment, tugs, barges, diving.

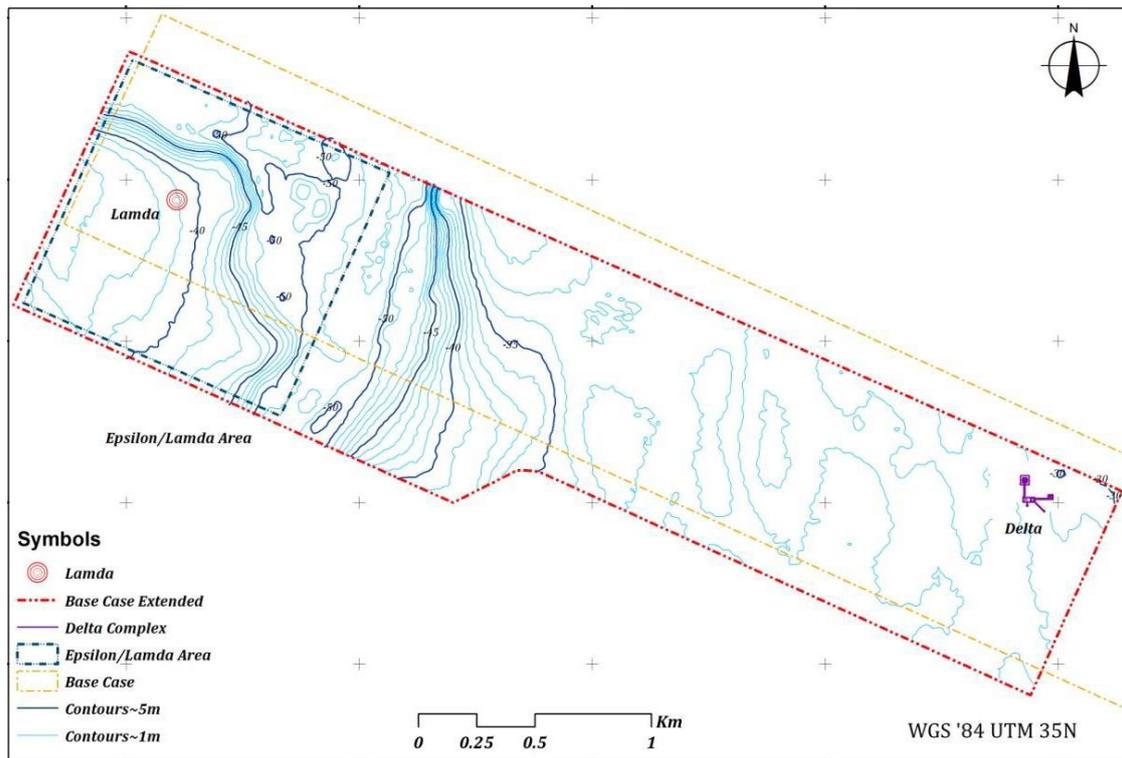
ENERGEAN have in house marine vessels, which will be used for the installation.

Each pipeline will be fabricated at a temporary designated string yard site either inside or adjacent to the onshore Sigma Plant, located approximately 18km north to the area of interest in the gulf of Kavala, or at Philippos port, located approximately 7km west to Sigma Plant. The final location of the temporary string yard site will depend on the proposed method of the CONTRACTOR.



**Map 1: Area of interest**

The distance between the existing Delta Platform and new Lamda platform is 3,878.39m (center line to center line) and the pipeline corridor in between is 3879.33m (horizontal distance). When deployed on the seabed, pipeline will be approximately 4km, according to October's 2015 Geophysical Survey (Annexed in the ESIA).

