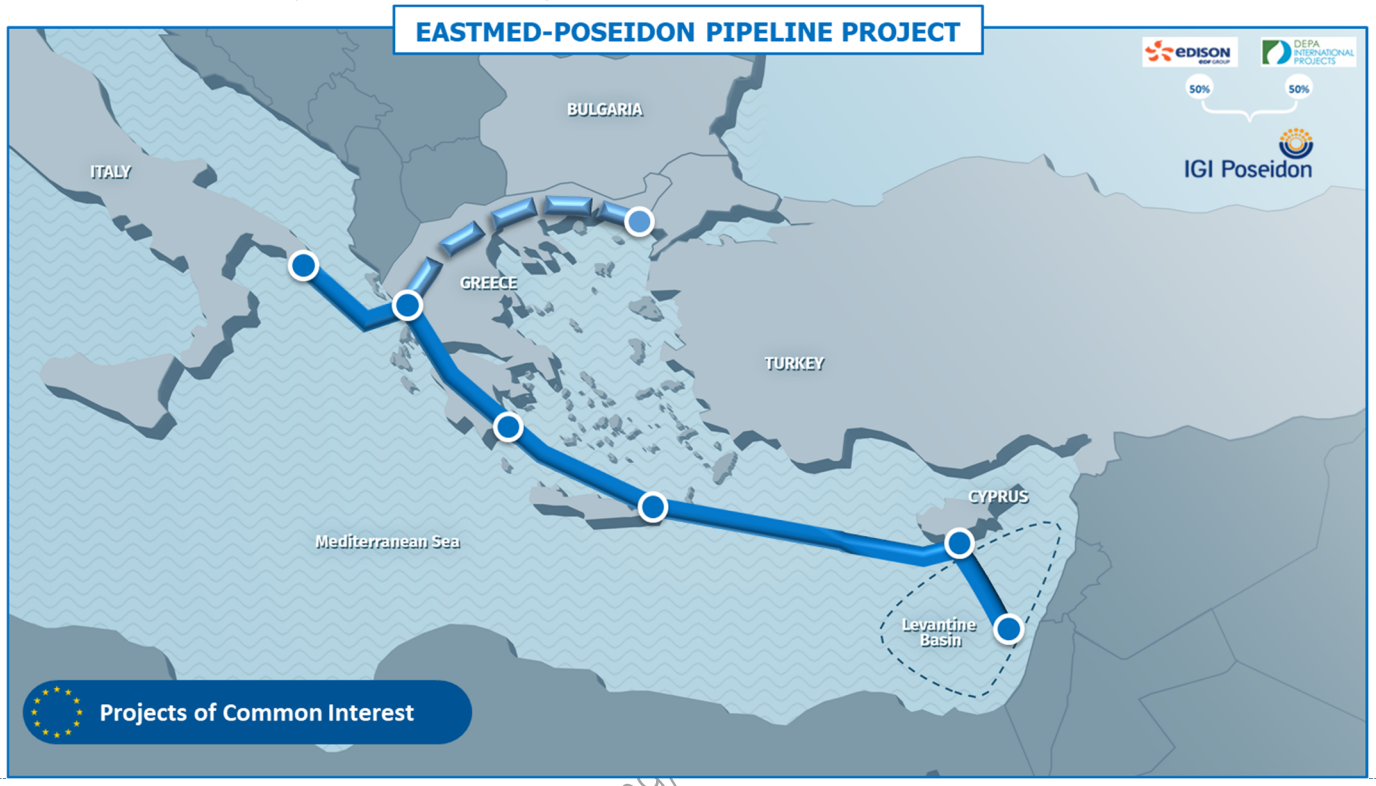
PROJECT:

EastMed Pipeline Project



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Abbreviations

Abbreviation	Description
AA	Appropriate Assessment
AQI	Air Quality Index
AUV	Autonomous Underwater Vehicles
AW	Atlantic Water
BAT	Best Available Techniques
BEMRS	British East Mediterranean Relay Station
BSCM	Billion Standard Cubic Meters
CBOs	Community Based Organizations
CCGT	Combined Cycle Gas Turbine
CEP	Community Engagement Plan
CLOs	Community Liaison Officers
CO	Carbon Monoxide
CO2	Carbon Dioxide
CPA	Cyprus Port Authority
CS	Contaminated Sites
DFMR	Department of Fisheries and Marine Research
DLI	Department of Labour Inspection
DMS	Detailed Marine Survey
DoE	Department of Environment
E&S	Environmental and Social
EAC	Electricity Authority of Cyprus
EBRD	European Bank for Reconstruction and Development
EBS	Environmental Baseline Studies
ECP	EastMed Compressor Platform
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
EMDW	Eastern Mediterranean Deep Water
EPCI	Engineering, Procurement, Construction and Installation
ESD	ESIA Scoping Document

Abbreviation	Description
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
EUNIS	European Nature Information System
FEED	Front End Engineering Design
FGD	Flue Gas Desulphurisation
FSRU	Floating Storage and Re-gasification Unit
GDP	Gross Domestic Product
GFCM	General Fisheries Commission for the Mediterranean
GMR	Greater Mediterranean Region
H&S	Health and Safety
HCC	Heads of Community Councils
HDD	Horizontal Direction Drilling
HSE	Health, Safety and Environment
ICH	Intangible Cultural Heritage
IFC	International Finance Corporation
IGA	Intergovernmental Agreement
IPIECA	International Petroleum Industry Environmental Conservation Association
ITA	Inline Tee Assembly
IUCN	International Union for Conservation of Nature
LIW	Levantine Intermediate Water
LNG	Liquefied Natural Gas
LSW	Levantine Surface Water
MAG	Magnetometer
MBES	Multi-Beam Echo-Sounder
NCA	National Competent Authority
NGOs	Non-Governmental Organization
NH3	Ammonia
NO	Nitrogen Oxide
NOx	Nitrogen Oxides

Abbreviation	Description
O&M	Operation and Maintenance
O3	Ozone
OSPAR	Oslo/Paris Convention (Protection of the Marine Environment of the North-East Atlantic)
PCI	Project of Common Interest
PCS	Potentially Contaminated Sites
PCV	Pressure Control Valve
PEC	Power Energy Cyprus
PLONOR	Pose Little or No Risk
PM10	Particulate Matter 10
PM2,5	Particulate Matter 2,5
PPE	Personal Protective Equipment
PR	Performance Requirement
RAP	Resettlement Action Plan
RMS	Reconnaissance Marine Survey
ROC	Republic of Cyprus
ROV	Remotely Operated Vehicles
SBP	Sub-Bottom Profiler
SCADA	System Control and Data Acquisition
SCI	Site of Community Importance
SEA	Strategic Environmental Assessment
SEE	South Eastern European
SPT	Standard Pressure Testing
SSS	Side-Scan Sonar
TBM	Tunnel Boring Machine
UNEP-WCMC	United Nations Environment Programme – World Conservation Monitoring Centre
VEC	Vasilikos Energy Centre
WD	Water Depth
WDD	Water Development Department

External cooperation (if applicable)

This document was drafted with the cooperation of:

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EXECUTIVE SUMMARY

Introduction

The Eastern Mediterranean Pipeline Project (EastMed) is an offshore/onshore natural gas pipeline that will connect East Mediterranean energy resources (offshore gas reserves in the Levantine Basin) to mainland Greece via Cyprus and Crete, untapping new sources, currently not reaching any part of the European Union Member State markets.

In conjunction with Poseidon Pipeline Project, it will integrate the regional infrastructure, connecting European energy systems by enhancing the security of supply of Mediterranean and south-east European countries. This connection with the Poseidon Pipeline Project will transport gas to Italy and other European markets, thus ensuring market integration, competition and security of supply. Moreover, it will ensure that member states not yet interconnected to the trans-European gas networks have the ability to access energy markets.

For their contribution to the European Union energy target, both infrastructure projects have been included in the list of "Project of Common Interest (PCI)" for Europe, the highest priority level for EU standards according to the provision of EU regulation 347/2013, and as a Project of National Importance and Public Interest for Greece, according to Article 106 of Law 4685/2020.

EastMed Pipeline Project, considered the regional key energy infrastructure, has been supported by the governments of Cyprus, Greece and Israel with the signature of its Intergovernmental Agreement on the 2nd of January 2020.

From a strategic point of view, the EastMed-Poseidon Pipeline Project would:

- Enhance Europe's gas security of supply by diversifying counterparts, routes and sources;
- Connect efficiently to the European markets indigenous and close border sources available in the eastern Mediterranean area;
- Promote development of a new energy corridor, completing the Southern Gas Corridor; Ending the isolation of Cyprus by means the connection to the pipeline representing a new energy corridor promoting integration and development with South Eastern Europe (SEE) markets.

The Cypriot portion of this international pipeline interconnector is made up of a Southern EastMed line and a Northern EastMed line. In order to ensure as much flexibility as possible and to strengthen the reliability of supply, these two lines, upstream of Crete, are designed to work complementarily as well as independently, due to infrastructure in Cyprus dedicated to each line. The system could be, therefore, adapted to needs of Cyprus based on the maturity of development of sources. The project, that runs in total for about 1400 km offshore and 600 km onshore, is

currently designed to transport 11 BSCM/year for the Southern line and 10 BSCM/year for the Northern line. One additional BSCM/year from the Southern line will supply the Cypriot internal gas network. Therefore, the system has an overall export capacity of 21 BSCM/year (11BSCM/year for the Southern line and 10 BSCM/year for the Northern line), plus 1BSCM/year to Cyprus mainland through Southern pipeline dedicated branch line.

The actual offshore pipeline routes are based on the outcomes of the Reconnaissance Marine Survey performed in 2017-2018 and an optimisation technical assessment performed by IGI Poseidon after confirmation of the availability of of several gas sources in Cyprus and Israel.

Onshore facilities in Cyprus will be located at the Vasilikos Industrial Area. The exact locations are going to be confirmed in the next project phases, after the completion of all the detailed technical, environmental and social surveys with the scope to identify potential suitable areas and minimize any type of impacts on the population and environment.

The ongoing development of the project includes the integration of natural gas transportation service and hydrogen, promoting the South-East Europe and east Mediterranean region's transition towards a sustainable and efficient energy transmission network and supporting hydrogen production plants and the development of energy intensive users.

In fact, IGI Poseidon is carrying out a technical assessment in order to identify the requirements (material and design specifications, operational management conditions, etc.) to ensure safe and optimised hydrogen transportation,. This activity is currently in progress with the contribution of leading firms specialised in the sector.

Purpose of this Report

Although Cypriot legislation does not require a scoping report for the project, this document was prepared following good international practice and in alignment and consistency with the approach adopted by IGI Poseidon in Greece (i.e. for consistency among the various geographies of the project).

This scoping report identifies the key issues to be addressed in the ESIA ensuring that the ESIA report focuses on relevant potential environmental and social impacts that may arise from the project. Ultimately the scoping defines the works and investigations required to prepare the ESIA, including stakeholder engagement and disclosure activities. It takes into account the NCA (National Competent Authority) letter and Annexes received by IGI Poseidon on 4th March 2020 from the Ministry of Energy, Commerce and Industry (i.e. the National Competent Authority), following submission of the Notification Dossier for Cyprus

Project Description

The EastMed Pipeline Interconnector in Cyprus consists of pipelines that deliver gas from Israeli/Cyprus offshore borders and from Cypriot national sources to mainland Cyprus and then from mainland Cyprus towards Crete/Greece. Preliminarily, the design takes into account an inlet of the pipeline from a location close to the Aphrodite field, but availability of this source has yet to be confirmed.

The pipeline will be made of welded steel pipe sections and the steel pipe sections will be coated outside to protect from corrosion. Some pipeline sections will also be coated with reinforced concrete to enhance pipeline stability (vertical and lateral) under hydrodynamic loads. The entire pipeline will be protected against corrosion by a cathodic protection system.

The proposed design life of the EastMed/Poseidon Pipeline Project is 50 years.

An overview of the project is provided in Figure 0.1 and in Map 1 (Appendix A).

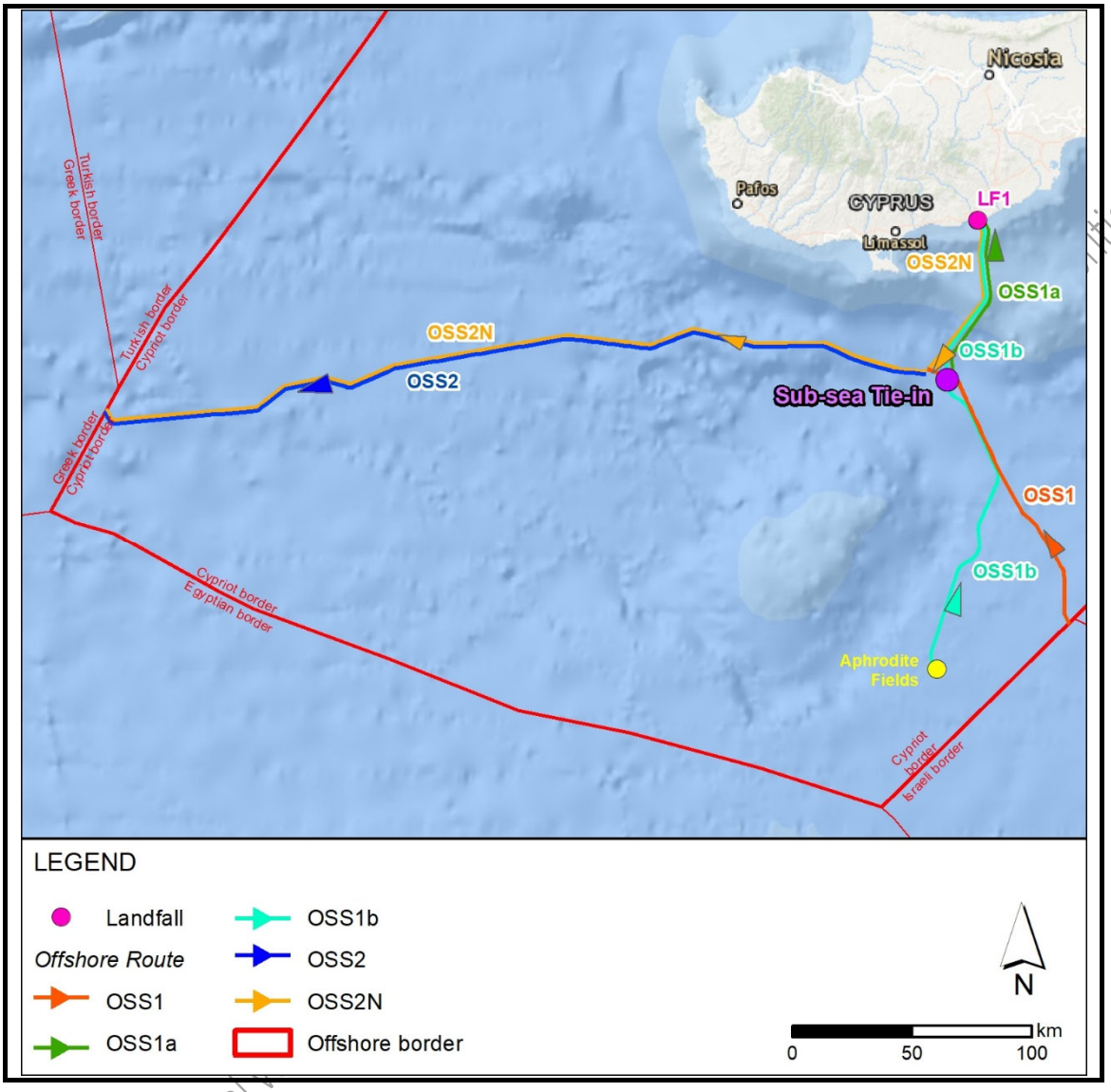

Figure 0.1 Overview Offshore Route Map within Cyprus Jurisdiction

Offshore Section

The Southern Pipeline in Cyprus consists of the following three offshore pipeline sections: OSS1, OSS2 and OSS1a. OSS1 is the pipeline that comes from the EastMed Compressor Platform (ECP) in Israeli waters and arrives at the subsea Inline Tee Assembly (ITA). OSS2 pipeline extends from the subsea tie-in point in Cypriot waters up to the Cyprus/Greece offshore border and then to Crete. OSS1a is a branch line from the subsea tie-in point to the landfall station in Cyprus that will supply the Cypriot internal gas network.

The Northern Pipeline in Cyprus comprises the following offshore pipeline sections: OSS1b, a subsea trunk line from the Cypriot offshore gas field (preliminarily identified close to Aphrodite Block) to Cyprus, and OSS2N that carries gas from Cyprus to Greece.

The installation methodology for the offshore sections of the EastMed Pipeline Project depends on sea water depth. Most of the routes of OSS1 and OSS2 pipelines will be installed using a deepwater installation vessel.

After the offshore pipelines have been installed, pre-commissioning activities will be undertaken to ensure that the pipelines meet operational requirements. Compliance with the prerequisites and requisites of the pre-commissioning procedure as well as implementation of the needed safeguards must be monitored and verified continuously as the project progresses.

During the operation phase the pipeline will be monitored and controlled from one Main Dispatching and Operation and Maintenance Centre in Greece and one Backup Dispatching Centre in Crete.

To allow internal inspection, pig traps will be installed at the inlet/outlet of each pipeline segment to facilitate pigging and cleaning operations.

OSS1-OSS2 will have a pig launcher facility most probably on board the ECP in Israel.

To allow pigging of the OSS1a subsea branch pipeline, one 12.75-inch (323.9 mm) subsea pig launcher will be available.

The subsea pig launcher will be a temporary pig launcher equipped with a diverless connection system. The pig launcher will be used for pre-commissioning and regular internal inspection of OSS1a.

Onshore Section and Facilities

Vasilikos Industrial Area has been selected as the area where the onshore facilities and shore crossing will be placed.

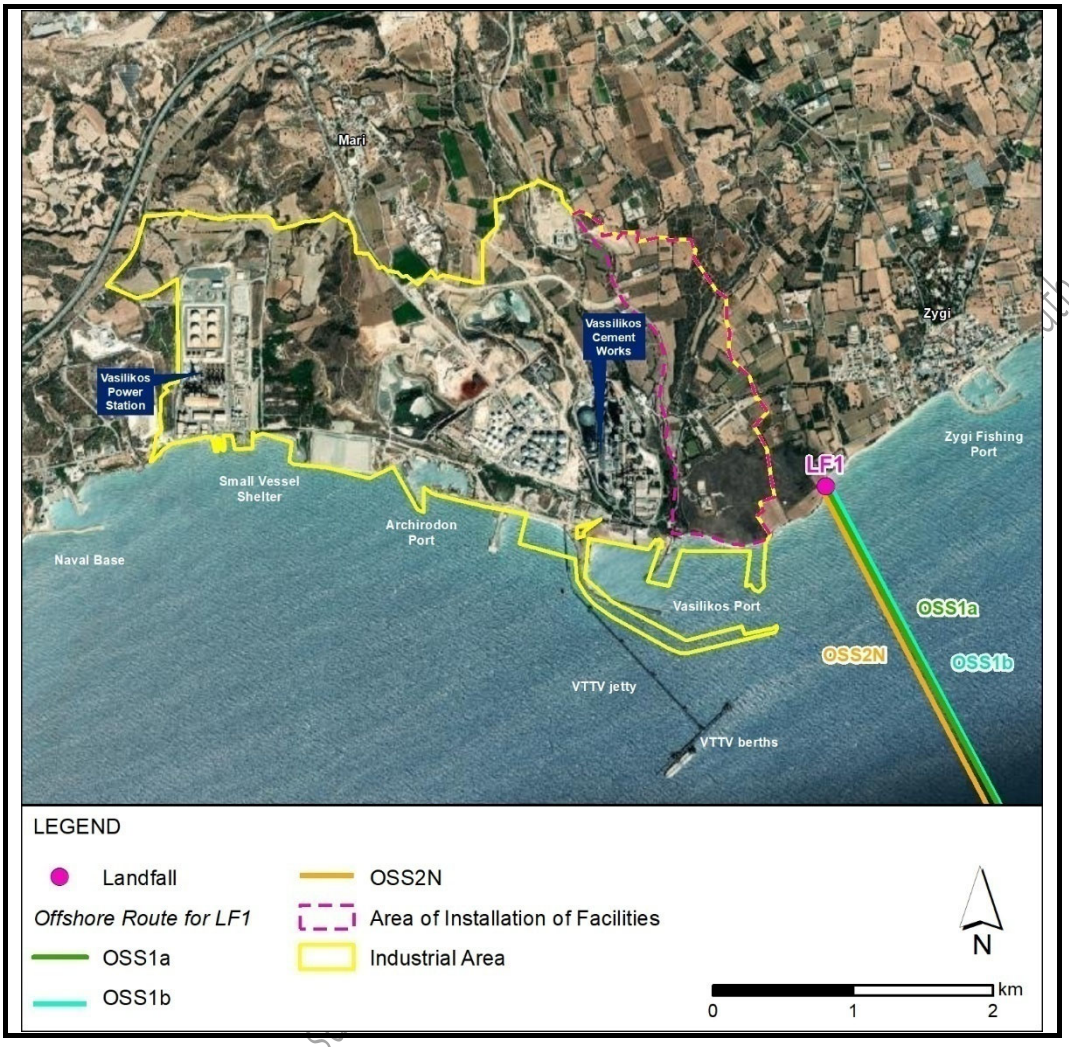

Figure 0.2 Overview Onshore Infrastructure Map within Cyprus Jurisdiction

The shore crossing (i.e. landfall) will occur in a location that satisfies the best alignment between the offshore pipeline and onshore facilities. The landfall evaluated at this stage is LF1, located between the ports of Vasilikos and Zygi, and so far the proposed construction method is the traditional open cut method.