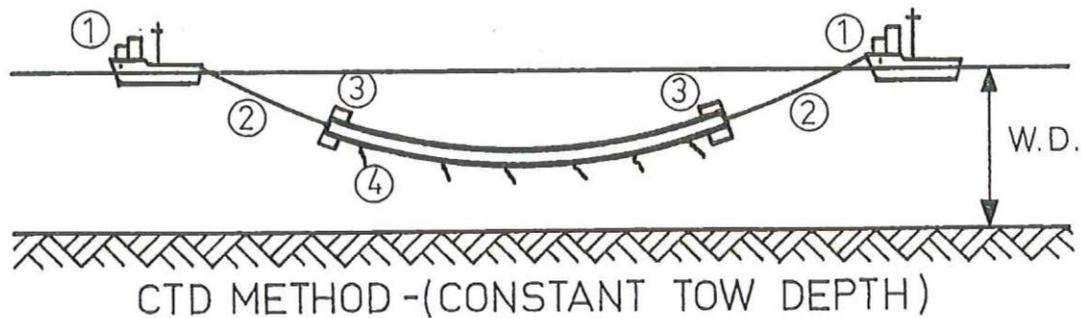


**Map 2: Installation area bathymetric chart**

Each pipeline string (up to 1km long, depending on CONTRACTORS method) will be assembled onshore and then welded in sections to form the 4km length, then towed to field position as a single 4km line with 2 tugboats; one in the front and one at the end.



**Map 3: Towing process map**



LEGEND :

- |                |                     |
|----------------|---------------------|
| ① SEAGOING TUG | ④ CHAINS            |
| ② CABLE        | ⑤ FLOATS            |
| ③ PULL HEAD    | L = PIPELINE LENGTH |

Figure 1: Towing process - elevation

The CONTRACTOR may select to tow the pipelines and umbilical individually or grouped together in a bundle. As a further optimization, the CONTRACTOR may propose to bundle the pipelines and the umbilical in a single tow.

The envisaged methods of towing may be off bottom tow or surface tow. The CONTRACTOR shall propose the method deemed most appropriate given the pipeline properties, water depths metocean conditions in the area, and the cost.

The battery limits for the installation are from the target box location at the existing Delta platform to the target box location of the new Lamda platform. The spools and riser installations are outside of this scope of work.

The pipeline diameters and wall thickness for the 3 respective pipelines are given below:

Nominal diameter (inch)	Pipeline	Pipeline and location class 1 (mm)	Riser, spools and location class 2 (mm)
10	Production	18.26	20.62
6	Water injection	10.97	12.70
6	Gas lift	14.27	15.88

It should be noted that the current design foresees a 3mm thk Corrosion Coating 3 layer system, with no concrete coating envisaged. The grade of the Pipe is X60.

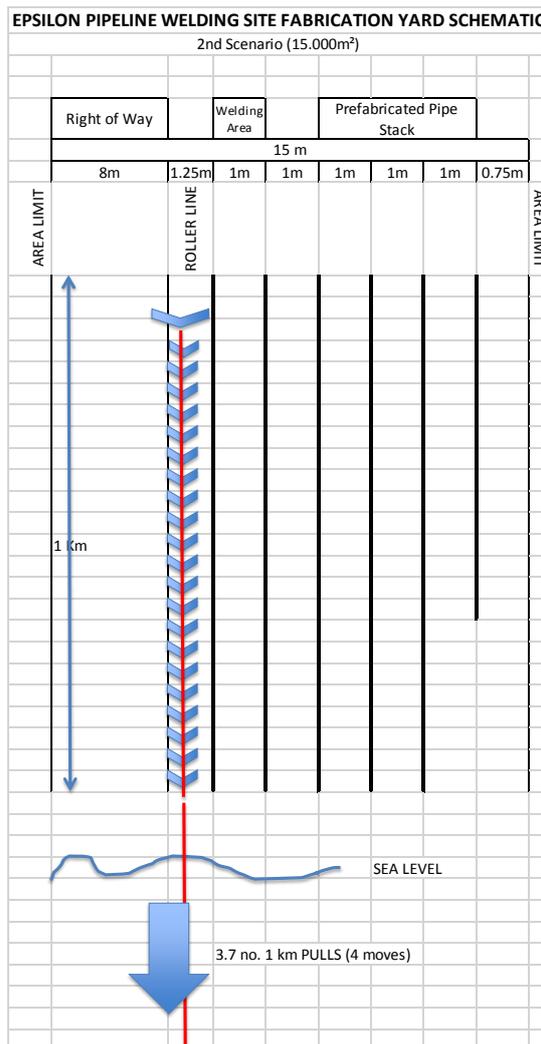
The umbilical has the following properties:

Parameter	Value
Outer diameter (mm)	135.8
Mass empty (kg/m)	33.4
Mass filled (mg/m)	34.8
Mass filled and flooded (kg/m)	36.8
Submerged weight empty (kgf/m)	18.6
Submerged weight filled (kgf/m)	20.0
Submerged weight filled and flooded (kgf/m)	22.0
Specific weight ratio	2.5
Submerged weight diameter ratio (kgf/m <sup>2</sup> )	162.0

Parameter	Value
Axial stiffness (MN)	486.7

The pipeline, flanges, and umbilical will be supplied as free issue materials to the CONTRACTOR. All installation aids to be specified by CONTRACTOR, and to be supplied free issue by ENERGEAN.

The onshore string yard will be required to facilitate the storage of pipes/ fittings and enough space for safe working of personnel/plant to construct strings of pipe sections ready for tow out. The diagram below provides an indication of the space required.



**Diagram 1: Epsilon pipeline welding site fabrication yard schematic**

Typical Temporary String Yard Activities as follows:

- Preparation of the area, land works, storage, temporary worker facilities and implementation of waste management plan, and Site Management plan;
- Set up of security arrangements;
- Set up of pre-fabricated pipe rollers and pipe roller trackway and welding/NDT stations;

- Pipeline Welder Qualifications (Could be performed offsite);
- Pipeline production welding and NDT;
- Flooding and Hydro testing of Individual Strings;
- Pipeline String assemblies with installation aids and pipeline monitoring equipment; and
- Set up of hold back winch and marine pulling and monitoring equipment.

The reference documents for the above activities to be provided by the CONTRACTOR, method statements, specifications, drawings, work plans, QHSE plans.

## 3.2. CONTRACTOR'S SCOPE OF WORK

The CONTRACTOR will be responsible for the overall pipeline and umbilical installation with covering as a minimum following activities:

### 3.2.1. Project Management

THE CONTRACTOR will be required to compile and coordinate the provision of reports / plans and information required to the EPMT, in order to support the overall planning and risks for the pipeline installation. The EPMT will coordinate the contractor's activities with a 'hands on approach'. The CONTRACTOR will be requested to provide regular updates of it's activities coordinated with ENERGEAN's PMT, as per the responsibility matrix given in the following paragraph (3.2.2) below.

A detailed project organization chart will be developed during the construction phase. The ENERGEAN Project Management Team (PMT) will coordinate the activities of the CONTRACTOR and its own team to meet the requirements of the project schedule and corporate policies.

### 3.2.2. Engineering and Procedures

The CONTRACTOR will be responsible to provide all calculations, reports, drawings and procedures for the planned installation activities. In addition, detailed MTO's and specifications will be required so that the EPMT can procure or provide services for the various activities. A summary of the Engineering Requirements as follows:

- Preparation of detailed method statements of the pipeline string yard set up, including plant, equipment, space, storage requirements;
- Preparation of specifications and drawings for pipeline rollers, winches, track-ways for pipe runway;
- Preparation of welding methods/NDT and field joint preparation according to project specifications;
- Preparation of site methods and QHSE plans, in compliance with ENERGEAN's HEALTH SAFETY work policies including waste management;
- Engineering analyses to support all the construction activities;

- Preparation of the offshore procedures, methods;
- Preparation and implementation of Safe Work Procedures/ Lifting Procedures, Toolbox talks; and
- Participation and supporting documentation for risk assessments, HAZID's and environmental workshops.