As part of the open cut method in the nearshore part close to the landfall, a sheet piled cofferdam will be temporarily installed to minimise dredging volumes, to prevent accelerated shoreline erosion and to protect the trench from natural backfilling during the period between trench excavation and pipeline installation. All pipelines reaching the landfall will be placed in the same trench.

Onshore facilities are proposed to be located within the fuchsia polygon in the Vasilikos Port Area (see Figure 0.2), although the specific location and distribution of facilities have not been decided yet. The selected area(s) will accommodate the following main components:

- A Metering and Pressure Reduction Station (MS1a/PRS) which measures and regulates the flow before the tie-in to the national gas grid (Southern line)
- A Compressor and Metering Station (CS1/MS1) with functionality to receive gas from the OSS1b trunk line and to recompress this gas for onward transport toward the compressor and metering station in Crete (Northern line)
- Associated facilities required during construction (access roads, camps, yards, etc.).

MS1a/PRS and CS1/MS1 can be built in the same area or in two separated areas located within the fuchsia polygon mentioned above and showed in Figure 0.2. The final locations of the abovementioned facilities will be defined during the ESIA phase.

A system of onshore pipelines will connect landfall point LF1 with the onshore facilities; these onshore pipeline sections will be buried.

A number of verification tests will be carried out before operation of the onshore facilities.

Baseline Conditions

Offshore Section

The marine waters of Cyprus are contained in the wider Levantine Basin which is considered one of the most oligotrophic areas in the world with inputs of organic carbon 15-80 times lower than in the western basin and very low concentrations of chlorophyll-a in surface offshore waters. Cyprus coasts boast excellent water quality status (EEA, 2020b). According to European Blue Flag (EEA), Governor's beach and Kalymnos beach, located respectively at 5 km and 4.6 km from the Landfall, are considered blue flag awarded sites since 2001. The landfall site, however is located right to the east of the Vasilikos Industrial Area with its industrial port, and therefore it can be expected that the site is already under the influence of port activities when compared to other areas located further east.

Estimates suggest that underwater noise has increased significantly during the past few decades, especially due to the expanding use of the sea for commercial shipping and the presence of offshore natural gas production installations. However, with respect to main international underwater noise indicators, existing data are insufficient to evaluate the current status of underwater noise in Cyprus.

In the southern part of Cyprus, seabed topography consists of uniform, smooth gradients with no major irregularities or obstructions and slopes descending gradually to depths of about 10 m by 800

m and 20 m by 1500 m offshore. Submarine canyons characterise the seafloor morphology of the offshore area. Almost 518 submarine canyons have been identified in the Mediterranean Sea, and five of them are within Cyprus waters.

Close to Vasilikos, local bathymetry follows the outline curve of the coastline, and marine deposits comprise silt, sand and gravel. Sandy and rocky seabed which can be found down to 10 m grades gradually into sandy composition within 50 m and becomes finer with depth, reaching quantities above 50%.

A Natura 2000 site is identified off the coast of Cyprus, named "Oceanid" (pSCI CY4000024) and categorised as a proposed Site of Community Importance (pSCI). This site is a 100% marine area extending for 8,317 km^2 off the west coast of Cyprus. The proposed SCI area aims to ensure the migratory corridors and create a marine protected area for marine turtles offshore as well as to ensure favourable conservation status for all marine mammals and their habitats. The proposed routes travel parallel to the southernmost limit of the site and enters the geometric boundary of the site in a couple of sections.

In the nearshore area, two main habitats have been identified in Vasilikos Bay which are characterised by benthic macrophyte communities of *Posidonia oceanica*, *Cymodocea nodosa* and the green alga *Caulerpa prolifera* (1120 *Posidonia* beds and 1110 Sandbanks which are slightly covered by sea water all the time). *Posidonia oceanica* represents a priority habitat per European Habitats Directive (Dir. 92/43/CEE) and the Barcelona Convention. Several fish species are present within the *P. oceanica* meadows of the Vasilikos area.

Main constraints for the offshore section of the project are shown in Figure 0.3 below.

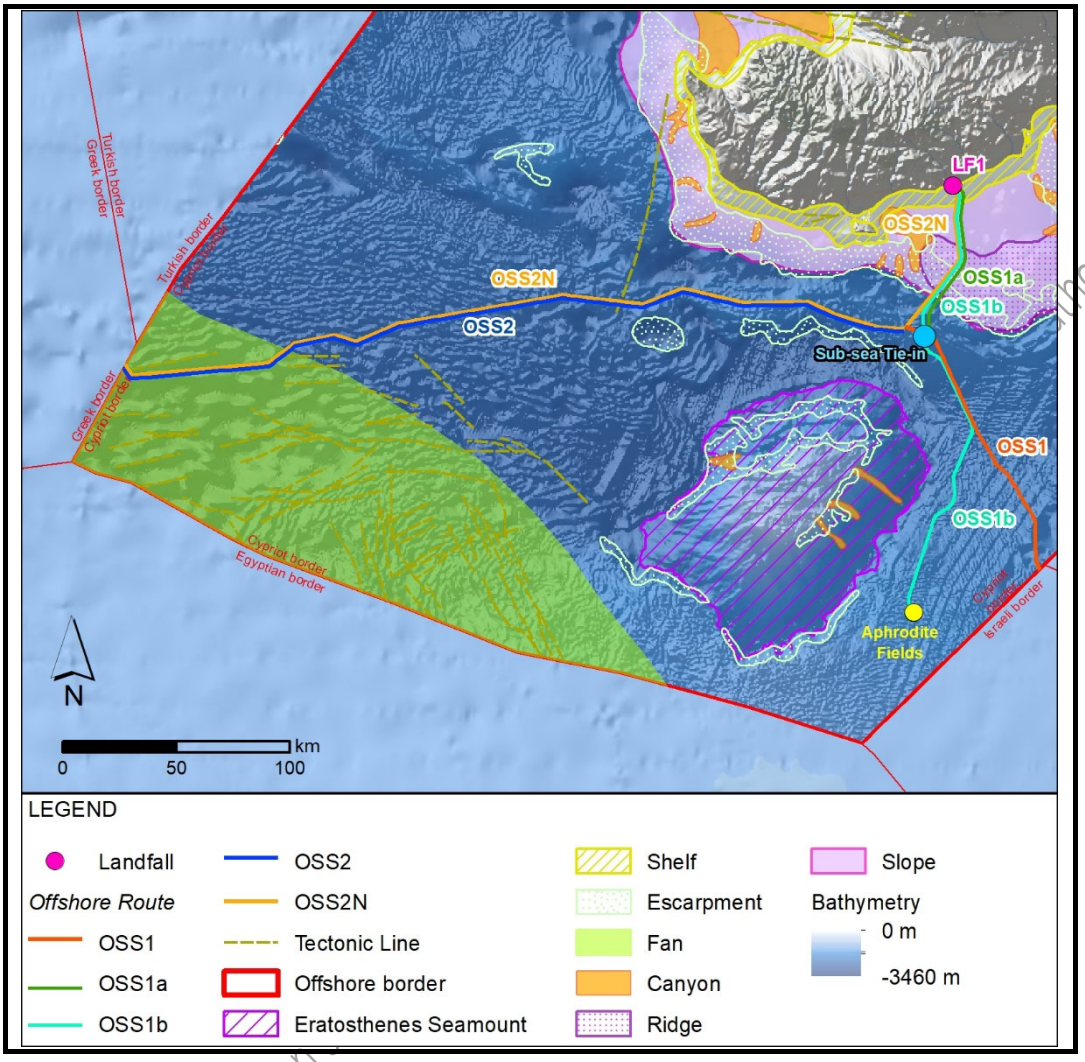

Figure 0.3 Main offshore constraints for Cyprus section

Onshore Section and Facilities

As is the case for most Mediterranean coastal zones, the coastal area of Cyprus is characterised by a high concentration of population and economic activities. The main industrial area is located in the Larnaca district on the southern part of the island.

The Vasilikos area is the major growth magnet for the area of study where there is a concentration of large numbers of industries such as the cement factory, petroleum facilities and more. Intense industrial activity and human exploitation in this area, which hosts the only industrial area in Cyprus with a direct access to the sea, contributed to a reduction in the quality of some environmental features (Poten & ALA, 2015b).

No sensitive habitats have been identified in the vicinity of the onshore installations location. The areas located around are in most cases either cultivations or brownfields with previous activities.

Closest protected areas are Potamos Pentaschinos (Special Protection Area - CY6000008) and Periochi Asgatas (Site of Community Importance - CY5000007), both at some 7.5km from the landfall site).

The literature review of fauna within the Vasilikos area revealed the presence of common lizards, weasels and mice, as well as common invertebrates. Generally, the ecological value in the area is not considered high.

Tourism and travel occupies a dominant position in the economy of Cyprus with 22.7% of GDP (2019); it has proved to be the most resilient of Cyprus' commercial sectors and contributes a great deal to local employment. The great area of Vasilikos plays a role in development of the tourist sector in Cyprus.

According to the Antiquities Department, there are ten archaeological sites near the project Area of Interest and two among them are close to the landfall area. There are three sites north of the Vasilikos industrial area, in the Kalavasos administrative area: Pamboules, Kopetra and Ayios Dimitrios antiquities. Tochni Lakkia and Zygi Petrini archaeological sites are located close the landfall area.

APPENDIX A – Map n. 3 shows the main outcomes of the Vasilikos Draft Master Plan (October 2020).

Potential Impacts and Mitigation Measures

The project's environmental and socioeconomic impacts have been identified and preliminarily assessed during the scoping process. The assessment was based on currently available project information, baseline information collected to date and experience gained during similar projects constructed in similar environmental and socioeconomic contexts. Mitigation and management measures have also been preliminarily identified for each impact. The likelihood, magnitude and significance of the impacts will be further assessed in the next stages of the project during the ESIA.

The preliminary assessment highlights that pipelines and associated facilities construction causes environmental and social impacts that in most cases are typically temporary in nature and localised. These include temporary noise and air emissions from construction machinery, potential impacts on water quality, potential loss/disturbance of natural habitats (flora and fauna), potential impacts on soil or the seabed from excavation and construction activities, and potential impacts on land use. The impacts on cultural heritage, due to the proximity of Tochni Lakkia will be better assessed after the specific field surveys and will be addressed on the ESIA.

The nearshore section crosses areas with potential sensitive receptors: local fisheries, other sea users, known relevant areas with *Posidonia oceanica* and other sensitive species and habitats.

The preliminary assessment reveals that mainly maintenance operations and activities would cause potential impacts during the operation phase. Maintenance machinery and vessels will impact with temporary noise and air emissions, and repair operations will require use of materials. The physical presence of the offshore pipeline can interfere with trawling activities. Air emissions and noise impacts will also be generated during operation of the compressor station. More details and a full comprehensive analysis of all the listed impacts and associated preventive/mitigation measures will be provided during the next ESIA phase.

Terms of Reference for ESIA

The ESIA will be conducted in compliance with the requirements of Cypriot legislation and indication of Cypriot authorities involved in the scoping phase. Provisions of EU directives and best international practices will be taken into account when carrying out all activities related to the ESIA study for the section of the project within Cyprus jurisdiction.

The main ESIA steps include:

- Complete the project description incorporating relevant information as further engineering details become available. For instance, refine and confirm base-case route alignments, onshore facilities location, construction details (e.g. techniques for landfall, corridor constraints), pre-commissioning activities and operation (e.g. Compressor Station);
- Conduct specific investigations to further support the alternatives assessment process (if necessary) and to document detailed findings (environmental and social constraints and general baseline) along the base-case route as well as permanent and temporary footprint/facilities;
- Undertake a comprehensive baseline data collection and survey in accordance with EBRD PR standards and regulatory requirements;
- Conduct additional consultation and further refine the scope of the ESIA as necessary;
- Develop all modelling and specialist studies required for a detailed evaluation of impacts;
- Report the final impacts evaluation for all project phases;
- Develop and describe potential mitigation, enhancement measures and outline an approach for monitoring.

To develop a complete baseline or impact assessment a number of specialised studies will be performed: modelling and desktop studies, nearshore site investigations, offshore marine campaign (DMS), onshore site visits, appropriate ecological assessment. Primary data will be collected by field studies carried out by environmental, socioeconomic and cultural heritage specialists.

Stakeholder Engagement

Consultation and engagement with stakeholders is an integral part of the Environmental and Social Impact Assessment (ESIA) process. In line with this, IGI Poseidon has prepared a Stakeholder Engagement Strategy with the overall aim to ensure that a consistent, comprehensive, coordinated and culturally appropriate approach is taken for stakeholder consultation and project disclosure. The approach taken by IGI Poseidon fully complies with Cypriot ESIA Regulations, EBRD Performance Requirements, EU Directive on Projects of Common Interest (PCI), as well as relevant policies of international best practice standards.

To meet stakeholder engagement objectives, the EastMed Pipeline Project has developed a plan for stakeholder engagement throughout the project life cycle. The plan lays out a process for consultation and disclosure through five stages, each having slightly different objectives.

Table 0.1 ESIA Stakeholder Engagement Phases

Phase	Objective	Status
Feasibility Phase	Introduce the project to national authorities to identify key sensitivities.	Completed (2015-2016)
Scoping Consultation	Provide further detail on the project and gather feedback on the scope, approach and key issues that will be addressed during the ESIA and for future engagement activities.	*Ongoing*
ESIA Study	Maintain relationships with stakeholders and ensure issues raised are taken on board by the project. IGI Poseidon will revisit national and district authorities and engage with affected communities.	*Planned*
Draft ESIA Disclosure	Stakeholders will be presented with the draft ESIA report at the end of the ESIA process and invited to comment on the document, in order to be finalized.	*Planned*
Project Execution (construction, operation and decommissioning)	IGI Poseidon will continue to engage with stakeholders throughout the project life cycle.	*Planned*
PCI process	Details regarding the modalities are included in Section 2.1.3.	*Planned*

Public Comments and Suggestions

An important objective of the ESIA scoping disclosure process is to allow stakeholders to provide feedback on the project. In this regard, IGI Poseidon has envisaged a process that allows stakeholders to address their comments and suggestions in writing to IGI Poseidon after the scoping meetings have taken place. Furthermore, IGI Poseidon would like to invite all stakeholders involved in the scoping process, including local communities and the general public, to submit their comments and suggestion concerning the Cypriot section of the EastMed Pipeline Project in writing using a standard form (see Appendix B) to facilitate the submission of comments and suggestions in both English and Greek. Participants to the scoping phase can submit comment forms either via ordinary mail or email to the following addresses:

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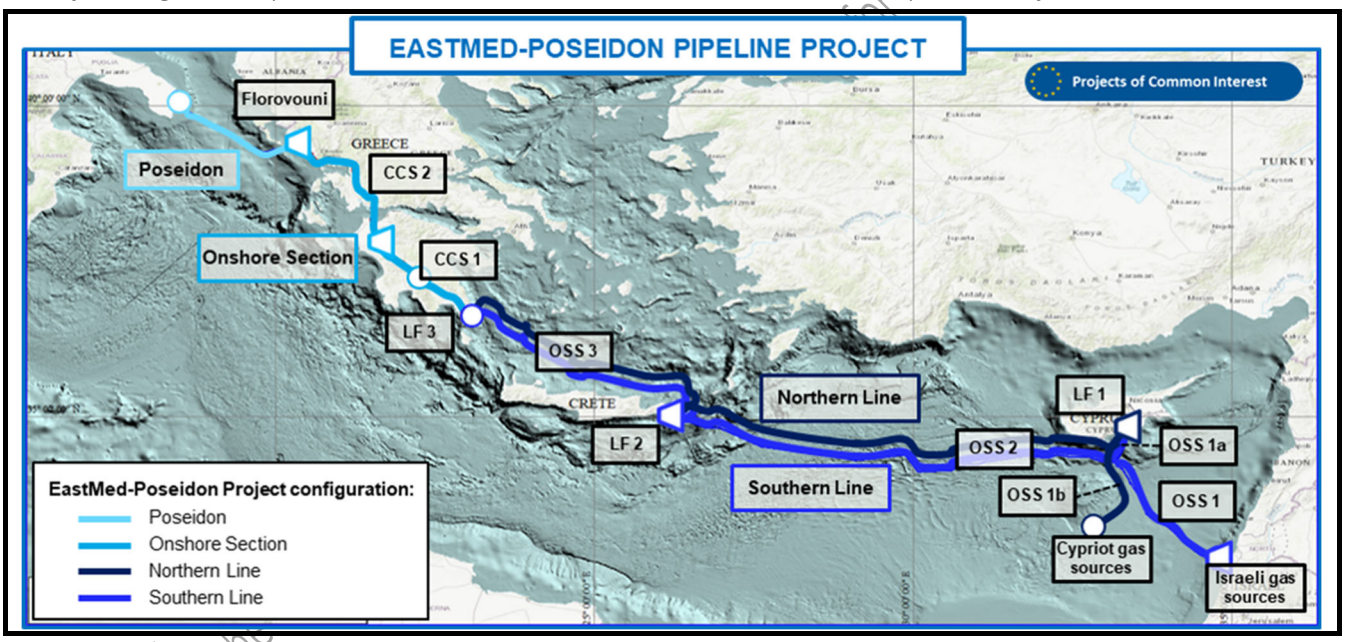
1 INTRODUCTION

1.1 Overview of the Project

Recently, several large offshore natural gas discoveries have been made in the south-eastern Mediterranean basin. The Eastern Mediterranean Pipeline Project (EastMed) is an offshore/onshore natural gas pipeline that will connect east Mediterranean energy resources (offshore gas reserves in the Levantine Basin) to mainland Greece via Cyprus and Crete. The EastMed-Poseidon Pipeline Project is endorsed by the EU and has been designated as a Project of Common Interest (PCI), included since 2013 in the EU PCI list according to provisions of EU Regulation 347/2013. In addition to the EU, development of the EastMed-Poseidon Pipeline Project is supported by the countries concerned with the pipeline. Therefore, on January 2nd, 2020, Cyprus, Greece and Israel signed an Intergovernmental Agreement (IGA) to support realisation of the EastMed-Poseidon Pipeline Project. Figure 1.1 presents an overview of the EastMed-Poseidon Pipeline Project.



Prepared by/reference: IGI Poseidon S.A.

Figure 1.1 Overview of the EastMed-Poseidon Pipeline Project

From a strategic point of view, the EastMed-Poseidon Pipeline Project would:

- End the energy isolation of Cyprus and Crete;
- Enhance competition in the energy market by providing access to additional new sources of supply currently not reaching any part of the European Union Member States and new points of entry for natural gas in Greece and Italy;

- Enhancement of EU security of supply by facilitating the diversification of energy sources and routes by providing solutions to supply disruption and emergency scenarios;
- Promote sustainability connecting the available EU indigenous and close border energy sources efficiently and cost effectively with the closest EU markets, limiting the carbon footprint entailed with transportation means from more distance sources, thus generating the conditions for the development of sustainable markets as well as reducing the impact of pollutant emissions;
- Broadening and completing of the Southern Gas Corridor, developing natural gas resources within the EU and close border sources;
- Remove the isolation of Cyprus and ensure the supply of natural gas to areas of Greece that do not have access to National Network;
- Promote environmental sustainability according to the decarbonisation goals to be achieved as defined in the framework of the Paris Agreement, therefore the replacement of oil facilities with natural gas facilities will have a strong role in reducing greenhouse gas emissions in the aforementioned areas.

The Cypriot portion of this international pipeline interconnector is made up of a Southern EastMed Line and a Northern EastMed Line. In order to ensure as much flexibility as possible and to strengthen the reliability of supply, these two lines, upstream of Crete, are designed to work complementarily as well as independently, due to infrastructure, dedicated to each line. The System could be, therefore, adapted to the maturity of development of sources, satisfying in parallel the needs of Cyprus.

The project is currently designed to transport 11 BSCM/year for the Southern line and 10 BSCM/year for the Northern line. One additional BSCM/year from the Southern line will supply the Cypriot internal gas network. Therefore, the system has an overall export capacity of 21 BSCM/year (11BSCM/year for the Southern line and 10 BSCM/year for the Northern line), plus 1 BSCM/year to Cyprus mainland through the Southern pipeline dedicated branch line. The Southern line under Cyprus jurisdiction consists of the following (see Section 4.1.1. for details on the project definition):

- Cypriot section of OSS1-OSS2 subsea trunk line, ie of pipeline OSS1 that comes from the EastMed Compressor Platform (ECP) in Israeli waters and goes to Crete and of pipeline OSS2, from Inline Tee Assembly to Crete);
- OSS1a subsea branch pipeline from the subsea Inline Tee Assembly (ITA) to Cyprus, including landfall LF1, landfall station in Cyprus and a short onshore pipeline section;
- Metering and Pressure Reduction Station (MS1a/PRS) in Cyprus aimed to receive high pressure gas from the OSS1a branch pipeline and to deliver at pressure conditions suitable for Cypriot domestic use.

The Northern line under Cyprus jurisdiction consists of the following:

- OSS1b subsea trunk line from the Cypriot offshore gas field (preliminarily identified close to the Aphrodite Block) to Cyprus, including a short onshore pipeline section and the landfall station at landfall LF1 in Cyprus;
- Compressor and Metering Station (CS1/MS1) in Cyprus to receive gas from the OSS1b trunk line and to recompress this gas for onward transport toward the compressor and metering station in Crete;
- OSS2N subsea trunk line from Cyprus to Cyprus/Greece maritime border, including a short onshore pipeline section that includes the landfall station at LF1 in Cyprus.

These offshore pipeline routes are based on outcomes of the route definition completed in February 2020, following the results of the Reconnaissance Marine Survey performed in 2017-2018 and an optimisation technical assessment performed by the company after confirmation of the availability of gas resources in Israel. This route definition was completed before the Detailed Marine Survey (DMS) activities and is based on the assumption of availability of sources close to the Aphrodite block.

Onshore facilities in Cyprus will be located at the Vasilikos Industrial Area. The exact location of these are being defined while preparing this Scoping Report and will be available for the ESIA preparation.

This report presents the outcomes of the Scoping Phase for the EastMed Pipeline Project. The ESIA report will be prepared on the basis of the final base-case route and final location and distribution of other project elements (e.g. Compressor and Metering Stations).

The ongoing development of the project includes the integration of natural gas and hydrogen, promoting the South East European (SEE) and east Mediterranean region's transition towards a more sustainable and efficient energy transmission network and supporting hydrogen production plants and the development of energy intensive users.

IGI Poseidon is carrying out a technical assessment in order to identify the requirements (material and design specifications, operational management conditions, etc.) to ensure safe and optimised hydrogen transportation, This activity is currently in progress with the contribution of leading firms specialised in the sector.

1.2 Proponent Presentation

The EastMed Pipeline Interconnector is promoted by the development company IGI Poseidon S.A. (IGI), equally owned by DEPA International Projects S.A. and EDISON S.p.A. and based in Athens, Greece. IGI, involved in several projects in SEE among other the Greece-Bulgaria natural gas interconnector, aims to create reliable and long term access to domestic / close border gas sources

for European gas markets, in line with the European Union's energy security policies and the Southern Corridor strategy. In coherence with the energy transition path, the Project will be designed in order to allow the transport of hydrogen and integration of renewable sources available along its route to markets. Table 1.1 shows the necessary contact details of the project promoter.

Table 1.1 IGI Poseidon contacts

Project Contact Details	
Name	IGI POSEIDON S.A.
Postal address	207, Mesogeion Ave., 115 25Athens, Greece
Telephone	+30 212 80 81 400
Internet Address	http://www.igi-poseidon.com/
Contact Person 1	
Name	Miriam Biscotti (English speaking)
Position	Environmental Licensing Manager
Telephone	+39 331 628 37 02
Email	miriam.biscotti@edison.it
Contact Person 2	
Full name	Kostas Tyroyiannis (Greek and English speaking)
Position	Assistant Environmental Licensing Manager
Telephone	+30 212 808 14 20
Email	k.tyroyiannis@depa-int.gr

1.3 ESIA Process

1.3.1 Introduction to the ESIA Process

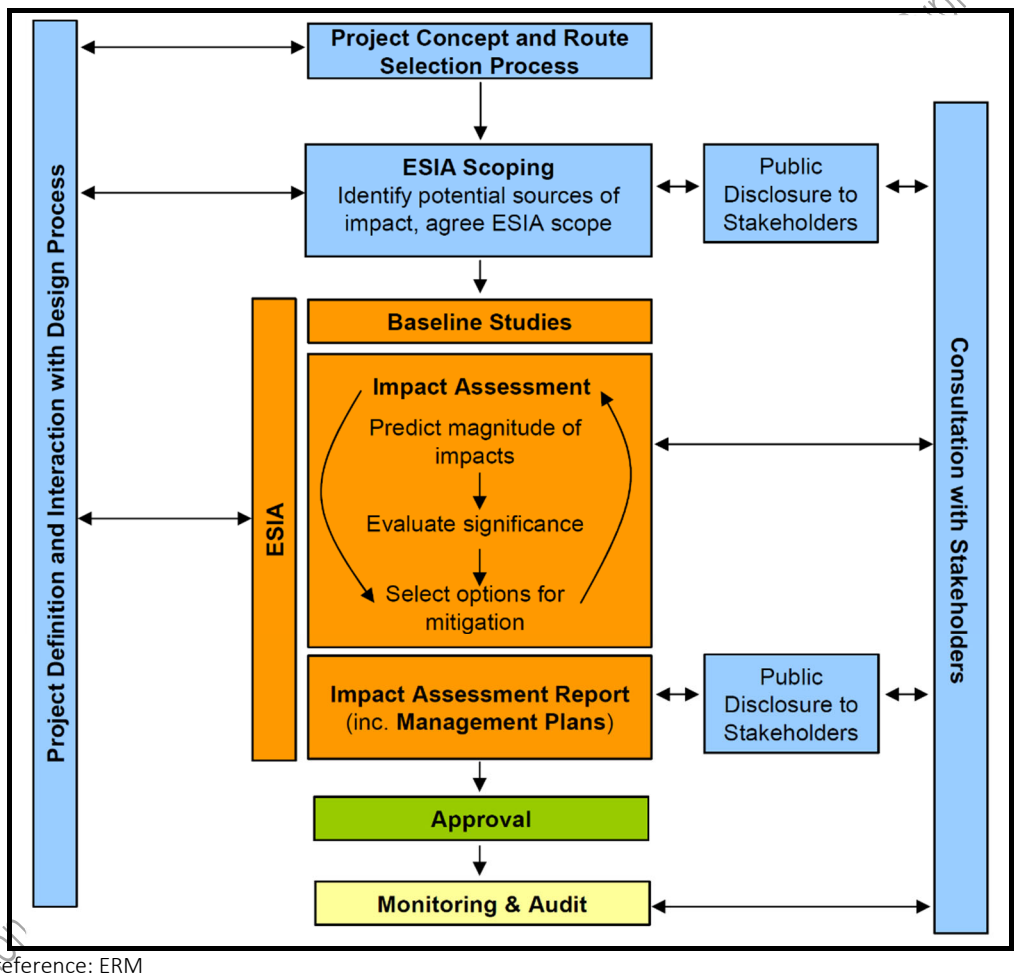
EastMed Pipeline Project's overall approach to the ESIA will comply with Cypriot regulations in force and will be performed in line with the requirements of the European EU Directive and applicable international standards, as embodied in the European Bank for Reconstruction and Development (EBRD) Performance Requirements (PR1-10) (see Section 2.2).

The first step in the EastMed ESIA process will assess possible route alternatives. The EastMed analysis of alternatives started in the early phases of the project development (Pre-Feasibility and Feasibility Study) in 2011 and was undertaken as part of the project design/decision making process through to the definition of the current project concept. The assessment was based on technical, environmental, socioeconomic and cultural heritage criteria in order to identify a technically

feasible alternative with the fewest adverse environmental, socioeconomic and cultural heritage impacts.

The route refinement process is still ongoing, especially linked to the outcomes of the Detailed Marine Survey (DMS) and some other ongoing nearshore investigations and engagement activities. During the ESIA phase the consolidated footprint of the pipelines and the onshore installations will be defined (e.g. CS1/MS1, etc.).

Figure 1.2 graphically presents the ESIA process. The scoping phase and ESIA activities are briefly described in Table 1.2.



Prepared by/reference: ERM

Figure 1.2 Schematics of the ESIA Process

Table 1.2 Summary of the ESIA Process

Step	Description
An ESIA is required for the EastMed Pipeline Project under Cypriot law (Law N.127(I)/2018), while a Scoping is not required (see Section 2.1), but IGI Poseidon (IGI) will submit to Cypriot authorities a Scoping Report in line with EBRD Requirements and best practices for this kind of project for alignment and disclosure.	
Scoping	Scoping identifies the key issues to be addressed in the ESIA. Scoping, as presented in this report, will ensure that the process is focused on the potentially significant environmental and social impacts which may arise from the project. It will take into account the results of consultations undertaken to date on the project. Ultimately scoping defines the works and investigation required to prepare the ESIA, including stakeholder engagement and disclosure activities.
Baseline Studies	The relevant environmental and social aspects identified in scoping will be developed during the ESIA phase. These will combine the gathering of existing information as well as further investigations and site visits as necessary.
Impact Assessment and Mitigation Measures	Impacts on the environmental and social receptors are evaluated in terms of predicted changes from baseline conditions and considering the entire life cycle of the project (i.e. construction, operation and decommissioning). Mitigation measures are evaluated and proposed in order to avoid and/or minimise impacts.
Environmental and Social Management Plans	The proposed mitigation measures are presented in an organised manner to prepare the Environmental and Social Management Plan (ESMP). This serves to describe how to implement mitigation and provides an indication of other key aspects such as responsibilities for implementation, timing and monitoring, and audit plans to ensure all mitigation commitments are met.
Stakeholder Engagement and Consultation	During the ESIA studies the team will seek out the views of interested parties so that they can be taken into account in the assessment and reflected in the proposals for mitigation. Once complete, the ESIA Report will be subject to public disclosure and consultation. Comments will be taken into account in revising the final ESIA Report and ESMP.

1.3.2 Approach to Scoping

IGI Poseidon assigned the consortium "INTECSEA BV - C&M Engineering S.A." to prepare the "Preliminary Environmental Study" and to draft the contents of the ESIA and Environmental Baseline Studies (EBS), based on the executed Feasibility Study. The competent authority of the Republic of Cyprus received these documents on 29th November 2019.

On 4th March 2020 the Hydrocarbon Service of the Ministry of Energy, Commerce and Industry (i.e. the National Competent Authority (NCA)) provided IGI Poseidon with a number of considerations from the Department of Environment of the Ministry of Agriculture, Rural Development and Environment with regard to information that should be considered in the framework of the Scoping

Report and ESIA preparation. This Scoping Report has duly considered the above request incorporating the details requested or, where appropriate, indicating the ongoing or planned activities and investigations that will be developed in the course of the ESIA preparation.

Later, in July 2020, the competent authority was also provided with an Addendum to the "Preliminary Environmental Study" to briefly present the evolution and maturation of the EastMed Pipeline Project from the time the Project's Feasibility Study was executed and to incorporate the requirements and comments of Cypriot authorities on the Preliminary Environmental Study.

This Scoping Report is part of the formal scoping process that IGI Poseidon is implementing for the project and is being prepared in alignment with EBRD standards. Although the scoping stage and report are not part of the permitting process in Cyprus, IGI Poseidon will be sharing it with the interested authorities and parties to ensure information is distributed early in the ESIA process and views can be gathered and considered when preparing the ESIA.

The Scoping phase and this Scoping Report have several objectives such as: documenting the pre-ESIA investigations; justifying the project design; presenting the alternative definition and selection; helping in the engagement and disclosure process, and identifying key aspects that should be the focus of the ESIA work, including the definition of the Terms of Reference for ESIA Report preparation.

1.4 Scoping Report Structure

The remainder of this report is structured as follows:

Section 2 - Regulations and Guidelines: provides a brief overview of the relevant Cypriot and International ESIA regulatory framework and international best practice with regard to Scoping;

Section 3 - Alternatives Assessment: summarises the alternative route assessment performed by Project Proponent in order to select the 'base-case' route;

Section 4 - Project Description: describes the main components of the project and the main construction, pre-commissioning, operation and decommissioning activities;

Section 5 - Baseline Conditions: provides an overview of baseline environmental, socioeconomic and cultural heritage characteristics of the Study Area;

Section 6 - Potential Impacts and Mitigation Measures: summarises potential significant environmental, socioeconomic and cultural heritage impacts and provides an indication of potential mitigation and management measures;

Section 7 - Terms of Reference for the ESIA: presents the proposed terms of reference, the detailed ESIA structure and a tentative schedule of ESIA activities;

Section 8 –Public Consultations and Project Disclosure: presents the proposals for consultation with identified external stakeholders during Scoping, including affected communities that may have an interest in the project. The section also summarises the consultation activities undertaken earlier in the ESIA process;

Section 9–References;

Appendix A – Maps;

Appendix B- Stakeholder Comments Communication Form: form to be used to provide comments and feedback on the scoping report;

Appendix C – Stakeholder List;

Appendix D- ESIA Execution Plan presents the list of studies (baseline and modelling) to be performed during the ESIA and the tentative timing of the activities.

2 REGULATIONS AND GUIDELINES

2.1 Legal Framework

2.1.1 Overview of Town Planning Permit

The Town Planning Permit is generally required before the initiation of any activity related to proposed developments. The Country Planning Law (90/72 and Amendments) established the need for this permit for the "carrying out of building, engineering, mining or other operations in, on, over or under immovable property, or the making of any material change in the use of any building or other immovable property", and therefore it applies and is a requirement for the EastMed project.

The applications for planning permission should be submitted by the proponent or their authorised representative to the relevant Town Planning Authority which varies according to the following:

- For onshore projects: Town Planning Department of the Ministry of Interior;
- For offshore projects (and specifically pipeline projects): Ministry of Communications and Public Works (specifically the Division of Marine Works).

Because the EastMed project covers both onshore and offshore components, the two authorities mentioned above will be involved in providing the Town Planning Permit, and in accordance with the requirements of the town planning law, the permit application requires to include an Environmental Impact Assessment study already approved by the Department of Environment (DoE) as part of the permitting documentation.[1].

It should be noted that, in the case of the EastMed project, the proponent should submit the application for the Town Permit (and any other required study) to the Ministry of Energy, who, acting as the National Competent Authority (NCA)[2] for the project, will forward the documentation to the corresponding authorities (i.e. Town Planning Department of the Ministry of Interior and Ministry of Communications and Public Works).

After submission of the application, the planning authority will send a notification of receipt to the applicant or the authorised representative, so that the applicant can address potential omissions.

[1] EastMed has been declared a Project of Common Interest (PCI), therefore, there will be other specific studies requested for the application to the Town Planning Permit (see Section 2.1.3 on PCI).

[2] For PCI projects that include the transportation or the management of any type of energy source, such as EastMed, the Ministry of Energy is appointed the National Competent Authority (NCA).

The notification also contains contact details that the applicant can use to keep informed of the progress of their application.

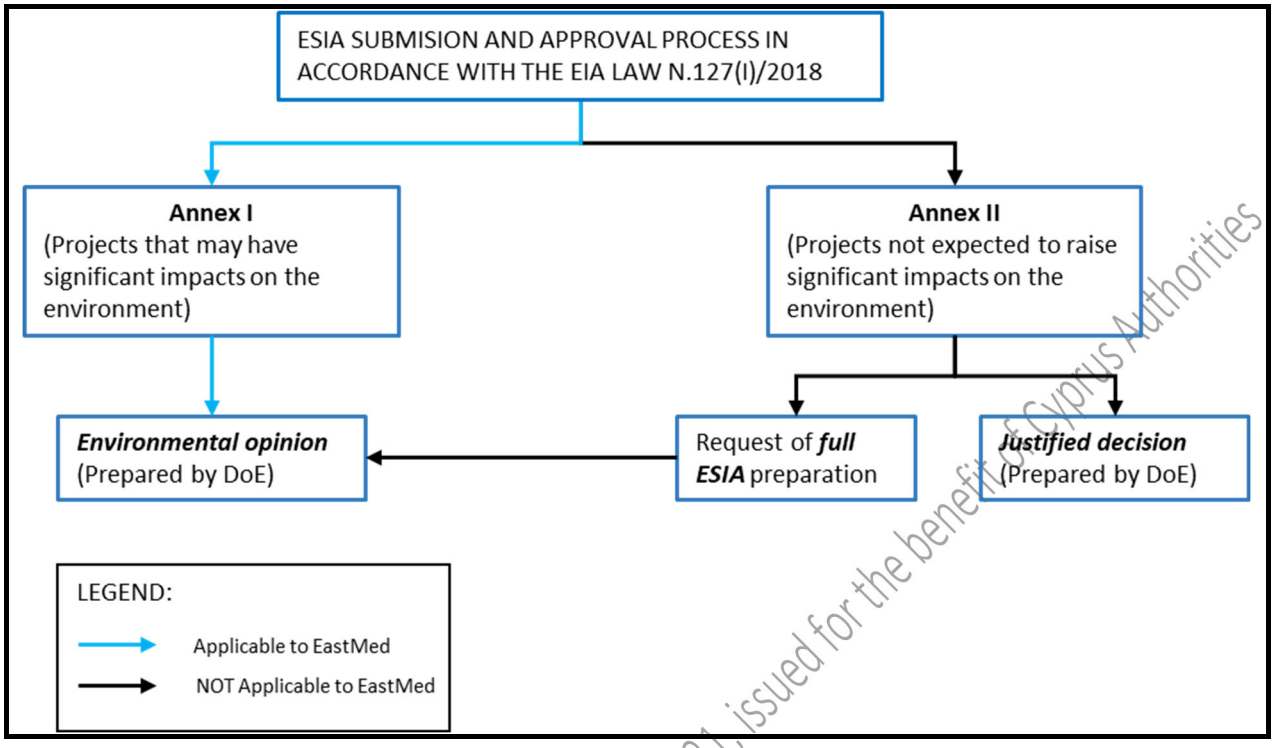
2.1.2 Overview of National ESIA Regulations and Requirements[3]

The Environmental Impact Assessment for Certain Projects Law N.127 (I)/2018 (and its recent amendment -N. 23(I)/2021) entered into force on 31 July 2018 and harmonises Directive 2014/52/EU (on the assessment of the effects of certain public and private projects on the environment). Law N.127 (I)/2018 also repeals the previous local regulations on Environmental Impact Assessment Laws and Regulations of Certain Projects from 2005 to 2014.

Any project falls within one of the 2 annexes defined by the ESIA law depending on the potential significance in terms of environmental impacts due to, inter alia, nature, size or location defined by the law (Figure 2.1):

- Annex I: lists and refers to projects that may have significant environmental impacts and which require the proponent to prepare an Environmental and Social Impact Assessment (ESIA) study. The Department of Environment prepares an Environmental Opinion to inform on the decision after reviewing the study;
- Annex II: refers to projects that are expected to raise less impacts than those listed in Annex I and for which the proponent should prepare an Information Report for the DoE, who will provide a Justified Decision. It may be the case that, as a result of the evaluation of the Information Report the Department of Environment requires the proponent to prepare a full ESIA report.

[3]Although EIA Law 127(I) 2018 refers to an Environmental Impact Assessment (EIA), the term is considered equivalent to Environmental and Social Impact Assessment (ESIA) and can be used indistinctively.



Prepared by/reference: ERM/Aeoliki

Figure 2.1 Permitting Procedure under EIA Law N. 127(I)/2018

The EastMed Pipeline Project in Cyprus falls under Annex I of Law N. 127(I)/2018 and therefore a full ESIA Study must be submitted. The specific items of Annex I which define the need for a full ESIA include the following:

- Item 17: "onshore pipelines with a diameter of more than 800 mm and a length more than 10 km (a) for the transport of gas, oil, chemicals";
- Item 18: "underwater pipelines and related installations submerged into territorial sea, the Exclusive Economic Zone and/or the Continental Shelf of the Republic, for the transport of any liquid, solid and/or gas, and relevant facilities in the coastal zone".