The following table defines the proposed responsibilities of each party for the works:

Item	Activity	Contractor	ENERGEAN PMT
1	Overall Management of the Project and Implementation of Corporate/Project Standards/Procedures, QHSE	Input	Responsible
2	Final Location of the Temporary Pipe String Yard	Input	Responsible
3	Land Permits and Liaison with Regulatory Authorities	Input	Responsible
4	Preparation of all String Yard Work Plans Procedures	Responsible	Review/Input
5	Risk Assessments/ HAZIDS, Workshops, Risk Mitigation Measures and Control Processes	Input	Responsible
6	Welding and NDT Procedures, ITP Plans	Responsible	Review
7	QA/QC	Input	Responsible
8	Preparation of Offshore Work Plans Procedures	Responsible	Review/Input
9	Supply of Pipeline/Flanges	Review	Responsible
10	Supply of Plant/temp equipment and Manpower for pipeline Welding	Responsible	Review
11	Supply of Flooding Hydro testing Equipment	Responsible	Input
12	Supply of Installation Aids, buoyancy tanks, chains	Specify	Responsible
13	Supply of Marine Equipment, tugs, support vessels	Input	Responsible
14	Supply and Management of all installation monitoring equipment / survey	Input	Responsible
15	Restoration of Temp String Yard Site to original condition	Responsible	Input
16	As built Documentation	Responsible	Review

### 3.3. ENERGEAN'S ROLES AND RESPONSIBILITIES

All Energean managers and supervisors are accountable for the implementation of this Management Plan. The roles and responsibilities of Energean's personnel in respect to this Management Plan are:

- Project Execution Manager – Responsible for the Epsilon Project Execution
- Project Manager/Engineer Pipelines – Responsible for the pipelines Installation
- Project String Yard QA/QC Supervisor – Responsible for QA/QC check of contractors welding and methods

- Project Safety Coordinator – Responsible for checks to Contractor’s Safe practice methods according to ENERGEAN Health and Safety Management Systems and monitoring of Site toolbox talks, JSA’s and Environmental Management.
- Project Logistics Coordinator – Organization of COMPANY supplied items to Site
- Project Marine Coordinator – Organization of Marine Support Services.

Energean will provide all issued permits and authorizations for the onshore construction site to the Contractor, in order to finalize his General Construction Management Plan.

The contractors will need to provide the following personnel:

- Project Manager and Construction Supervisors
- Welders/Fitters/Riggers/Crane Operators
- QA/QC Personnel and Site Safety Personnel

Before the commencement of the construction ENERGEAN’s Project Manager will communicate this Management Plan to the Contractor. The assessment of Contractor’s General Construction Management Plan will be made by the Construction Supervision with the assistance of the HSE Manager.

### 3.4. CONTRACTOR’S ROLES AND RESPONSIBILITIES

The Contractor will be responsible for the proper arrangement of the onshore construction site and for putting in place any necessary measures for safeguarding the environment and health & safety of the personnel and generally of the public. In general the Contractor will be responsible for:

- Elaborate and implement a General Construction Management Plan
- Assignment of the responsible persons
- Communicate the Management Plan to workers and subcontractors
- Ensure compliance
- Establish a communication line with the competent Authorities, if required
- Implement effective monitoring, including subcontractors
- Reporting

The Contractor must comply with all national, EU and international regulations and EBRD Performance Requirements with regard to environmental and health & safety specifications at places at work.

Specific duties have to be assigned, for this reason and more specifically:

- The Site Manager is responsible for:
  - ⇒ Understanding ENERGEAN’s HSE policy and HSE Management Plan
  - ⇒ Implementing the Management Plan
  - ⇒ Ensuring the compliance of subcontractors to the Management Plan
  - ⇒ Distributing responsibilities to the hierarchy in the worksite
  - ⇒ In cooperation with the HSE Coordinator, he verifies that the worksite is effectively managed and controlled

- ⇒ Ensuring employee training on HSE issues and on this Management Plan
- ⇒ Ensuring that all workers know how to implement the mitigation measures
- The Project Engineer is responsible for:
  - ⇒ Understanding ENERGEAN's HSE policy and HSE Management Plan
  - ⇒ HSE issues for his section of the project/work.
  - ⇒ Implementing the Management Plan
  - ⇒ Briefing and training the personnel on the provisions of this Management Plan, First Aid training, organizing emergency teams, provide first aid etc, for their section of the project/work.
  - ⇒ They are responsible for ensuring proper conditions of work, in alignment with the HSE legislation and the present Management Plan.
  - ⇒ Supervising the subcontractors' compliance to this Management Plan and to HSE Regulations.
- The HSE Coordinator is responsible for:
  - ⇒ Controls the subcontractors' compliance to this Management Plan and to HSE Regulations
  - ⇒ Provides clarified instructions for the secure and proper execution of the Management Plan
  - ⇒ Is informed for any accident and participates in their investigation, and suggests measures to avoid their repetition.
  - ⇒ Updates the Project HSE Diary
  - ⇒ Conducts inspections to ensure the procedures are followed and to evaluate their effectiveness
  - ⇒ Receives information for all incidents or near incidents and participates in their investigation, informing the Project Manager
  - ⇒ In case of incident or near incident, he fills in all the documentation that is demanded by the procedures