Exclusions from the provisions of the law are established for projects related to the defence of the Republic of Cyprus and for emergency projects for civil protection. Furthermore, under exceptional circumstances, a project might be excluded from the ESIA process only if the implementation of the provisions of the law would negatively influence the scope of a public project promoted by public authorities.

In detail, the ESIA procedure for the EastMed Pipeline Project in Cyprus, including the requirements of PCI procedure (see in details in section 2.1.3), can be outlined as follows (refer to Prepared by/reference: ERM/Aeoliki

Figure 2.2 for the flow chart of the procedure):

i. The proponent prepares the preliminary documentation necessary for the application to the Environmental Opinion, in accordance with general ESIA Law and specific sector/project guidelines.

   In the case of the EastMed project, since it is included in the PCI projects list, the project proponent is required to undertake an early engagement with the National Competent Authority (NCA; Ministry of Energy) and the Department of Environment (DoE). The objective of this step is that the proponent gathers the views and comments from all the relevant authorities so these can be taken into account for the preparation of the ESIA study,[4] The role of the NCA is to facilitate the exchange of information between the proponent and the DoE and the role of the DoE is to gather and consolidate the considerations from all relevant authorities (see Phase 1 of PCI procedure at section 2.1.3 below).

ii. In the case of the EastMed project, a Scoping Report is also being prepared and submitted to the DoE through the NCA, in agreement with these authorities. The comments and input gathered from the authorities, will help the proponent in confirming (and amending, if needed) the detailed studies and investigations planned for the preparation of the ESIA Study, which the Scoping Report details.

   It should be noted that the Scoping Report is not part of the permitting process and that the Cypriot legislation on ESIA does not mention the Scoping phase. Despite this, IGI Poseidon has developed the Scoping Report in line with PCI Guidance Document (Regulation (EU) No 347/2013 on guidelines for trans-European energy infrastructure, repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009), EBRD Requirements and best practices for this kind of project to ensure information is distributed early in the ESIA process and views can be gathered and considered when preparing the ESIA.

iii. The proponent prepares a Draft ESIA[5] considering the requirements gathered in steps i and ii, and submits it to the NCA, which is in charge of sharing the document with the DoE who will distribute to the relevant range of authorities. All the comments on the draft ESIA will

[4] Note that for the preparation of this Scoping report the NCA was already engaged and guidance on the contents and investigations for the ESIA preparation were already gathered from the DoE.

[5] The Draft ESIA should be accompanied by all the specific studies and investigations requested by authorities under Steps i and ii.

then be sent back to the proponent through the NCA and be implemented in the ESIA document before public disclosure of the draft ESIA.

iv. The Public Consultation developed by the proponent must include (according to Law 127) at least one (1) Public Presentation, and the disclosure must be based on the updated ESIA (i.e. incorporating the views of the authorities provided in the previous step). All stakeholders and the public are given the opportunity to submit their comments and concerns. These must then be incorporated in the final ESIA as a separate chapter (i.e. including the specific comments and responses to the authorities – step iii and step iv).

v. Once the **Final ESIA** is ready it is submitted by proponent to the Ministry of Energy (NCA) who sends it to the DoE for their full evaluation:
   a. The DoE posts the Final ESIA on the website of the Department of Environment (Digital Environmental Register) for comments from any third party
   b. The DoE organises a presentation for the *Environmental Impact Evaluation Committee* (the consultant that has prepared the ESIA is asked to present the project to the Committee). The *Environmental Impact Evaluation Committee* is composed of 9 members from different authorities and organisations (i.e. Department of Environment, Department of Urban Planning and Housing, Department of Labour Inspectorate, Forestry Department, Water Development Department, Game Fund Service Department, Technical Chamber of Cyprus, Federation of Environmental Organisations of Cyprus and a representative from an NGO not represented by the Federation of Environmental Organisations of Cyprus)[6].
   c. The DoE shares the Final ESIA studies with the authorities involved in the development of the project.

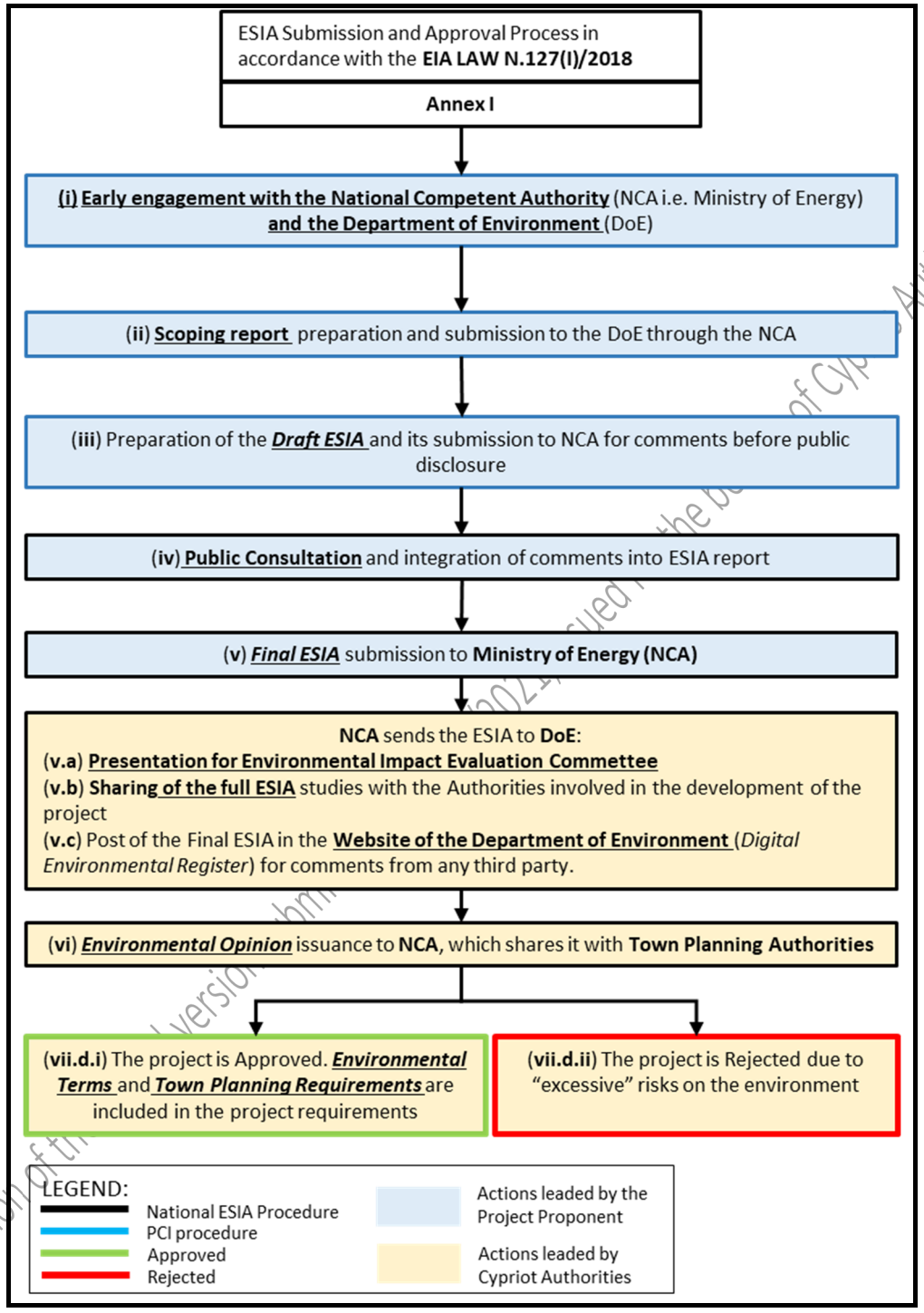
vi. The DoE issues the **Environmental Opinion** to the NCA which shares it with Town Planning Authorities. The Environmental Opinion is prepared taking into account the views of the DoE, the *Environmental Impact Assessment Committee*, the relevant authorities and the comments from any third party through the website (discussed during the presentation of the ESIA at step v-b). The Committee may require the project proponent to submit supplementary notes or studies based on the comments received in the previous steps.

vii. The **Environmental Opinion** includes the following elements:
   a. Summary of the Project;
   b. Expected E&S impacts;
   c. Proposed Mitigation and Monitoring Program;
   d. Statement on whether:

[6]Other authorities or organisations can be invited by the DoE and be part of the Committee if considered appropriate.

i. The project is **Approved:** In this case the **Environmental Terms** for the Project (i.e. requirements for the proponent to undertake the project) are also included as part of the statement and these will be merged with the Town Planning Requirements at a later stage);
ii. The project is **Rejected** due to "excessive" risks on the environment.

It should be noted that the Environmental Opinion is valid for the same period as the validity of the Town Planning Permit or other permits issued.



Prepared by/reference: ERM/Aeoliki

Figure 2.2 ESIA procedure for EastMed Project in Cyprus (Considering Integration of PCI Requirements)

2.1.2.1 Appropriate Assessment Study

Whenever there is a Natura 2000 crossed or located in the vicinity of the project, the proponent is required to prepare an Appropriate Assessment (AA) Study. In the case of the EastMed Project, an AA is required due to crossing of the Oceanid area (see Section 5.1.1.6 for details).

Whenever an Appropriate Assessment is needed, the submission procedure is the following:

1. The project proponent submits the Appropriate Assessment Study to the Ministry of Energy, which is in charge of forwarding it to DoE;
2. The AA Study is presented by the consultant of the proponent to the *Ad Hoc Committee* specifically nominated for the Appropriate Assessment evaluation;
3. The DoE issues an *"*AA Report*"*. This report provides the results of the AA Study, integrated with the measures of the impacts the project would have on the integrity of the concerned site;
4. The "AA Report" is issued to the members of the Environmental Impact Evaluation Committee for comments and opinions.

   Note that according to law the Appropriate Assessment Report result should be "positive" (i.e. not affecting the integrity) in order for the ESIA permit to be granted.

2.1.3 Guidance Document for Projects of Common Interest (PCIs)

2.1.3.1 EastMed Pipeline Project

The EastMed/Poseidon Pipeline Project is endorsed by the EU and has been designated as a Project of Common Interest (PCI), included since 2013 in the EU PCI list according to provisions of EU Regulation 347/2013. IGI Poseidon, following the requirements for PCI projects in Cyprus already initiated contacts with the authorities in 2019. Specifically, IGI Poseidon, as project proponent, sent to the NCA a written notification and the related notification dossier (including EastMed Feasibility Study – Preliminary Environmental study – Scoping Report – Section within the jurisdiction of Cyprus) for the Project of Common Interest (PCI) EastMed Pipeline Project in electronic copy on 11th November 2019 and in hard copy on 6th December 2019. On 22nd January 2020 the Department of Environment, notified by the NCA, sent to the NCA a list of requirements that are considered important for the EastMed permitting process. The NCA communicated this list to IGI Poseidon by issuing the NCA PCI Notification letter with Annexes I, II and III, in compliance with Article 10 of Regulation (EU) No. 347/2013. IGI Poseidon, following the implementation request, issued supplemental documentation (EastMed Pipeline Project - Addendum to Scoping Report – Section within the jurisdiction of Cyprus) on 5th August 2020. Reponding to the submission of the supplemental documentation, on 2nd September 2020, the National Competent Authority, on behalf of all concerned authorities of Cyprus, sent a letter to IGI Poseidon accepting the EastMed Pipeline Notification file, thus establishing the start of the permit granting process, as defined by article 10 of the Regulation 347/2013.

The above steps have been undertaken by IGI Poseidon in alignment with the procedures established by the Council of Ministers in its Decision 75,948 dated 23 October 2013, which appointed the NCA to coordinate the issuance of an "in-depth decision" according to the "cooperative system" of the Ministry of Energy, Commerce, and Industry. Due to the choice of this system of issuing the "in-depth decision", the competent Ministry of Agriculture, Natural Resources and Environment (Department of Environment) has been requested to rationalise the environmental impact assessment procedures and ensure consistent application of the ESIA procedures required under EU law for PCIs.

A summary of the general steps and procedures established in Cyprus for PCI projects is presented in Section 2.1.3.2. The steps presented include the steps already mentioned above for completeness.

In addition, it should be noted that a Guidance Document for Rationalisation of Environmental Impact Assessment Procedures is available from the Department of Environment. The document provides guidance on implementing the legal provisions relating to the environmental impact assessment carried out for large-scale 'cross-border projects', as well as easy and practical information for users, competent authorities and promoters, environmental impact assessment professionals and other stakeholders. It forms an integral part of the Licensing Procedures Handbook which, in accordance with Article 9 of Regulation (EU) 347/2013 on the guidelines for trans-European energy infrastructure, is not, however, a legally binding document.

2.1.3.2 Environmental Permitting for Projects of Common Interest

Due to the scale and nature of PCIs, environmental assessment procedures can be divided into two levels, (a) cross-border and (b) national. The Guidance Document referred to herein focuses on the formulation of National Environmental Assessment Procedures, taking into account the provisions of Regulation No. 347/2013 on guidelines for trans-European energy infrastructure, and in particular the provision for establishing a competent authority or authorities to consolidate or coordinate all the one-stop-shop procedures, in order to reduce complexity and increase efficiency and transparency.

As a PCI project, EastMed shall follow some procedures for the application, preparation and presentation of the ESIA study that are subject to regulations aimed to facilitate and implement the ESIA Submission and Approval Process in accordance with Law 127/2018 (see details described in Section 2.1.2). The National Environmental Assessment and Procedures necessary for PCI projects are divided into three phases:

- Phase 1- PCI Notification of Application (see steps i and ii described in Section 2.1.2):

  This phase covers a period prior to the ESIA pre-submission procedure and is not subject to a time limit. As the project proponent submits a notification dossier (including the details of the project) for the related project to the National Competent Authority, the Department of Environment, notified by NCA, evaluates its content and communicates by letter the possible requirements for the preparation of an ESIA study for PCI projects. This procedure is not an obligation of the project proponent, but is made for its facilitation and timely preparation.

  The NCA, as result of this phase, issues the NCA PCI notification letters, in compliance with Article 10 of Regulation (EU) No. 347/2013.

- Phase 2 - ESIA PRE-SUBMISSION of Application (see steps iii and iv described in Section 2.1.2):

  This phase covers the period between the start of permitting process and the receipt of the application dossier by the competent authority. This phase is composed of the following steps:

  1. The project proponent, in accordance with the provisions of regulation 347/2013, shall submit to the National Competent Authority a Public Participation Plan including at least one public consultation in accordance with Article 9 (4) of the regulation. This public consultation will be carried out within 30 calendar days after approval of the Public Participation Plan by the National Competent Authority and shall contain matters to be determined by the environmental authority. The environmental authority shall publish the outcomes of the public consultation at the contact points of the competent authorities for information;
  2. The Project proponent prepares the draft ESIA, including the studies/reports/projects requested by the environmental authority and the individual authorities (identified by NCA in close cooperation with environmental authority during step 1), and submits it to the National Competent Authority as an integral part of the application dossier. The results of the public consultations and other consultations that preceded the construction and operation of the PCI should be reported and taken into account in the draft ESIA;
  3. The National Competent Authority gathers all the comments and observations from relevant authorities and forwards them directly to the project proponent for their incorporation into the final texts to be submitted at the application stage.

- Phase 3 - ESIA SUBMISSION procedure (see steps v to vii described in Section 2.1.2):

  This phase covers the period between acceptance of the application dossier until the issuance of the Environmental Opinion and should not exceed 18 months.

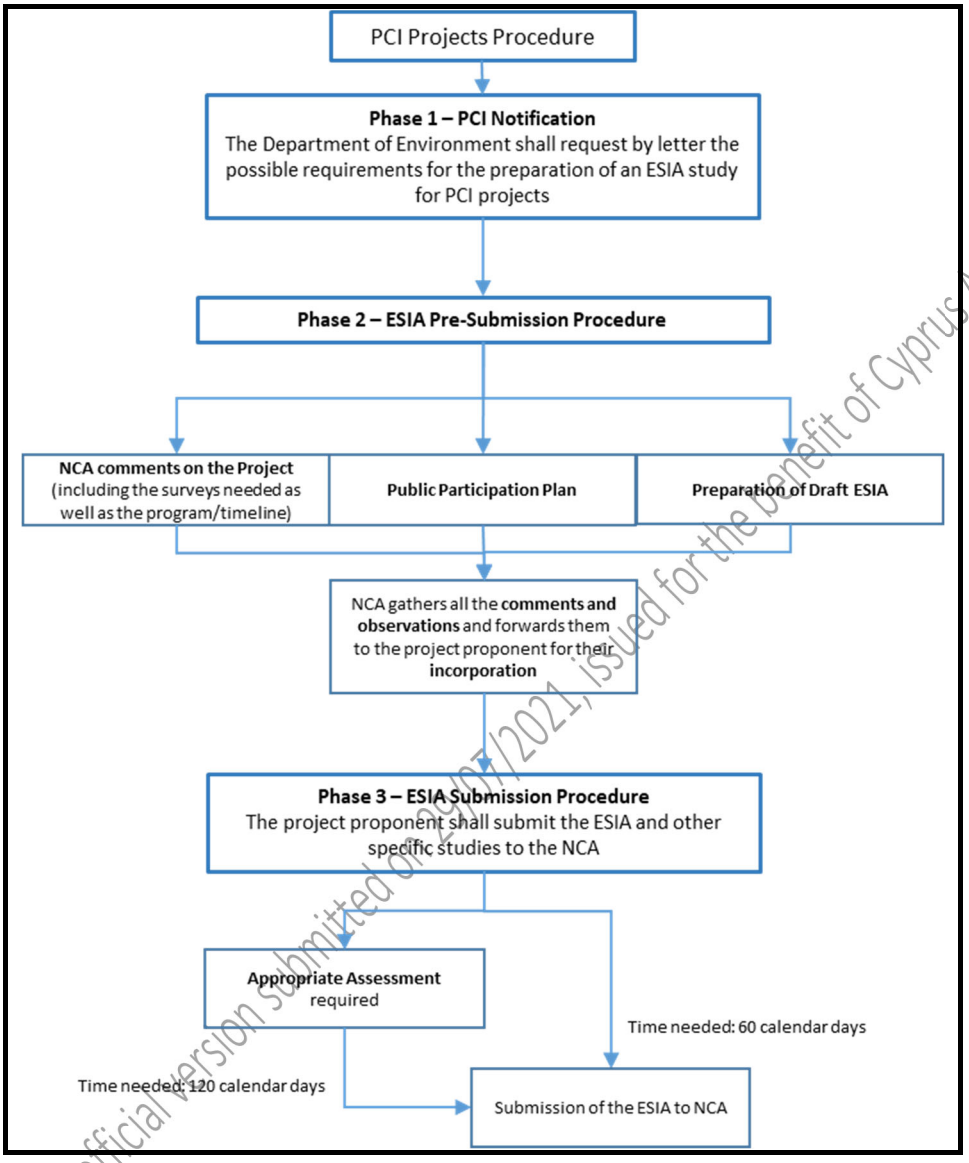
  The project proponent shall submit the ESIA and other specific studies to the NCA (Ministry of Energy in the case of EastMed), in compliance with the requirement of Law 127/2018 Annex I (see section 2.1.2) and with the instructions given during Phase 2.

  The Environmental Impact Evaluation Committee and other relevant authorities examine the ESIA study:

  a. In the event that an environmental Appropriate Assessment study is required,[7] the total time needed to complete the submission application process is 120 calendar days;
  b. In the event that an Appropriate Assessment study is not required, the total time needed to complete the submission application process is 60 calendar days.

[7]Where a Project occupies area located within a Natura 2000 or it is located close enough to interfere with the site. The decision on the AA study is expected to be taken after the evaluation of the information gathered in Phase 2.

A flow diagram of the process for the PCI procedure is provided below in Figure 2.3:



Prepared by/reference: ERM/Aeoliki

Figure 2.3 EIA Process for PCI projects

2.1.4 Master Plan of the Vasilikos Area[8]

The onshore area of the project comprises the greater Vasilikos area, which is located on the southern coast of Cyprus, about 25 km east of the city of Limassol, 30 km south-west of the city of Larnaca and 40 km south of Nicosia. The area is delimited to the west by the boundary of the "Evangelos Florakis" Naval Base, to the north by the A1 Nicosia - Limassol motorway, to the south by the coastline including the relevant offshore area in the entire Vasilikos Bay.

The Vasilikos area, the only available coastal heavy industry zone in Cyprus, was selected as the most suitable location for construction of the Vasilikos Energy Centre (VEC) due to its location and morphology. The VEC was originally planned to be comprised of import facilities; storage of strategic and operational oil reserves; management, distribution and export of petroleum products (oil terminal), as well as import, storage and re-gasification facilities of Liquefied Natural Gas (re-gasification terminal).