### 3.5. SUB-CONTRACTOR'S ROLES AND RESPONSIBILITIES

The subcontractors must know and comply with any duties or responsibilities set by the national, EU and international regulations and EBRD standards with regard to HSE issues.

Before the commencing of the construction a project, the subcontractor must make known to the Contractor and more specifically to the HSE Coordinator the specifics of his) safety engineer. The subcontractor must have a representative, with whom the contractor can communicate the HSE issues. The subcontractor must ensure that all requirements stated in this document are known and obeyed by their personnel.

## 4 PROJECT STANDARDS

---

The management of any finds will be handled in accordance with national legislation and EBRD requirements.

More specifically:

- National legislation:
  - ⇒ Presidential Decree 17/1996, on measures to improve the safety and health of employees at work in compliance with the instructions of 89/391/EC and 91/383/EC, as amended by PD 159/99 and repealed by Law 3850/10 (amendments by Law 4144/13)
  - ⇒ Presidential Decree 305/1996 adopting the 1992/57/EC Directive on the implementation of minimum safety and health requirements at temporary or mobile construction sites
  - ⇒ Law 40421/12, on Environmental liability – framework of waste generation and management
  - ⇒ Law 4014/11, on the protection of environment
  - ⇒ Law 3013/02, on the protection of antiquities
- European legislation:
  - ⇒ Construction Site Directive (Directive 92/57/EEC)
  - ⇒ Directive 89/391/EEC (Framework Directive) and Directive 91/383/EC (supplementing the measures to encourage improvements in the safety and health at work)
- EBRD requirements:
  - ⇒ PR1 – Assessment and management of environmental and social impacts and issues
  - ⇒ PR2 – Labor and Working Conditions
  - ⇒ PR3 - Resource efficiency and pollution prevention and control:
  - ⇒ PR4 – Health and Safety
  - ⇒ PR6 - Biodiversity conservation and sustainable management of living natural resources
  - ⇒ PR8 - Cultural heritage
- ENERGEAN's standards:
  - ⇒ HSE Policy
  - ⇒ HSE Management Plan

## 5 IMPLEMENTATION SCHEDULE

---

The overall implementation schedule of the works is presented in the below diagram:

ACTIVITY	2016				2017				
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APRIL	MAY
Permissions and Permits (If outside SIGMA Plant)									
Preparation of Procedures and Engineering									
Fabrication of Rollers, and Temp Equipment									
Procurement of all Installation Aids, Bouyancy Tanks chains									
Welder Qualifications									
Welding Production of the Pipeline Strings									
Installation of Bouyancy Tanks									
Tow out and Installation									

## 5.1. BEFORE COMMENCEMENT OF CONSTRUCTION

The implementation schedule for the Management Plan, before the commencement of construction is:

Activity	Timeline / milestone
Assignment of Contractor's and Energean's responsible persons	Prior to contract
Provision of environmental documentation (ESIA, Approved Environmental Terms, Management Plan) to Contractor	Immediate after contract
Energean's HSE Policy and HSE Management Plan to be available in site	Immediate after contract
Definition of onshore construction site footprint and boundaries	Immediate after contract
Set up clearance procedures (according to Biodiversity and Wildlife Management Plan)	Two months prior to construction
Definition of waste storage and chemical substances storage areas	Two months prior to construction
Estimation of quantities and sources of water (process and potable)	Two months prior to construction
Obtain all permits and authorizations for the onshore construction site	Prior to construction
Establishment of communication line between the Contractor and Energean	Prior to construction
Communicate the Management Plan to employees	Prior to construction