However, after discovery of the "Aphrodite" natural gas field in Block 12 in the Republic of Cyprus, the initial plans regarding the VEC were revised. The new data, the potential discovery of further significant gas resources in Cypriot waters, the relocation of the oil storage facilities from Larnaca to Vasilikos and the smooth operation of existing installations, resulted on the need to update the Master Plan of Vasilikos area in order to create a framework that would enable optimum industrial development of the area.

The first Master Plan of this region was prepared in 2009 and the latest update, on which the information below is presented, was published in October 2020. The overall objective of the Vasilikos Master Plan is to provide a comprehensive picture of the region and to define the land use of existing facilities and proposed future developments, taking into account the hazards, safety, protection, environment and social appreciation.

To achieve the overall objective, the master plan identified existing installations in the region, examined their compatibility with the proposed facilities and their contribution to regional development planning in such a way that existing and future facilities can operate in an efficient, synergistic, safe and environmentally rational manner.

[8]Rogan Associates, 2020. Revision of the Master plan of Vasilikos Area, Draft Report – Last update: October 2020.

More specifically, the Master Plan was aiming to allocate the land for the possible extension of a future LNG Plant, oil and liquefied petroleum gas (LPG) facilities, and space for a development of gas based industries (e.g. petrochemical industries), taking into consideration environmental, safety and compatibility criteria, as well as the needs for additional infrastructure.

The final Master Plan (currently the Strategic Environmental Assessment has been completed and is in the process of evaluation by the relevant environmental committee) includes specific developments and recommendations for the adoption of planning zones for specific uses, as described below:

1. The existing facilities of EAC Vasilikos Power Plant;
2. Vassiliko Cement Works (VCW);
3. Vasilikos Port, VTTV Ltd and Petrolina;
4. LNG zone comprised of:
   - LNG Phase 1 - space for up to three LNG Trains of 5 MTPA capacity each, as well as space for LNG storage tanks, other auxiliary facilities and the necessary access;
   - LNG Phase 2 - space for up to two LNG Trains of 5 MTPA capacity each, as well as space for additional LNG storage tanks and other auxiliary facilities (the LNG Phase 2 will not be required until additional natural gas discoveries of more than 20 - 25 Tcf are discovered);
   - LNG jetty, designed for multiple uses: import/ export of LNG and possibly HFO and other oil products import/ export;
5. Oil and LPG facilities and gas-based industries zone (petrochemical industries), comprised of:
   - Phase 1 oil storage – including VTTV and Petrolina oil storage terminals;
   - Phase 2 oil storage;
   - LPG storage in pressurised mounded tanks to the north of the zone;
   - Gas-based industries, e.g. Methanol Plant and Gas Compressor Station;
6. A Protection Planning Zone 500 m wide around the LNG zone and 400 m around the oil storage and gas-based industries zones;
7. Future quarrying zone for the Vassiliko Cement Works;
8. Zones for offices and workshops.

The Master Plan also includes provisions for installation of new import and export berths:

- LNG jetty and berths;
- Dedicated LPG berth;
- Bitumen berth (possibly combined with the LPG import berth), and spur off the VTTV jetty to provide additional oil import capacity.

The industrial area for the Vasilikos Master Plan is shown in - Map 03 (APPENDIX A .

For each new installation which is planned to be sited within the area of the Master Plan of the Vasilikos region, including the EastMed Pipeline Project, all provisions and terms of the Environmental Opinion for the Master Plan of Vasilikos are applicable.

IGI Poseidon had requested including an additional area (in order to reach a total area in the order of 125,000 m^2) to accommodate the compressor station adjacent to the area of the Metering Station in relation to planning the Spatial Development Plan of the area (subject to approval by Cypriot authorities), with particular focus on safety issues. Nevertheless, the updated version of the Vasilikos Master Plan, dated October 2020, indicates that the additional area proposed on the same site cannot be used for the compressor station since it is intended for another use. Therefore, only the initial area (26,000 m^2) remains as defined in the previous spatial planning. The plan suggests exploring the possibility of zoning the compression/metering station in the Phase 2 area (defined as Oil Storage & Gas based industries) where the land belongs to private individuals and no other type of work is anticipated. It is clarified that an additional area in the order of 130,000 m^2 (depending also on the shape of the ownership) is necessary for the compression/metering station.

2.1.5 Overview of Legal Framework Applicable to the Project

A preliminary list of relevant EU Legal Framework and Republic of Cyprus Laws and Regulations related to the project on environmental, social and cultural heritage issues is included in the tables below (Table 2.1 and Table 2.2, respectively).

Table 2.1 European Union Legal Framework

EU Legal Framework
Impact Assessment and Permitting
Directive 2011/92/EU amended in 2014 by Directive 2014/52/EU on assessing the effects of certain public and private projects on the environment
Directive 2001/42/EC on assessing effects of certain plans and/or programmes on the environment
Directive 2014/53/EC on the Environmental Impact Assessment of Projects
Directive 97/11/EC on Environmental Impact Assessment (UN ECE Espoo Convention)
Regulation 347/2013/EU on guidelines for trans-European energy infrastructure, repealing Decision 1364/2006/EC and amending Regulations 713/2009/EC, 714/2009/EC and 715/2009/EC
Regulation 842/2018/EU on binding annual greenhouse gas emission reductions, amending Regulation 525/2013/EU
Air quality
Directive 2008/50/EC on ambient air quality and cleaner air for Europe

EU Legal Framework
Directive 2012/33/EU repealed by the 2016/802/EC as regards the sulphur content of marine fuels
Directive 2010/75/EU on industrial emissions (Integrated Pollution Prevention and Control)
Regulation 1005/2009 on substances that deplete the ozone layer
Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community
Environmental Noise
Directive 2002/49/EC relating to the assessment and management of environmental noise
Directive 2000/14/EC relating to noise emission in the environment by equipment for use outdoors
Transportation of Dangerous Goods
Directive 2008/68/EC on inland transport of dangerous goods
Directive 2004/35/EC on environmental liability with regard to preventing and remedying environmental damage
Directive 2013/30/EU on safety of offshore oil and gas operations and amending Directive 2004/35/EC
Directive 2006/21/EC amending Directive 2004/35/EC
Marine Strategy
Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)
Nature Protection
Directive 92/43/EC Habitat Directive on the conservation of natural habitats and wild fauna and flora
Directive 2009/147/EC on the conservation of wild birds
Regulation (EU) No 1343/2011 on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area
Vessels and Ports
Directive 2009/123/EC amending Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements

EU Legal Framework
Port Reception Facilities for Ship-Generated Waste and Cargo Residues
Directive 2002/59/EC establishing a community vessel traffic monitoring and information system
Waste
Commission Decision 2000/532/EC amended by Commission Decision 2014/955/EU on the list of waste pursuant to Directive 2008/98/EC on waste
Integrated Pollution Prevention and Control
Directive 2010/75/EU on industrial emissions (Integrated Pollution Prevention Control)
Water and Soil Pollution
Directive 2000/60/EC establishing a framework for community action in the field of water policy Art. 4.7 of Water Framework Directive 200/60/EC The directive has been amended by: Decision 2455/2001/EC Directive 2008/32/EC Directive 2008/105/EC Directive 2009/31/EC Directive 2013/39/EC Directive 2013/64/EC Directive 2014/101/EC
Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the community
Directive 2006/7/EC concerning the management of bathing water quality, amended by regulation EC/596/2009
International convention for the control and management of ships' ballast water and sediments, 2004 BWM.2/Circ.34/Rev.4
Health and Safety
Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances

EU Legal Framework
Regulation No 1907/2006 on the registration, evaluation, authorisation and restriction of chemicals (REACH)
Directive 94/9/EC concerning equipment for and protective systems intended for use in potentially explosive atmospheres, amended by: Regulation EC/1882/2003 Regulation EC/1025/2012
Directive 2014/68/EU relating to making pressure equipment (PED) available on the market
Directive 2013/59/Euratom (repealing Directives 89/618/Euratom, 96/641/Euratom, 96/29/Euratom, 97/43/Euratom, and 2003/122/Euratom) laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation
Safety and Health at Work
Directive 89/391/EEC on minimum health and safety requirements regarding workers' exposure to the risk arising from physical agents (electromagnetic fields)
Safety of offshore oil and gas operations
Directive 2013/30/EU on safety of offshore oil and gas operations amending Directive 2004/35/EC
Public Participation
Directive 2003/35/EC providing for public participation regarding drawing up certain plans and programmes relating to the environment (Aarhus Convention)

Table 2.2 Republic of Cyprus Laws and Regulations

Republic of Cyprus Legislation
Impact Assessment and Permitting
Law No. 127(I)/2018 on the Environmental Impact Assessment – EIA Law of Certain Projects and amendment Law No. 23(I)/2021
Law 102/2005 on the Assessment of Impacts on the Environment for Certain Plans and or Programmes
Air Quality
Law No. 77(I)/2010 "Air Quality Law" amended by *Law 3(I)/2017*

Republic of Cyprus Legislation
Air Quality Regulation P.I. 327/2010 on limit values of pollutants in ambient air
Law 148(I)/2003 "Oil and Fuel Specifications", modifying laws 40(I)/2007, 12(I)/2009, 111(I)/2013, 37(I)/2015
Law 184(I)/2013 "Industrial Emissions Law (Integrated Prevention and Control of Pollution)" as amended by Law 131(I)/2016
Law 16(I)/2011 on Substances that Destroy the Ozone Layer, modified by law 23(6)/2016
Law 110(I)/2011
Environmental Noise
Law 224(I)/2004 "Assessment and Management of Environmental Noise", as modified by Law 31(I)/2006 and Law 75(I)/2007 and Law N 125(I)/2019
Transportation of Dangerous Goods
Law 29(I)/2004 "Road and Transport of Dangerous Goods", as modified by Law 4(I)/2006,Law 168(I)/2007, Law 14(I)/2010, Law 138(I)/2011, Law 80(I)/2013, Law 161(I)/2015, Law 176(I)/2017 and Law 91(I)/2018
Environmental Liability
Law 189(I)/2007 "Environmental damage to protected species and natural habitats caused by occupational activities"
Marine Strategy
Law 18(I)/2011 "Marine Strategy" and Law 159(I)/2014
Nature Protection
Law No. 153(I)/2003 "Protection and Management of Nature and Wild Life"
Law 152 (I)/2003 "Protection and Management of Wild Birds and Game"
Law CAP 135 "Fisheries" and its amendment Laws and Regulations (latest amendment Law 170(I)/2019)
Waste
Law 185(I)/2011 "Waste Law, 2011", as amended by Law 6(I)/2012, Law 32(I)/2014, Law 55(I)/2014, Law 31(I)/2015, Law 31(I)/2016 and Law 120(I)/2016
Law N 32(I)/2002 and amendments Packaging and Packaging Waste law

Republic of Cyprus Legislation
Integrated Pollution Prevention and Control
Law 184 (I) 2013 "Integrated Pollution Prevention and Control" and its Amendment Law 131(I)/2016
Water and Soil Pollution
Law 106(I)/2002 "Water And Soil Pollution Control", as amended by Law 160(I)/2005, Law 76(I)/2006, Law 22(I)/2007, Law 11(I)/2008, Law 53 (I)/2008, Law 68 (I)/2009, Law 78 (I)/2009 and Law 181 (I)/2013
Law 13(I)/2004 "for setting up a framework of action in the field of water resource protection", as amended by Law 67(I)/2009, Law 113(I)/2010, Law 122(I)/2012, Law 159(I)/2015 and Law 47(I)/2018
Law No. 57(I)/2008 "Management of Bathing Water Quality"
Law 20 (III)/2001 "Protocol on the Pollution Prevention of the Mediterranean Sea by Ships and Aircraft (Dumping Protocol) of the Barcelona Convention"
Law 266/87 "Protocol for the Protection of the Mediterranean Sea against Pollution from onshore Sources"
Archaeology
CAP. 31 (1959) "Antiquities Law", modified by Law 48/1964, Law 32(I)1973, Law 92(I)/1995, Law 4(I)/1996, Law 33(I)/1997, Law 120(I)2005, Law 41(I)/2006, Law 103(I)/2012, Law 200(I)/2014 and Law16(I)/2017
Health and Safety
Regulatory Administrative Act 347/2015 "Safety and Health at work – control of major accidents, hazards related to dangerous substances"
Law 78(I)2010 "Chemical Substances Law" and other related chemical laws
Regulation P.I. 309/2003 "Equipment and Protective Systems to be Used in Explosive Atmospheres"
Regulation P.I. 311/2003 "Essential Requirements (Pressure Equipment)"
Law 115(I)/2002 "on Protection from Ionising Radiation and Nuclear Safety", modified by Law (I)/2009, Law 127(I)/2011, Law 122(I)/2017 and Law 164(I)/2018
National Annex for EN 1998 Eurocode 8 "Design of structures for earthquake resistance"
Safety and Health at Work
Law 89(I)/1996 "Occupational Health and Safety", modified by Law 158(I)/2001, Law 25(I)/2002, Law 41(I)/2003, Law 99(I)/2003, Law 33(I)/2011, Law 170(I)/2015, Law 178(I)/2015 and Law 215(I)/2020

Republic of Cyprus Legislation
Safety of Offshore Oil and Gas Operations
Implementing Regulation No. 257/2013 "Safety for offshore oil and gas operations"
Human Rights
Law 43/1967 "on Republic of Cyprus Citizenship"
CAP. 105 (1952) "Aliens and Immigration Law"
CAP. 154 "Criminal Code of the Republic of Cyprus"
CAP. 161 (1920) "Prevention of Corruption Law"
Consolidated laws 1990-2006 "Public Service Laws"
Law 33(III)/2003 "Convention on Access to Information, Public Participation in Decision-Making and Access to Justice on Environmental issues ("Aarhus Convention")"

2.2 International Performance Requirements on Environmental and Social Impact Assessment

IGI POSEIDON has adopted EBRD Performance Requirements (PRs) as the international reference standard for social and environmental strategies and will comply with these requirements throughout all stages of the project. EBRD has an Environmental and Social Policy which seeks to ensure that sustainable development is achieved by projects that it finances.

The project will be developed in line with Good International Industry Practice, and Environmental and Social Impact Assessment (ESIA) Reports will be developed for the benefit of prospective lenders in line with EBRD standards and requirements and relevant international conventions and protocols.

The European Bank for Reconstruction and Development promotes environmental and sustainable development in the full range of investments and activities. EBRD categorises each project to determine the nature and level of environmental and social investigation, information disclosure and stakeholder engagement required according to nature, location, sensitivity and scale of the project and the significance of its potential adverse future environmental and social impacts.

The project categories are summarised below:

- Category A: project which could result in potentially significant adverse future environmental and/or social impacts which at the time of categorisation, cannot be identified or assessed and which require an environmental and social impact assessment process;
- Category B: project whose potential adverse future environmental and/or social impacts are typically site-specific, and/or identified and addressed through mitigation measures;
- Category C: project which is likely to have minimal or no potential adverse future environmental and/or social impact.

In addition, EBRD has defined in their Environmental and Social Policy (April 2019) specific Performance Requirements (PRs) for key areas of environmental and social sustainability.

The ESIA Studies shall conform to the following PRs listed below:

- PR 1: Assessment and Management of Environmental and Social Impacts and Issues;
- PR 2: Labour and Working Conditions;
- PR 3: Resource Efficiency and Pollution Prevention and Control;
- PR 4: Health and Safety;
- PR 5: Land Acquisition, Involuntary Resettlement and Economic Displacement;
- PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- PR 7: Indigenous Peoples;
- PR 8: Cultural Heritage;
- PR 9: Financial Intermediaries;
- PR 10: Information Disclosure and Stakeholder Engagement.

The EastMed Pipeline Project is classified as Category A according to EBRD criteria, and as such, a special, formalised participatory assessment process is required according to EBRD standards. The process includes:

- A comprehensive Environmental and Social Impact Assessment in compliance with PR 1 Environmental and Social Appraisal and Management and PR 10 Information Disclosure and Stakeholder Engagement;
- An examination of the technically and financially feasible alternatives and the rationale for the alternative selection;
- Also addressing PRs 2 and 4, the ESIA should identify the issues related to potential risks related to community health, safety and security, as well as labour and working conditions;
- An assessment of involuntary resettlement issues according to PR 5 Land Acquisition, Involuntary Resettlement and Economic Displacement;
- The sustainable use of natural resources and the protection of biodiversity must be considered as instructed by PR 6; and
- An assessment of impacts on cultural heritage according to PR 8 Cultural Heritage.

In addition, the following guidelines and standards will be considered:

- OSPAR Guidelines on Best Environmental Practice (BEP) in Cable Laying and Operation;
- OSPAR Guidelines for the Management of Dredged Material at Sea (2014-06);
- OPRED Guidance Notes on Decommissioning of Offshore Oil and Gas Installations and Pipelines (2018);
- European Standard ISO 13.060.45 (EN16260) on Water Quality;
- ACCOBAMS Methodological Guide: Guidance on underwater noise mitigation measures (2016);
- JNCC Guidelines for Minimising the Risk of Injury to Marine Mammals from Geophysical Surveys (2017);
- CMS Family Guidelines on Environmental Impact Assessment for Marine Noise-generating Activities (2016).

2.3 ESIA Related International Conventions/Agreements

The Republic of Cyprus has ratified several international environmental and socioeconomic conventions, protocols and agreements.

The list of these conventions and protocols is shown below in Table 2.3:

Table 2.3 Conventions and Protocols Ratified by the Republic of Cyprus

Convention/Protocol	Ratification/ Signature Year
Protocol on Protection of the Mediterranean Sea against pollution from the exploration and exploitation of the continental shelf and the seabed and its subsoil (Offshore Protocol) of the Barcelona Convention	2001
Protocol on the avoidance of pollution of the Mediterranean by ships and aircraft (Dumping Protocol) of the Barcelona Convention	2001
Protocol on the protection of Mediterranean Sea mammals from pollution from Land-Based Sources and Activities (LBS)	1987
Marpol 73/78 Convention	1989
Convention on Access to Information, Public Participation in Decision-Making and Access to Justice on Environmental Issues (Aarhus) (1998)	2003
United Nations Convention on the Sea (UNCLOS) (1982)	2004
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)	1992
Ramsar Convention on Wetlands (1971)	2001

Convention/Protocol	Ratification/ Signature Year
Framework Convention on Climate Change (FCCC) (1992)	2017
Kyoto Protocol to the FCCC (1997)	1999
Rio Convention on Biodiversity (1992)	1996
Paris Agreement (2015)	2017
Stockholm Convention on Persistent Organic Pollutants (2001)	2004
Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) (1979)	1988
Convention on the Conservation of Migratory Species of Wild Animals (CMS CONVENTION - 1979)	2001
Vienna Convention for the Protection of the Ozone Layer (1985)	1992
Montreal Protocol on Substances that Deplete the Ozone Layer (1987)	1992
Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS - 1996)	2006
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (1972)	1990
World Heritage Convention (1972)	1975 (acceptance)
OSPAR (1972)	

3 ALTERNATIVES ASSESSMENT

3.1 Introduction

The aim of this section is to describe Alternatives Assessment activities performed by IGI Poseidon during the period 2015-2021 in order to select a technically feasible pipeline route with the fewest environmental, socioeconomic and cultural heritage adverse impacts for the EastMed Pipeline Project.

The EastMed Pipeline Interconnector in Cyprus consists of pipelines that deliver gas from Israeli/Cyprus borders and from the Cypriot offshore (preliminarily identified close to the Aphrodite block) to Cyprus and then from Cyprus towards Crete/Greece.

The EastMed Pipeline Interconnector is made up of a Southern Line and a Northern Line, upstream of Crete. In order to ensure as much flexibility as possible and to strengthen the reliability of supply, these two lines, upstream of Crete, are designed to work complementarily as well independently, thanks to infrastructure in Cyprus dedicated to each line. This pipeline interconnector could be, therefore, adapted to needs of Cyprus based on the maturity of development of sources.

Because of the preliminary location of supply gas sources south of Cyprus, the landfall region on the mainland has been identified in the southern area of the island and specifically at the Vasilikos Industrial Area. This area has specific advantages, such as:

- Reduced impacts on populated areas due to the localisation of the project within the Vasilikos Industrial Area;
- The presence of the main power plant of Cyprus which can operate with gas. Moreover, other power stations and industries using natural gas are also planned in it;
- The relatively close distance to the main towns of Cyprus, which will minimise the length of onshore distribution networks to the future gas end users;
- The short distance from the gas sources, thus minimising the offshore pipeline length.

Upon selection of the preferred route (or “base-case”), a process of route refinement commenced in order to optimise the route, particularly through those sections which present greater technical, environmental, socioeconomic and cultural heritage challenges. The route refinement process is still ongoing, especially linked to the outcomes of the Detailed Marine Survey.