## 5.2. DURING CONSTRUCTION

The implementation schedule for the Management Plan, during the construction phase, is:

Activity	Timeline / milestone
Fencing of site	With commencement of construction activities
Signage of site	With commencement of construction activities
Hygiene facilities	With commencement of construction activities

Activity	Timeline / milestone
All materials, equipment, machinery and vehicles throughout the worksite are stored and parked in the specified positions	Continuously
All areas must be cleaned of garbage, waste materials, spilled materials (lubricants, fuel etc)	Continuously
Tanks with gases under pressure (for welding & cutting), must be gathered to a place, in vertical position and fenced	Continuously
Pipelines must be placed properly and fenced in order to avoid rolling or falling	Continuously
Maintenance of vehicles and machinery	Continuously
Pollution prevention	Continuously
Proper hazardous substances usage	Continuously
Proper waste management and wastewater management	Continuously
Set up clearance procedures (according to Biodiversity and Wildlife Management Plan)	Two months before the end of construction

## 6 MITIGATION AND MANAGEMENT CONTROLS

Energean and the Contractor have the following general obligations:

Obligation	Responsible	Means of verification
Obtain all permits and authorizations for the onshore construction site	Energean (HSE Manager)	Issuance of all permits and authorization prior to construction site mobilization
Obtain all permits and authorizations for the mobilization of the construction site	Contractor (Site Manager)	Issuance of all permits and authorization prior to construction site mobilization
Communicate the Management Plan to Contractor	Energean (Construction Supervisor)	Training Diary
Environmental documentation (ESIA, Approved Environmental Terms, Management Plan) to be available in site	Energean (HSE Manager) Contractor (HSE Coordinator)	Availability of documents
Energean's HSE Policy and HSE Management Plan to be available in site	Energean (HSE Manager) Contractor (HSE Coordinator)	Availability of documents
Use of approved project footprint (onshore)	Contractor (Site Manager)	Fencing of site limits

The following mitigation measures and management controls shall apply:

Measure / commitment	Responsible	Means of verification
<b>Clearance of the area</b>		
Special measures for the clearance of the area	As per Biodiversity and Wildlife Management Plan	As per Biodiversity and Wildlife Management Plan
<b>Fencing</b>		
Specifications of fencings: <ul style="list-style-type: none"> <li>• Materials</li> <li>• Dimensions</li> <li>• Distance from areas</li> <li>• Color</li> <li>• Signage</li> </ul>	Contractor (Project Engineer)	List of specifications
Fencing of site boundaries	Contractor (Site Manager)	Construction of fencing before commencing of works
Appropriate fencing for areas inside the site: <ul style="list-style-type: none"> <li>• where personnel is exposed to hazards</li> <li>• waste storage</li> <li>• hazard substances storage</li> </ul>	Contractor (Site Manager)	Construction of fencing before commencing of works
<b>Signage</b>		
Signage specifications	Contractor (Project Engineer)	List of specifications
Signage for the construction site	Contractor (Site Manager)	Installation of signage before commencing of works
Signage near the of vehicle / machinery exit points of the construction site	Contractor (Site Manager)	Installation of signage before commencing of works
Signage for areas inside the site for: <ul style="list-style-type: none"> <li>• Prohibition (red)</li> <li>• Warning (yellow)</li> <li>• Obligation (blue)</li> <li>• Emergency &amp; medical information (green)</li> <li>• Fire-fighting gear (red)</li> </ul>	Contractor (Site Manager)	Installation of signage before commencing of works
<b>Public Utility Networks</b>		
Mapping of Public Utility Networks affected by the onshore construction site	Contractor (Project Engineer)	Drawings with Public Utility Networks
Application of Public Utility Networks guidelines	Contractor (Project Engineer)	Supervision of relevant works
<b>Hygiene facilities</b>		
In the construction site will be chemical toilets	Contractor (Site Manager)	Installation before the commencement of construction works
In the construction site will be adequate and appropriate hygiene facilities for safe keeping of clothes, personal items of personnel		Installation before the commencement of construction works
<b>Cleanliness &amp; Tidiness</b>		
All materials, equipment, machinery and vehicles	Contractor (Project Engineer)	Specified positions prior to construction site