The EastMed alternatives analysis started in the early phases of project development (Pre-Feasibility, and Feasibility Study) and was undertaken as part of the project design/decision making process through to definition of the actual project concept.

The EastMed pipeline routes have been developed during four different phases of the project:

- Pre-Feasibility Study (2011-2014);
- Feasibility Study (2015-2016);
- Reconnaissance Marine Survey (2017-2018);
- Technical Screening Study – Pre-DMS (2019).

3.2 Zero Alternative

A zero solution is equivalent to the "do nothing" scenario. The selection of this solution leads to maintaining the current situation in terms of energy supply of the country and the EU.

The zero solution, i.e. the solution of non-implementation of the project, is not considered desirable and will have the following adverse effects:

- Non-compliance with Regulation No. 347/2013 of the Trans-European Energy Infrastructure Guidelines in terms of:
  - No strengthening of competition in the energy market;
  - No enhancement of EU security of supply (if energy sources and flows to Europe are not diversified), renouncing the advantages of the supply of EU with indigenous and other sources;
  - No widening of the Southern Gas Corridor from the easier market access;
  - No further promotion of sustainability according to the decarbonisation goals to be achieved as defined in the framework of the Paris Agreement (adopted by 196 Parties at COP 21 on 12 December 2015 and entered into force on 4 November 2016; Regulation 525/2013/EU amended by Regulation 842/2018/EU);
  - No supply of Cyprus with natural gas from pipeline and no contribution to the potential emergence of Cyprus as a European transit hub;
- The existing level of security of supply will remain with the non-diversification of energy sources and flows;
- No steps will be taken to reduce greenhouse gas emissions at country and EU levels.

Based on the above, the zero alternative is considered neither reasonable nor environmentally purposeful and is not considered further.

3.3 Methodology

In addition to the zero solution, alternative scenarios of the onshore and offshore pipeline routes and landfall site locations were considered.

Ideally, to minimise pipeline length and hence material and construction costs, but also relevant environmental and social impacts, a pipeline should be routed between the starting and end point along as close to a straight line as possible. However, other factors such as environmental

considerations, route obstructions, seabed conditions, geohazards, third party facilities, etc. may necessitate the introduction of turning points into the pipeline routing.

The criteria used to define the current base-case alignments are presented below.

3.3.1 Offshore Routing Considerations

Major criteria for the offshore route selection and optimisation are summarised below:

- Minimise total pipeline length, i.e. minimise the pipeline distance from the initiation point to the termination point;
- Avoid, wherever possible, restricted sensitive offshore areas such as protected areas (e.g. Natura 2000 sites), anchorages, sanctuaries, shipping lanes, military avoidance zones, mining activities and waste or ammunition dumping areas;
- Duly consider third party requirements, i.e. liaison with fishing organizations, local and/or governmental authorities and other interested parties (social and environmental constraints)
- Avoid or minimise pipeline, cable and utilities crossings. Where this is not possible, the crossing angle should preferably be 45 degrees or more. Sufficient straight section should be available to avoid adjacent curves' affecting the crossing;
- Provide adequate clearance to adjacent pipelines and cables;
- Maintain consideration of future pipelines, facilities and cables;
- Follow a smooth seabed profile avoiding coral growth and, wherever possible, rocky outcrops, soft or liquefiable soil, unstable seabed areas (e.g. sand waves and ripples), abrupt breaks of slope, steep gradients; this improves pipeline free spanning behaviour;
- Conservative routing along cross slopes, dynamic slopes and other geohazards such as active tectonic faults and mud volcanoes;
- Consider limitations of installation equipment and line pipe fabrication with regard to water depth; note that this is a function of the pipeline diameter in conjunction with the water depth. This criterion is especially important for OSS2 section crossing the Mediterranean Ridge. For the selected pipe size of 26 inches, the aim is to avoid water depths in excess of 3,000 m.

In addition to the above general criteria presented here above, major criteria for nearshore route selection and landfall evaluation are summarised below:

- Environmental and/or Archaeological Constraints: nature reserves or other environmental conditions that could affect the landfall location. Some of these are:
  - Presence of *Posidonia oceanica* (priority habitat 1120- *Posidonia* Beds, according to Habitats Directive 92/43/EEC);
  - Presence of shallow water coralligenous formations;
  - Presence of marine caves which might harbour a high number of rare, endemic, protected and commercially important species for which they also serve as "refuge habitats";
- Length of offshore route in shallow marine areas (depth <200 m). These zones cover up to the maximum depth of the euphotic layer which are the most likely to sustain populations of commercially important species and highly productive communities;

- Archaeological sites;
- Local Bathymetry: obstructions to routing, potential for spanning, extent of trenching;
- Geotechnical Suitability: suitability for trenching;
- Third Party Interaction: presence of industrial, marine, fishing and military infrastructures and activities, restricted and anchorage areas that could affect the pipeline route or construction method;
- Ease of access: Existing road network close to the landfall / presence of ports nearby;
- Construction Considerations and best practices;
- Local Routing and Transition to Deepwater: the possibility to tie the landfall site in to the offshore and onshore sections of the pipeline.

From an environmental point of view, the process was based on detailed analysis of the area territory, aimed at identifying the most suitable "Base-Case" solution.

3.3.2 Onshore Routing and Facilities Site Selection Considerations

Safety, environmental and social impact, and technical feasibility were the essential factors taken into account in evaluating and defining onshore pipeline routing. In fact, a large number of factors are taken into consideration in order to identify critical points which include obstacles and restrictions existing within the planning area as, for instance:

- Topographic, geologic, seismic and hydrologic conditions;
- Building development, infrastructure and land use;
- Statutory specifications, e.g. on nature conservation, environmental protection and protection of cultural assets.

The construction and operation of a pipeline itself requires a certain usage of property, both temporary and permanent, with relevant rights to be acquired by the project owner and resulting in usage restrictions on the part of the owner and any beneficiaries of the property (See Section 4.2.3and Section 4.6.2).

Accordingly, the following general routing principles have been defined during the initial phases of the project:

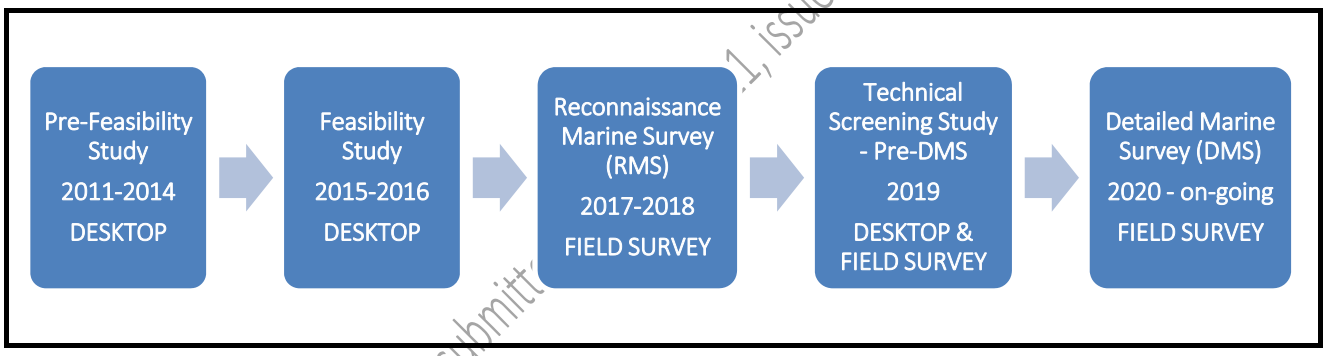
- Within the project area, the pipeline route should be planned as the shortest possible link between the critical points;
- In order to take into account general regional planning issues, where possible, the route should be bundled with existing infrastructure facilities, such as other pipelines, overhead power lines and transport systems (within the scope of the project, mainly roads and tracks);
- Changes in route direction at critical points or wherever the pipeline route is bundled with existing infrastructure facilities are to be marked by intersection points.

3.4 Offshore Route Selection Process and Results

The route selection process for the offshore sections has been undertaken from the early stages of the project starting from preliminary desktop activities (Pre-Feasibility and Feasibility Studies) with a continuous updating and refinement of the macro corridors preliminarily selected to identify narrower areas where field activities are performed.Prepared by/reference: ERM

Figure 3.1 shows the steps undertaken by IGI Poseidon for this process: the base-case options presented in this section are the results of these activities.

Various high level pipeline route corridors have been investigated since the pre-feasibility phase as a starting point for the desktop study and a Geohazard and Seismic Desk Study Report were developed during the pre-feasibility phase. The main geohazards identified include areas of potential landslides and active fault crossings. Secondary hazards include tsunami, turbidity currents, gas, mud volcanoes and potential rock outcrop. Slope stability was also assessed and, considering the medium-high seismicity of the area, slope angles steeper than or equal to 8 degrees were assessed potentially unstable.



Prepared by/reference: ERM

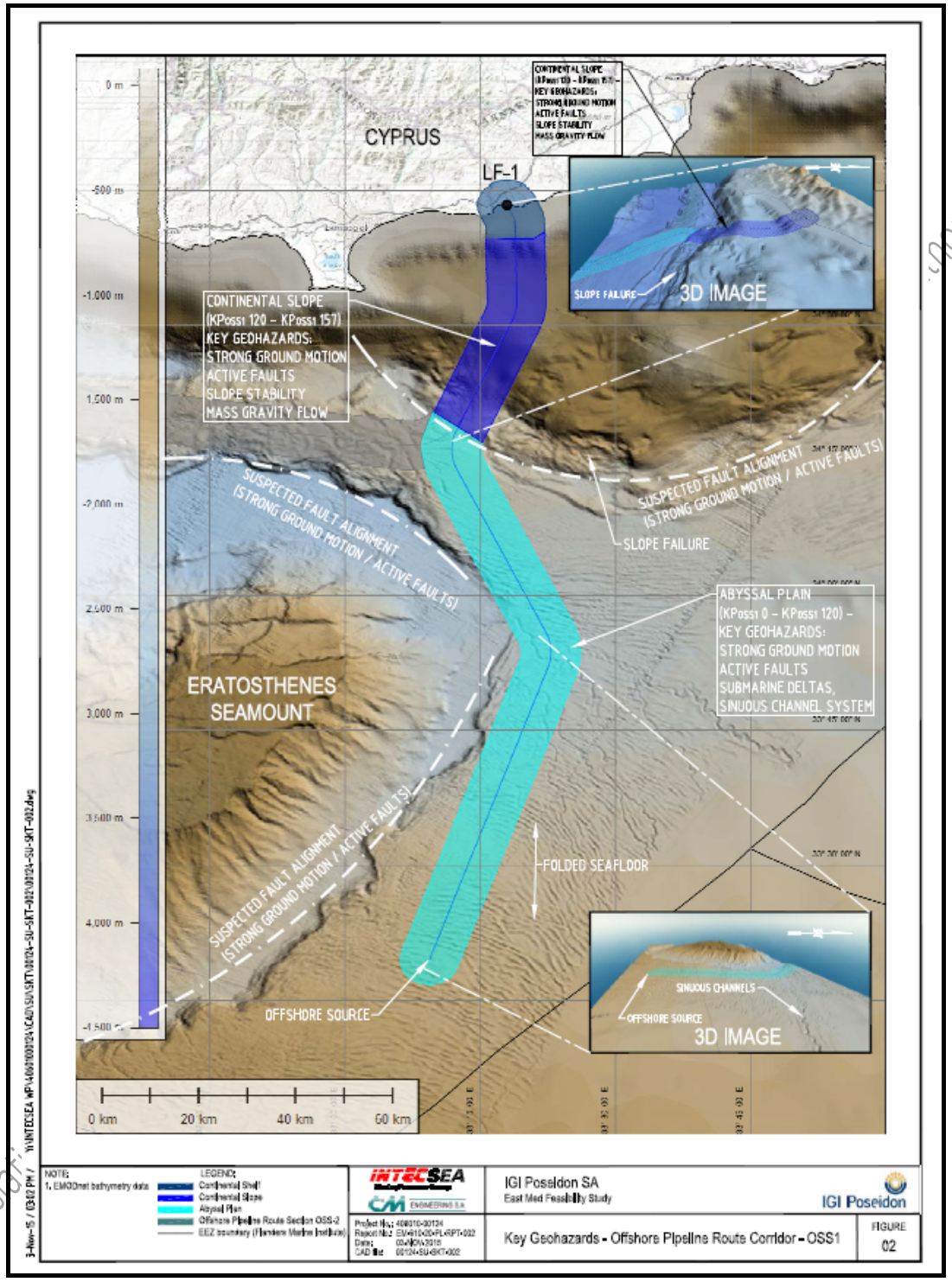
Figure 3.1 Activities performed for route selection

Numerous papers, British Admiralty charts, EMODnet bathymetry data and qualitative geotechnical data were also consulted when available within the public domain.

Taking into consideration the methodology presented in Section 3.3.1, the macro-corridors for offshore pipeline routes were developed during the feasibility phase of the project.

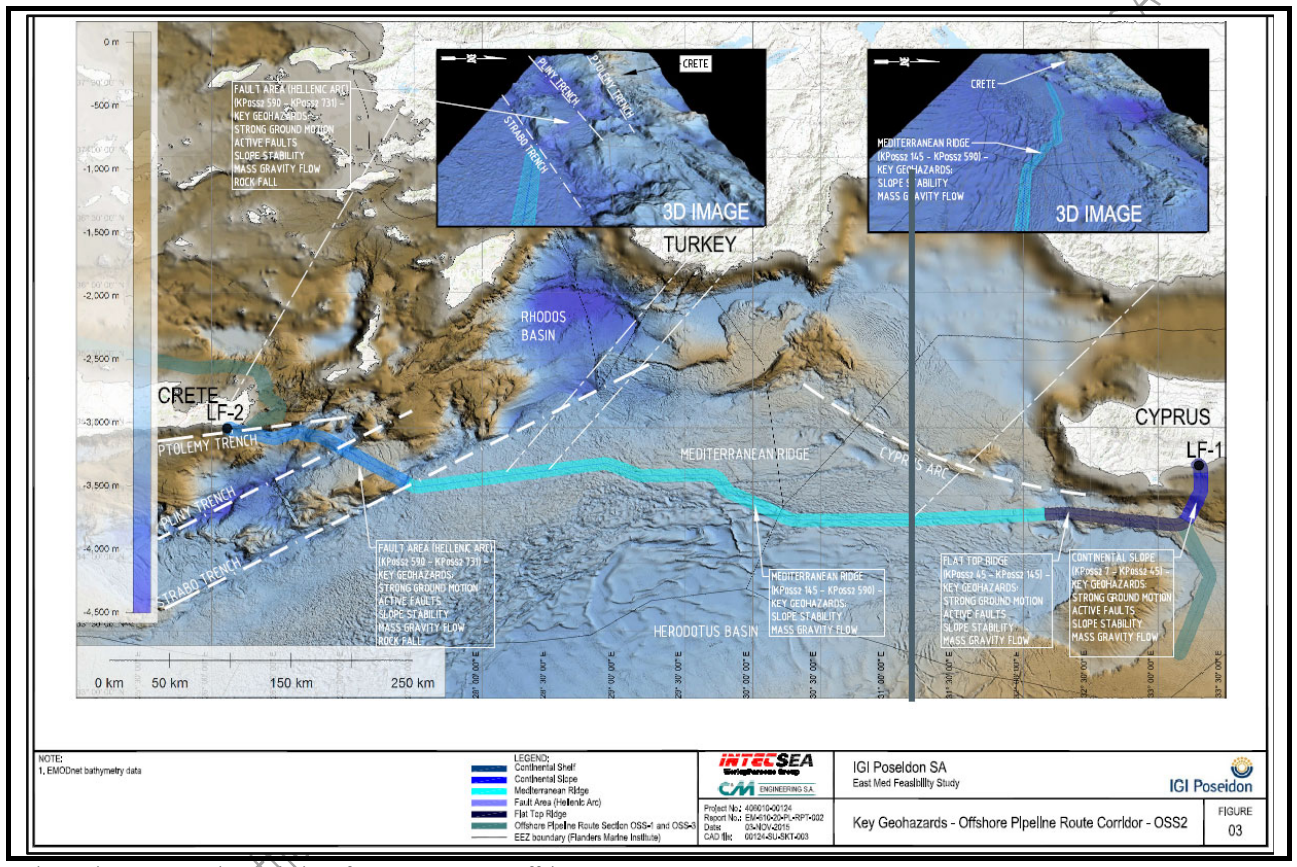
The desktop investigations identified the main geohazards located in the area and allowed definition of the preliminary feasible offshore corridors. Figure 3.2 (OSS1b section) and Figure 3.3 (OSS2 section) show the corridors defined as a result of the investigations provided above and anticipate where the most important geohazards are located (so these can be further investigated

in the subsequent design phases and the project refined as appropriate). All proposed corridors, therefore, avoided to the extent feasible any severe geohazard constraint. The remaining geohazards that will be found along these corridors will be studied and effectively managed through standard engineering practice.



Reference: EastMed Feasibility Study, Preliminary Geohazard Identification Report – Offshore Section, 2015

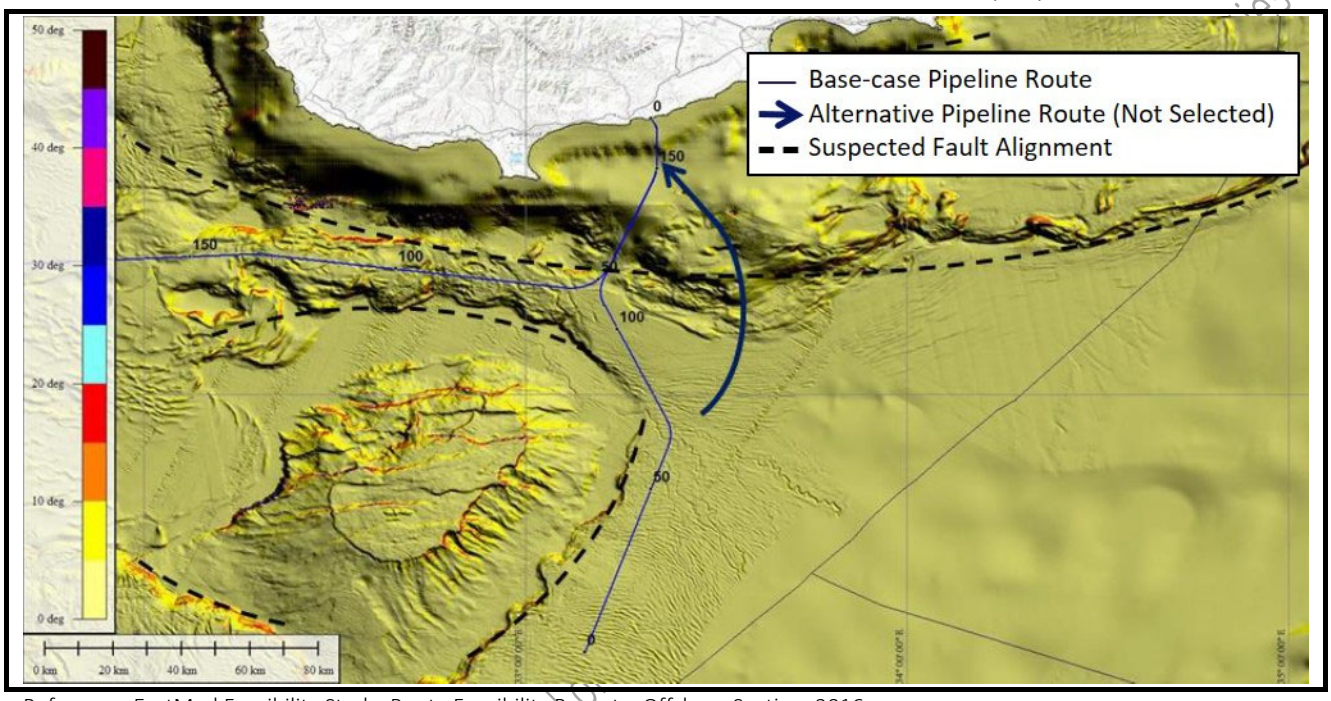
Figure 3.2 Key Geohazards within the Base-Case route – Offshore Pipeline Route Corridor – OSS1b



Reference: EastMed Feasibility Study, Preliminary Geohazard Identification Report – Offshore Section, 2015

Figure 3.3 Key Geohazards within the Base-Case route– Offshore Pipeline Route Corridor – OSS2

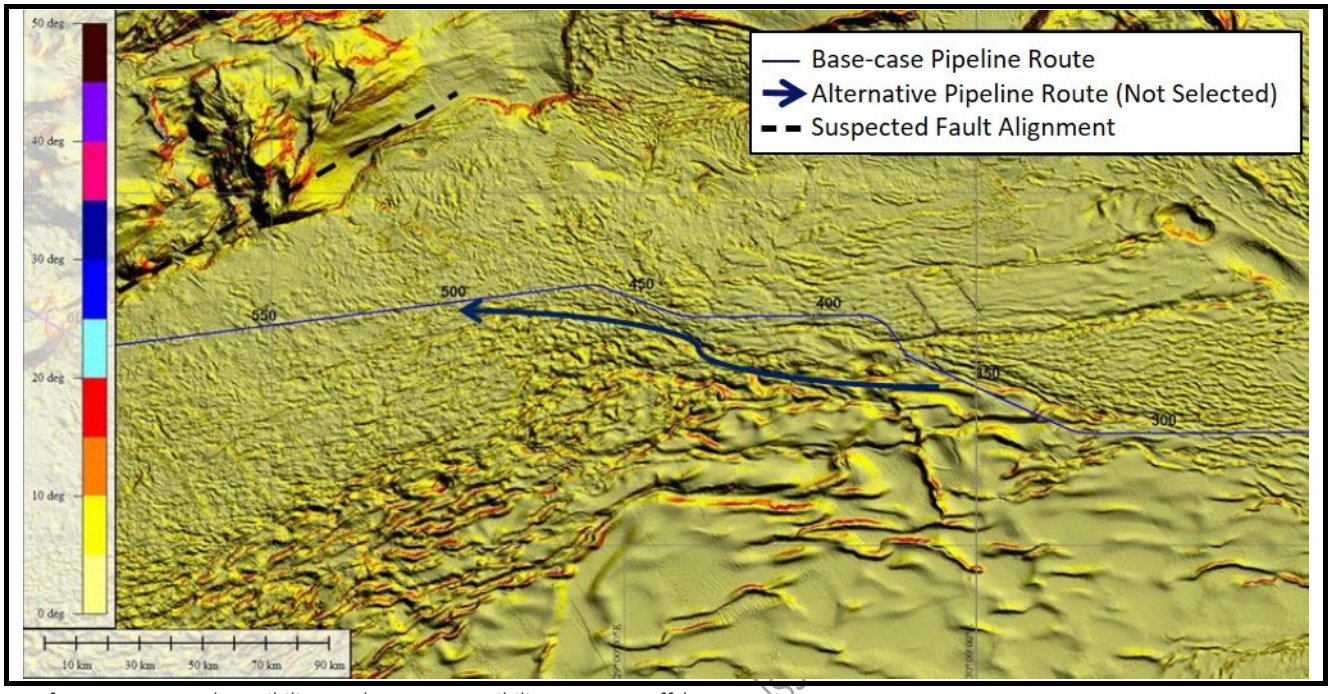
Figure 3.4 presents an example of a local an alternative route (see dark-blue thicker arrow) that was considered during the design phase of section OSS1b for crossing the Cypriot continental margin. In this case, due to the severe slope-related geohazards detected along the route, this alternative was considered as not feasible and thus was discarded and an alternative route proposed.