Measure / commitment	Responsible	Means of verification
throughout the worksite are stored and parked in the specified positions		mobilization
All areas must be cleaned of garbage, waste materials, spilled materials (lubricants, fuel etc)	Contractor (Project Engineer)	Inspection in daily basis
Tanks with gases under pressure (for welding & cutting), must be gathered to a place, in vertical position and fenced	Contractor (Project Engineer)	Inspection in daily basis
Pipelines must be placed properly and fenced in order to avoid rolling or falling	Contractor (Project Engineer)	Inspection in daily basis
<b>Vehicle control in the onshore construction site</b>		
Development of a Vehicle Management Study for application in the construction site	Contractor (Site Manager)	Vehicle Management Study
<b>Pollution prevention and resource availability</b>		
Regular maintenance of vehicles and machinery	Contractor (HSE Coordinator)	Maintenance Diary
Estimation of quantities and sources of water (process and potable)	Contractor (Project Manager)	Development of Water Use Study
Authorizations for use of water:	Contractor (HSE Coordinator)	Obtain all authorization, if required
Proper wastewater Management	As per Waste Management Plan and Pollution Prevention Management Plan	As per Waste Management Plan and Pollution Prevention Management Plan
Proper waste Management	As per Waste Management Plan and Pollution Prevention Management Plan	As per Waste Management Plan and Pollution Prevention Management Plan
Proper use and handling of hazardous substances	As per Pollution Prevention Management Plan	As per Pollution Prevention Management Plan
<b>Cultural Heritage</b>		
Chance Finds of cultural heritage	As per Chance Finds Procedure Management Plan	As per Chance Finds Procedure Management Plan
<b>Reinstatement after construction</b>		
Special measures for the reinstatement of the area	As per Biodiversity and Wildlife Management Plan	As per Biodiversity and Wildlife Management Plan

## 7 MONITORING APPROACH AND LIST OF MONITORING PROCEDURES

The following monitoring procedures will be applied:

Measure / commitment	Responsible	Periodicity
Fencing (site boundaries and areas inside the site) has to be in good conditions with no damages	Contractor (HSE Coordinator)	Monthly
Signage (site boundaries, areas inside the site, vehicle exit points) has to be in good conditions with no damages	Contractor (HSE Coordinator)	Monthly
Hygiene facilities must be in good condition	Contractor (HSE Coordinator)	Monthly
Storage of materials in specified positions	Contractor (HSE Coordinator)	Daily
Cleanliness and tidiness of areas	Contractor (HSE Coordinator)	Daily
All tanks with gases under pressure in vertical position	Contractor (HSE Coordinator)	Daily
Placement of pipelines	Contractor (HSE Coordinator)	Daily
Maintenance log of vehicles and machinery	Contractor (Project Engineer)	Monthly

Monitoring parameters for emergency response, waste, wastewater, chance finds of cultural heritage will follow the provisions of relevant Management Plan. Monitoring parameters for clearance and reinstatement of the area after constructions will follow the provisions of Biodiversity and Wildlife Management Plan.

## 8 TRAINING REQUIREMENTS

Prior to the construction site mobilization ENERGEAN's Project Manager will communicate this Management Plan to the Contractor.

ENERGEAN recognizes that an effective training program can reduce the number of injuries, property damage, legal liability, illnesses, workers' compensation claims and missed time from work.

Safety training classes help establish a safety culture in which employees themselves help promote proper safety procedures while on the job. The safety-training program covers topics such as:

- Accident prevention and safety promotion
- Safety compliance

- Accident and emergency response
- Personal protective equipment
- Safety practices
- Firefighting principles and fire extinguishing
- Equipment and machinery
- Chemical and hazardous materials safety
- Workplace hazards
- Employee involvement
- First aids and Automatic External Defibrillator

## 9 AUDITING AND REPORTING

The following auditing and reporting will take place:

Audit / report	Parameter / indicator	Periodicity
Satisfactory implementation of mitigation measures for general construction management	100% implementation	Monthly
Non-compliance report	Non-compliance	When occur
Reporting on accident / near-miss accident	As per HSE Management Plan	As per HSE Management Plan