Reference: EastMed Feasibility Study, Route Feasibility Report – Offshore Section, 2016

Figure 3.4 Alternative Route Option for OSS1b

Another area where alternative routes were evaluated corresponds to the area located close to the Mediterranean Ridge, along the route of the OSS2/OSS2N. Here an alternative route (see dark-blue thicker arrow) was evaluated in order to cross the Mediterranean Ridge (see Figure 3.5) with a more direct route (i.e. shorter route). However, the route was discarded due to the higher density/severity of geohazards.



Reference: EastMed Feasibility Study, Route Feasibility Report – Offshore Section, 2016

Figure 3.5 Alternative Route Option for OSS2/OSS2N

Overall, the desktop technical investigations have allowed a number of geohazards to be identified and located within the study area and the corridors investigated. These findings have been a key factor in the definition of the base-case route alignments within the route corridors. Therefore, despite the fact that the routes present some geohazards, all routes avoid any severe geological constraint. Indeed, the hazards identified along these routes are common in the region and are typically managed through standard engineering techniques/processes and related mitigation measures.

The deepwater offshore pipeline routes were further investigated during the Reconnaissance Marine Survey (RMS, 2017-2018) with the collection of geophysical and geotechnical data. The refinement of routes (before DMS activities) inside the corridors was performed based on geohazards identified and mitigation measures / engineering techniques available and/or feasible. Some of the most relevant geohazard constraints identified during the refinement process have been:

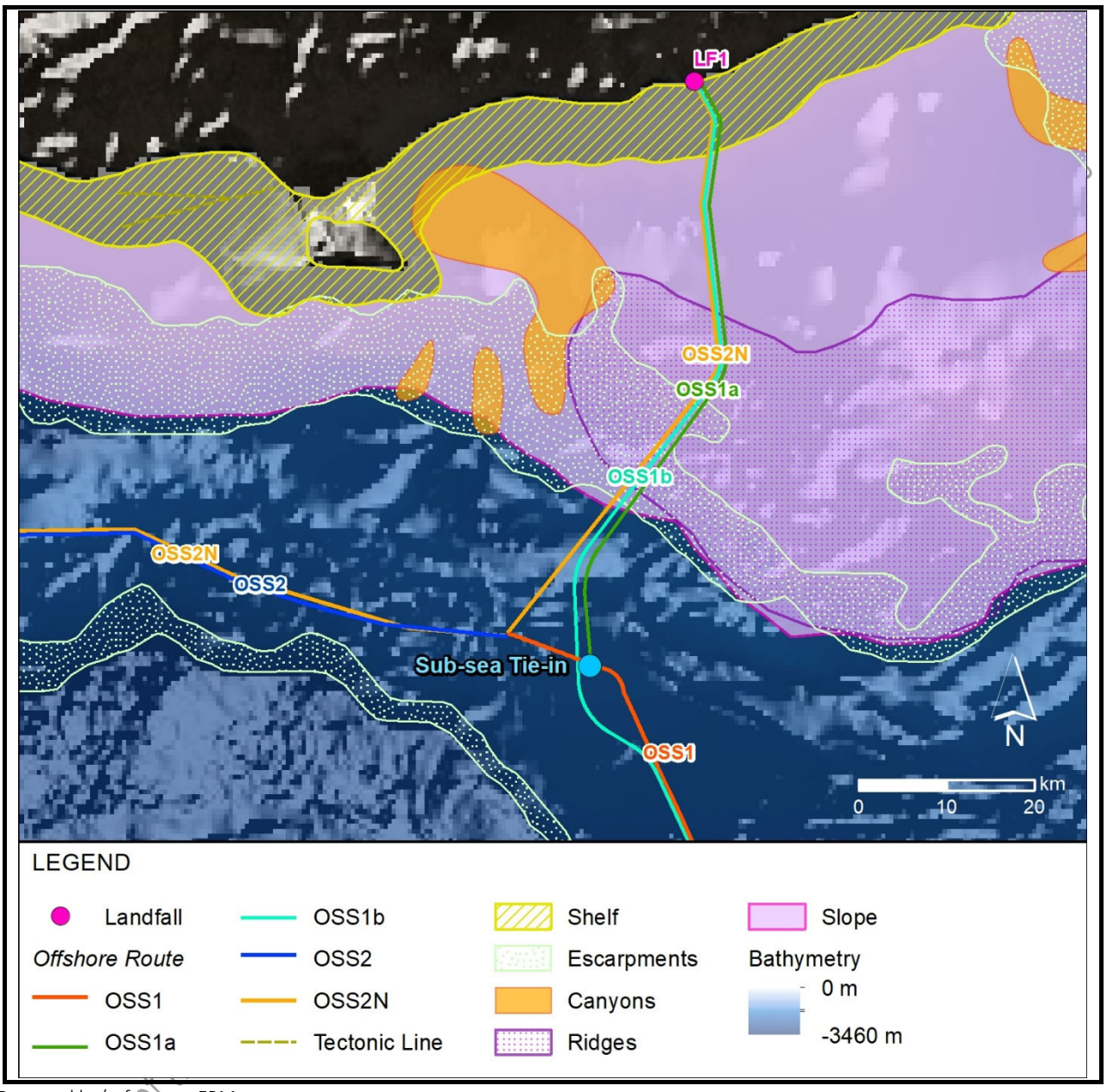
- Strong Ground Motion;
- Active Faults;
- Slope Stability;

- Mass Gravity Flows;
- Shallow Gas;
- Pockmarks;
- Bottom current and hydrodynamic effects.

These, in association with the other geohazards already identified in the previous desktop investigations and those that will be identified during the DMS activities, will be taken into consideration for the final route refinement with appropriate studies.[9]

Overall, the present offshore pipeline route is based on the outcomes of the pre-DMS route definition and the results of the ongoing DMS (Map n.1 in Appendix A). Figure 3.6 shows the main constraints preliminarily identified for the pipeline sections that reach LF1 (i.e. OSS1a, OSS1b and OSS2N) from the open sea. These constraints are described in detail in Section 5 (See Figure 5.2) with an overview on the whole Cypriot area. As part of next phases of the project design, the offshore routes will be optimised/refined based on outcomes of the Detailed Marine Survey (DMS) as well as input from stakeholders and other specific investigations. The refined routes will be considered in the ESIA report and will integrate technical, environmental, socioeconomic and cultural heritage constraints (if any) (see Section 7 and APPENDIX D for details on all the planned site investigations and disciplines covered).

[9]These investigations are currently being undertaken or being planned and will be incorporated as part of the ESIA report analysis (see APPENDIX D).



Prepared by/reference: ERM

Source: Global Seafloor Geomorphic Features Map Data (GRID-Arendal, Geoscience Australia and Conservation International)

Figure 3.6 Offshore Route Map with Main Hazard and Constraints within Cyprus Jurisdiction (Detailed View on Sub-Sea Tie-In and Landfall)

3.5 Nearshore and Landfall Location Selection Process and Results

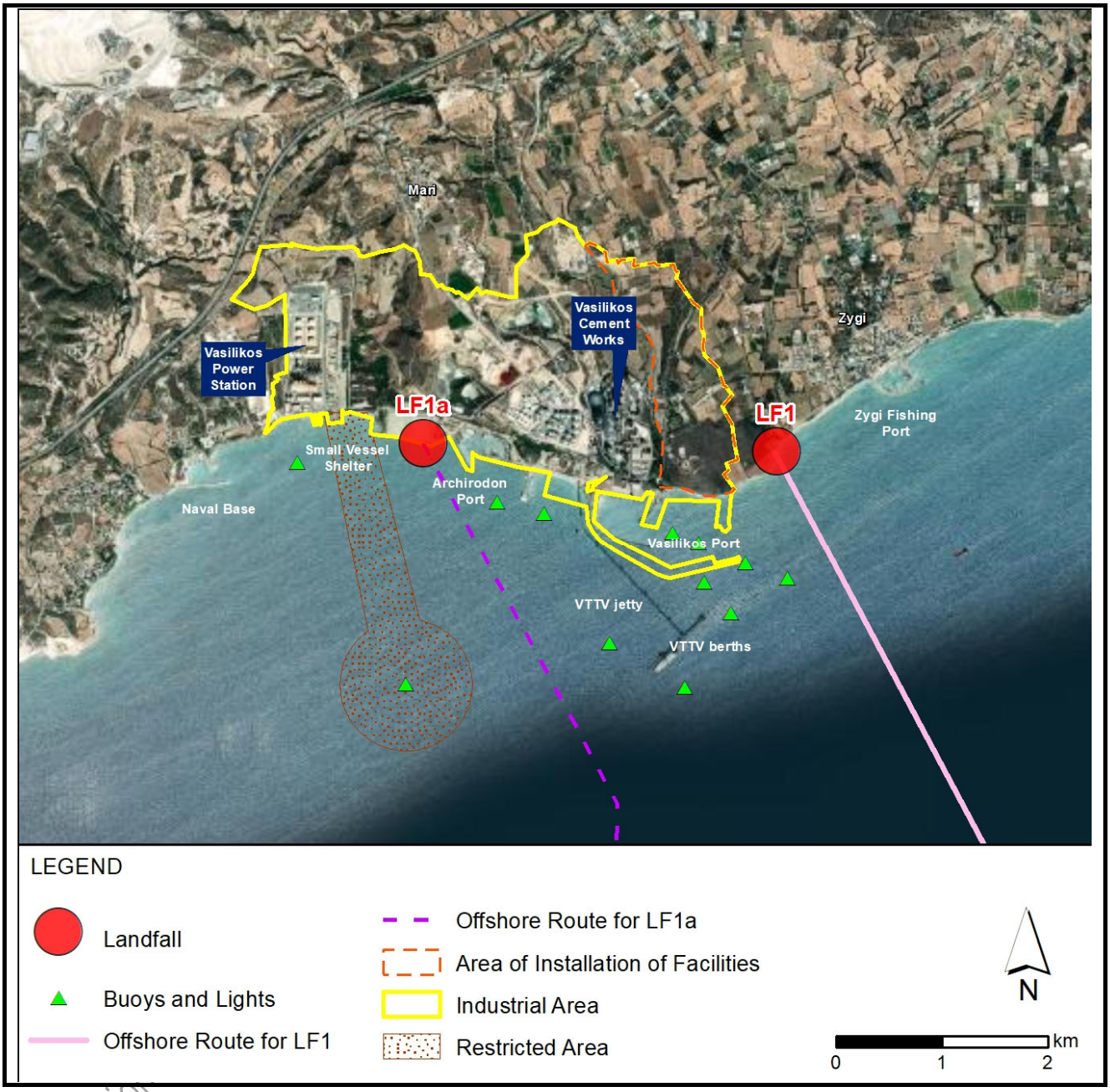
The portion of the coast where the landfall could be located is already defined by the location of the onshore facilities, which will be built on the eastern portion of the Vasilikos Industrial complex (see Section 3.6). The Vasilikos Industrial Area is the only available coastal heavy industry zone in Cyprus and an obvious choice because a Master Plan (Section 2.1.1.2) was developed for the Government of Cyprus within the context of the necessary planning in the area in order to accommodate a number of developments associated with the Vasilikos Energy Centre (e.g. energy import facilities, storage, management, distribution and export of petroleum products, etc.), which are also necessary after the discovery of the "Aphrodite" natural gas field.

To choose a landfall site far from the Vasilikos area, where the onshore facilities are currently planned, would imply installing a longer onshore pipeline and increasing impacts and onshore receptors. In addition, overall sensitivities on the nearshore and coastal marine environment (i.e. considering the complete range of environmental and socioeconomic aspects) would be possibly more relevant in areas located farther from the wider industrial zone at Vasilikos.

Two local alternatives were considered for selection of the landfall site, Vasilikos 1, the base-case (LF1), and Vasilikos 1a (LF1a):

- Vasilikos 1 (LF1) is located between the ports of Vasilikos and Zygi, in the Zygi community of Larnaca District. The landfall is located 3.1 km south-east from Mari and 1.3 km south-west of Zygi settlements;
- Vasilikos 1a (LF1a) is located west of the Archirodon port in Mari Community in Larnaca District. The nearest settlement is Mari, about 2 km to the north. The Archirodon port is located in the wider industrial zone of Vasilikos, in the area where the future Energy Centre is foreseen in the Master Plan and close to Vasilikos Power Station and Vasilikos Cement Factory.

Figure 3.7 shows the proposed routes for both landfall alternatives together with the main constraints identified.



Prepared by/reference: ERM

Figure 3.7 Aerial View - Cyprus Landfall Location (LF1/LF1a)

A preliminarily qualitative comparison and evaluation was performed during the Pre-Feasibility Study (Table 3.1). From the evaluation it was concluded that both landfall sites would be technically acceptable, and in several aspects differences would be rather negligible. Table 3.1 presents the comparison between the landfall sites (LF1a and LF1).

Table 3.1 Cyprus Landfall Evaluation (LF1a and LF1)

Criteria	Landfall Location Remarks & Evaluation	
	Vasilikos 1a (LF1a)	Vasilikos 1 (LF1)
Environmental / Archaeological Constraints	There are no environmental and archaeological constraints yet identified. The shallow zone of Vasilikos Bay is known to host *Posidonia oceanica* meadows.	Near the landfall is located an Archaeological site named Tochni – Lakkia. The shallow zone of Vasilikos Bay is known to host *Posidonia oceanica* meadows.
Geotechnical Suitability	Sandy soil is expected in the nearshore and onshore area. Transformation from sandy to clayey soils is expected further offshore. The shoreline east and west from the landfall location is rocky. Rocky outcrop is not identified, but buried rock can be expected at the landfall location. Survey will determine the depth of the bedrock layer.	Rocky outcrop is identified at the landfall location. Survey will determine the extent of the bedrock layer and will determine the depth of possible buried bedrock. Transformation from sandy soils (overlaying the bedrock) to clayey soils is expected with increasing distance offshore.
Third Party Interaction	The area of Vasilikos is a brownfield site used for industrial and other purposes, both onshore and nearshore. The nearshore pipeline is located within designated pipeline corridor	The landfall location is on the edge of the congested industrial onshore Vasilikos area. The nearshore pipeline is routed to the east of the also congested nearshore area.
Local Routing and Transition to Deep-water	Pipelines (incoming and outgoing) are routed in the assigned 'Main Gas Pipeline Corridor' as per the Master Plan 2015 (not present in Master Plan update 2020) avoiding the SPM buoy on the west and the ports and jetties on the east. No obstruction is identified towards deeper waters.	Pipelines (incoming and outgoing) are routed outside the congested nearshore area. No obstruction is identified towards deeper waters.
Fish Farm Areas	Several aquaculture cages marked with buoys and reflectors are present in the area. Future expansion of fish farming could be expected and should be towards deeper waters according to the Department of Fisheries.	The landfall located outside of the area where several aquaculture cages marked with buoys and reflectors are present. Future expansion of fish farming could be expected and should be towards deeper waters according to

Criteria	Landfall Location Remarks & Evaluation	
	Vasilikos 1a (LF1a)	Vasilikos 1 (LF1)
		the Department of Fisheries.
Proximity to Naval Base	Landfall is about 500 m to the east of the restricted area that exists around the naval base (Evangelos Florakis), where shipping, fishing and any other activity, including the installation of underwater cables and pipeline is prohibited.	Landfall is about 1500 m from the restricted area that exists around the naval base (Evangelos Florakis), where shipping, fishing and any other activity, including the installation of underwater cables and pipeline is prohibited.

Prepared by/reference: Modified by ERM from EastMed Feasibility Study, Route Feasibility Report - Offshore

The overall conclusion from the analyses is that from a technical point-of-view, there are no obstructions identified that may compromise feasibility of the alternatives, however the shore crossing construction and nearshore pipeline installation could become more complex for the LF1a due to the possibility of simultaneous construction activities for other planned developments and presence of restricted areas within the port (e.g. naval base and the assigned 'Main Gas Pipeline Corridor' of the Vasilikos Master), thus raising relevant technical and safety issues during construction of the project.

As a consequence, LF1 has been identified as the preferred option since it is located just east of the congested Vasilikos Bay (and therefore less interaction is expected with existing infrastructure as well as with future developments - see Section3.6-) and also because the rest of the constraints (e.g. presence of *Posidonia* and potential for underwater archaeological sites) can be managed with standard practice on both cases.

3.5.1 Shore Crossing Construction Methodologies

The shore crossing is the intersection area between the offshore and onshore part of a pipeline, where special construction techniques are required. The size of this intersection area depends on local circumstances such as bathymetry, topography, metocean conditions, seabed characteristics (e.g. seabed material, morphology) and environmental conditions. Generally, the area runs from a water depth of around 10 to 20 metres to the onshore end of the beach. Three standard technical options are presented below (i.e. open cut construction, horizontal directional drilling and micro-tunnelling). All 3 techniques are considered as feasible at this stage, and each provides specific advantages and disadvantages. The base-case proposed construction method is the traditional

open cut method as with the data available to date, no technical constraints are yet identified that rule out this technique.

3.5.1.1 Open Cut Construction

An open cut construction methodology is a frequently used technique with the lowest technical construction risk level and it is the quickest construction method. Generally, the nearshore section is trenched by a combination of dredging equipment (e.g. deeper sections by cutter suction dredger or trailing suction hopper dredger and shallower sections by pontoon-based backhoe) and the onshore section by common excavators to enable the pipeline to be pulled ashore at a required burial depth. A sufficiently sized beach with good access in necessary to enable the use of heavy equipment (preferably minimum 50 metres from dune to shoreline and minimum 100 metres wide).

To minimise dredging volumes and to protect the trench from natural backfilling during the period between trench excavation and pipeline installation, a cofferdam is often used. If the subsoil is not suitable for sheet piles, a causeway can be created by using rock boulders or gravel of sufficient size to secure a stable dam during the installation process.

3.5.1.2 Horizontal Directional Drilling

Horizontal Direction Drilling (HDD) is a trenchless construction method that minimizes the land required for construction. However, construction takes longer and so do the potential nuisances that can be caused to the nearby receptors. The feasibility of the HDD method is heavily dependent on suitable soil conditions, which therefore necessitates a high-quality soil survey. In case of rock / limestone, it must be confirmed that the rock is not heavily fractured. Such fractures can cause mud loss during the drilling operation, which can result in lack of lubrication to the drill string and therefore sticking of the drill string downhole. Mud lost in this manner may communicate with the surface or nearby water body and may result in unanticipated environmental impacts.

3.5.1.3 Micro-Tunnelling

Micro-tunnelling is the tunnel construction method with nominal diameter in a range of up to 4 meters. Compared to the above this construction method involves more heavy machinery and the construction of a microtunnel launch shaft and is the slowest method, and therefore the potential nuisances to the nearby receptors are also extended in time. However it involves a lower technical risk level when compared with HDD as its feasibility depends less on geology but still in some geological profiles is not a valid alternative. The micro-tunnel consists of prefabricated casing structures or liner pipe elements that are sequentially pushed into place or jacked forward by

hydraulic rams. These rams are supported off a thrust wall at the entry pit location, behind a remotely operated Tunnel Boring Machine (TBM) which simultaneously excavates the aligned path to the final destination through the ground ahead.

An alternative to micro-tunnelling is Direct Pipe which combines elements of micro-tunnelling with a pipe thruster system. The technique is a one-process operation that allows pipelines to be jacked quickly and efficiently. The TBM that is used with the Direct Pipe method is basically identical to the micro-tunnel machine. The main difference is the jacking system; instead of the conventional system that is placed behind the pipeline, Direct Pipe uses the Pipe Thruster system that is located along the pipeline.

3.5.2 Cyprus Shore Crossing

As mentioned above, the industrial area of Vasilikos Bay is regulated by a Master Plan and future developments of the area (i.e. onshore facilities and/or offshore infrastructures) have been taken into account and used as the basis for evaluating the shore crossing method for LF1a and LF1. In addition to this, the presence of maritime activities (e.g. aquaculture, submarine cables, buoys) was considered for development purposes.

The shore approach is long, flat and sandy and, for these conditions, the traditional open cut shore crossing method may be the preferred method as it provides the lowest risk technical solution and the minimum time of execution so as to minimize interferences with other industrial activities and local receptors. The pipelines (OSS1a, OSS1b and OSS2N) will be installed in a pre-dredged trench. This trench offers a smooth transition, typically from shore to a 25-m water depth. The trench not only smooths the pipeline profile but provides stability and mechanical protection to the pipeline in shallow water, where it is most susceptible to trawl gear impact and/or dropped objects. The pipelines will be buried to provide adequate cover. Cover height depends on factors such as: sediment transport and erosion rate, tidal variations, protection requirements and should be further assessed during pipeline FEED. The proposed method also includes a sheet piled cofferdam on both sides of the pipelines. The sheet piled cofferdam, typically extending beyond the surf zone, prevents accelerated shore line erosion and premature natural backfilling of the trench. The surf zone in front of LF1a and LF1 is preliminarily assessed as 300 m long and therefore a preliminary length of the sheet piled cofferdam is assessed to be (at least) 300 m in length. The shore crossing is preliminarily assumed continued with a 1,500m long trench at the end of the cofferdam to a water depth of 25 m. Actual design of shore approach shall be defined during ongoing engineering phase (FEED).

3.6 Onshore Route and Facility Location Selection Process and Results

Currently, the onshore route and facility location has not yet been defined. However, a wide area in which the facilities should be placed is currently under discussion for an agreement with the competent authorities within the complex of the Vasilikos industrial area (see Figure 3.7).The final location of the onshore facilities and therefore onshore pipeline is subjected to the current FEED investigations and will confirmed in a subsequent project phases.

In the first phases of the project, Cypriot Authorities provided for the EastMed Project a potential area for the location of the Metering station of 26,000 m^2, located in the area formerly identified as BEMRS (British East Mediterranean Relay Station). This area was included in the Vasilikos Master Plan of 2015 along with the route of the onshore Pipeline. However, a bigger area would be needed, for the installation of a Compressor Station as well.

As per the 2017 version of the Master Plan, the assigned compressor station location is east of the Vasilikos Cement Works area. Therefore the landfall location LF1 was adopted as the base-case landfall location; the landfall point is expected to be confirmed even in case the final location agreed with the competent authorities for the onshore facilities will slightly differ with respect to current investigations on CS1/MS1.

Since the final location of the facilities has not been defined yet, it is conservatively assumed to consider and study the entire area (Figure 3.7), in order to find the best location to accommodate the facilities. The area will accommodate the following facilities:

- MS1a/PRS: Metering and Pressure Reduction Station in order to measure and regulate flow before the tie-in to the national gas grid. The station is part of the Southern Line and will be the ending point of the OSS1a section;
- CS1/MS1: Compressor and Metering Station that shall be able to receive, meter and compress gas coming from various offshore field developments in Cyprus. This station is part of the Northern Line, the incoming pipeline is the OSS1b and the outgoing one the OSS2N.

4 PROJECT DESCRIPTION[10]

4.1 Introduction

4.1.1 General Description

The EastMed Pipeline Interconnector in Cyprus consists of pipelines that deliver gas from Israeli/Cyprus offshore borders and, from the Cypriot offshore source (location still to be confirmed but preliminarily identified close to Aphrodite field) to Cyprus and then from Cyprus towards Crete/Greece.

The ongoing development of the project includes the integration of gas and hydrogen, promoting the SEE and East Mediterranean region's transition towards a sustainable and efficient energy transmission network and supporting hydrogen production plants and the development of energy intensive users[11].

The EastMed Pipeline Interconnector is made up of a Southern Line and a Northern Line. Upstream of Crete these two lines are designed to work complementarily as well as independently, anticipating infrastructure in Cyprus dedicated to each line. Thank to this, the system is highly flexible, contributing to security of supply.

The Southern Line of Cyprus comprises the following main components (see Appendix A, Map n.1):

- Cypriot section of OSS1-OSS2 subsea trunk lines, which includes the subsea Inline Tee Assembly (ITA), at the transition from OSS1 into OSS2 for offtake of gas to Cyprus: OSS1 comes from EastMed Compressor Platform (ECP) in Israeli waters and it ends to ITA, OSS2 starts in ITA and continues until Crete;
- OSS1a subsea branch pipeline from the subsea ITA to Cyprus, including:
  - Subsea tie-in arrangement to connect to the ITA of OSS1-OSS2 trunk lines;

[10] The details provided within this Project Description such as schedule/timings, land occupations, raw materials, wastes and emissions, workforce, etc. are presented as a reasonable estimate with the objective of providing the reader with a good understanding on the magnitude of the operations. However, this information should be considered as an estimate only and may be subject to changes as the Project is further developed.

[11] IGI Poseidon is carrying out a technical assessment in order to identify the requirements (material and design specifications, operational management conditions, etc.) to ensure safe and optimised hydrogen transportation,. This activity is currently in progress underway with the contribution of leading firms specialized in the sector

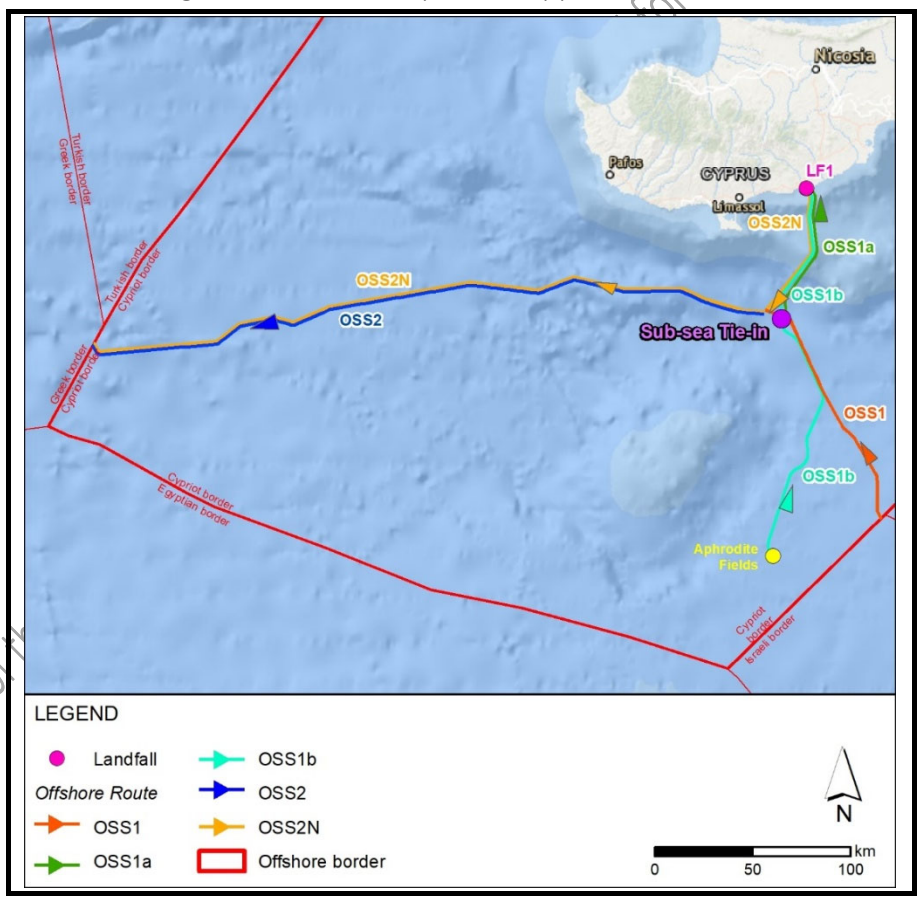
- Short onshore pipeline section, including landfall station in Cyprus;

- Metering and Pressure Reduction Station (MS1a/PRS) in Cyprus with functionality to receive high pressure gas from the OSS1a branch pipeline and to deliver at pressure conditions suitable for Cypriot domestic use.

The Northern Line of Cyprus comprises the following main components:

- OSS1b subsea trunk line from Cypriot offshore gas field preliminarily identified close to Aphrodite field to Cyprus, including a short onshore pipeline section and the landfall station at landfall LF1 in Cyprus;
- Compressor and Metering Station (CS1/MS1) in Cyprus with functionality to receive gas from the OSS1b trunk line and to recompress this gas for onward transport toward the compressor and metering station in Crete (CS2/MS2N);
- OSS2N subsea trunk line from Cyprus to Cyprus/Greece marine border, including a short onshore pipeline section that includes the landfall station in Cyprus.

The sections are shown in Figure 4.1 and in Map n.1 in Appendix A.



Prepared by/reference: ERM

Figure 4.1 EastMed Overview Offshore Route Map within Cyprus Jurisdiction

Northern and Southern lines are designed to be constructed and operated as a whole unique system, while also allowing the flexible realization of the two section with a timing consistent with the level of maturity of the gas sources development. Anyway, at landfall LF1 pipelines sections from both Northern and Southern Lines will be constructed simultaneously and will be laid in the same shore approach, in order to minimize construction impacts at this landfall. More details on LF1 can be found in Section 4.2.2.

The system schematic for the combined Southern and Northern Pipelines are presented in Figure 4.2. Southern Line components are reported in blue and Northern Line components in green.

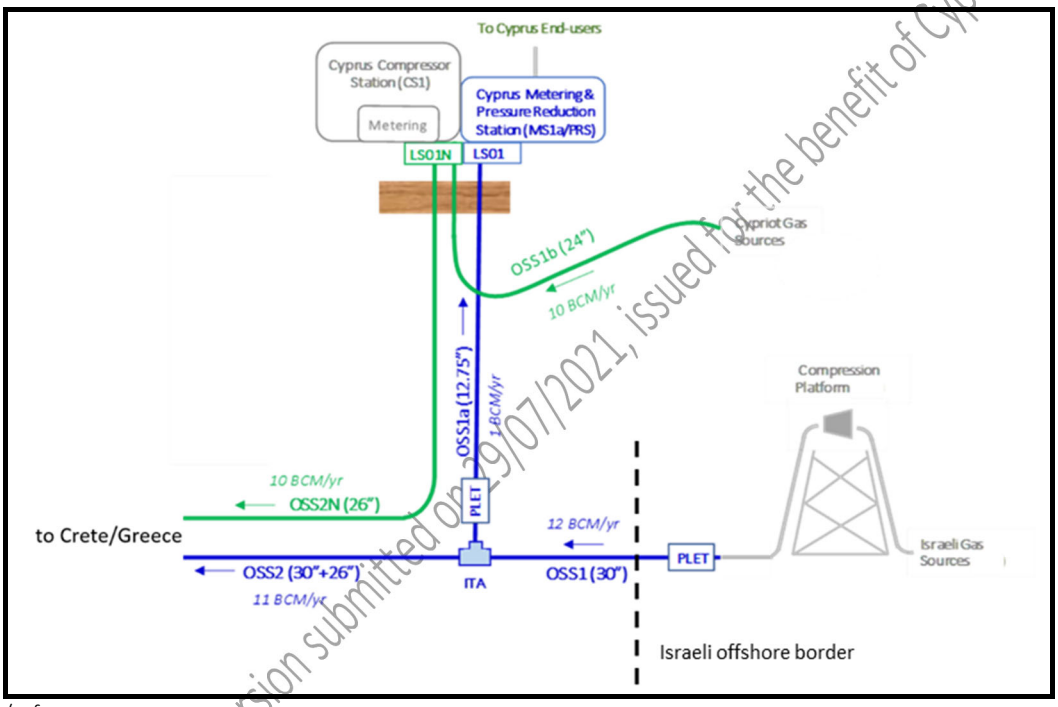


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Figure 4.2 System Scheme – Combined Southern and Northern Lines

4.1.1.1 Design Criteria

The design will ensure that the gas transmission system meets all necessary National and European standards. The pipeline will be designed in full compliance with the requirements arising from:

- National and local commitments;
- Safety of employees and the public;
- Environmental Protection;
- Protection of properties and facilities;

- Geotechnical, corrosive conditions;
- Requirements for construction, operation and maintenance;
- Third party activities.

Section 3.3 describes the criteria used in the route selection process. In the following sections the project description considers the routes and locations proposed so far, although the routing will be investigated further.

4.1.1.2 Basis of Design

All data reported in this Section must be considered preliminary, as design activities for EastMed Pipeline system are still ongoing.

The pipeline transportation capacity will be 11+1 BSCM/year for the Southern Line and 10 BSCM/year for the Northern Line. One BSCM/year from the Southern Line will supply the Cypriot internal gas network: OSS1a design ensures that 1 BSCM/year can be transported to Cyprus, irrespective whether the OSS1-OSS2 pipeline is operating at full flowrate or minimum turndown flowrate.

The proposed operational life of the EastMed-Poseidon Project is 50 years, which is not uncommon for long distance gas transmission systems.

The pipelines will be made of welded steel pipe sections that are coated both inside (to reduce friction) and outside (to protect from corrosion). An exception to this is the branch pipeline to Cyprus (OSS1a) which will not be internally coated, given its small diameter and its low flow. Some of the pipeline sections will be additionally coated with reinforced concrete to ensure stability.

The entire pipeline will be additionally protected against corrosion by a cathodic protection system, in case the anti-corrosion coating is damaged. The following Sections from 4.2 to 4.5 provide information on the construction, pre-commissioning, operation and decommissioning methods that might be used for each section of the project.

4.1.2 Safety

A detailed risk assessment will be performed (during FEED phase) considering all failure modes for: design, manufacture, transport, installation, pre-commissioning, commissioning and operation of the system.

The Risk Assessment will define the probability of occurrence and the consequence of each failure resulting in an overall reliability picture quantifying at least the following risks: design risks, installation risks, operational risks, environmental risks.

When developing the inspection plan in later engineering phases, decision could be made to carry out two separate programmes; one being the route survey (total length) and the other being the critical sections of the offshore pipelines (e.g. slopes, crossings, landfalls, etc.), where only the latter will be performed annually, while the first will be performed less frequently.

For the EastMed-Poseidon Project, specifically for the pre-commissioning and operational phases, pigging operations are required, namely the practice of using mechanical devices (inspection gauges) known as 'pigs' to perform maintenance operations scrubbing the insides of the pipeline system. The pigging operations will be performed initially (as part of pre-commissioning) and periodically (during operation for internal inspection).

4.2 Construction

4.2.1 Offshore Pipeline

The Southern Line of Cyprus consists of the following three offshore pipeline sections: OSS1-OSS2, OSS1a.

Table 4.1 presents the specifics of the Southern Pipeline Line sections within Cyprus jurisdiction; the reported figures must be considered as preliminary numbers.

Table 4.1 Southern Pipeline Line - Section Highlights within Cyprus Jurisdiction

Section	Approx. Length (km)	Maximum Water Depth (m)	Annual Flow Rate (BSCM/yr)
OSS1	130	2,310	11+1
OSS1a	72	2,135	1
OSS2	360	2,803	11

Prepared by/reference: ERM. Source: Project Design Basis 2021

OSS1 is the pipeline that comes from the EastMed Compressor Platform (ECP) in Israeli waters and arrives at the subsea Inline Tee Assembly (ITA).

OSS1a is the offshore pipeline from the subsea tie-in point to the landfall station in Cyprus (LS1); it is a branch line of the main pipeline system (OSS1-OSS2) which will supply the Cypriot internal gas network.

OSS2 pipeline extends from the subsea tie-in point in Cypriot waters up to the Cyprus/Greece marine border.

The Northern Line of Cyprus consists of the following offshore pipeline sections: OSS1b and OSS2N. The OSS1b pipeline is preliminarily intended to extend from the Cypriot gas sources to the compressor station CS1 onshore Cyprus. The OSS2N pipeline extends from the compressor station in Cyprus (CS1) to the limit of Cypriot offshore borders.

Table 4.2 presents the preliminary specifics of the Northern Line sections.

Table 4.2 Northern Pipeline Line Section Highlights within Cyprus Jurisdiction

Section	Approx. Length (km)	Maximum Water Depth (m)	Annual Flow Rate (BSCM/yr)
OSS1b	210	2,316	10
OSS2N	430	2,803	10

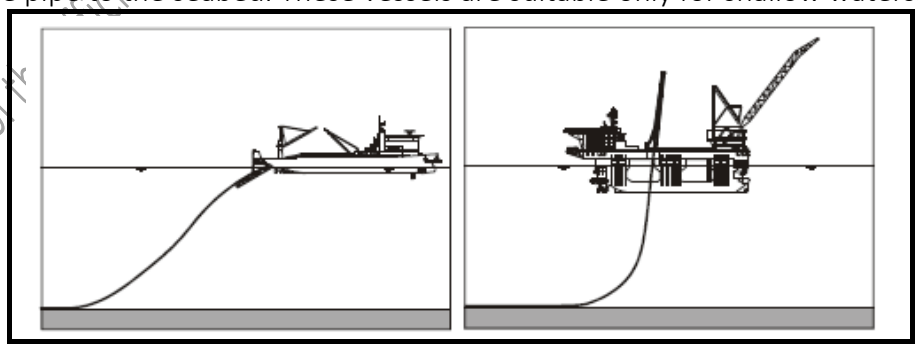
Prepared by/reference: ERM. Source: Project Design Basis for Northern Line 2021

Offshore section routes have been designed in accordance with all routing criteria: sections cross submarine cables and other offshore lines at an angle close to perpendicular (based on the existing data).

Installation methodology for offshore sections of the EastMed Pipeline Interconnector depends on sea water depth. The S-lay method is suitable for offshore section installation of the EastMed Pipeline Project. Alternatively, the deep water sections can be installed by the J-lay method. See Figure 4.3 below for a scheme of both installation methods.

For installation of the offshore pipelines, the following types of pipelay vessels are distinguished:

- J-lay vessels are capable of laying pipe in a water depth range starting at typically 400 m (depending upon pipe properties and tower angle) and extending to ultra-deep waters;
- S-lay vessels employ large capacity tensioning systems and steep departure angle stingers to support the pipe to the seabed. These vessels are suitable only for shallow waters.



Prepared by/reference: EastMed Feasibility Study – Preliminary Design Report - Offshore

Figure 4.3 S-Lay Configuration (left) and J-Lay Configuration (right)

Most of the routes of OSS1 and OSS2 pipelines will be installed using a deepwater installation vessel.

Typical pipelay rates are on the order of 3 km per day. Note that this excludes shore crossing (landfall sites) construction activities.

It is noted that all works in intermediate waters and deep waters will be performed with ships that will be likely using dynamic positioning; consequently, it is not expected that these ships will anchor at these depths. Ships that will be anchoring could be possibly used, in case, only in the shallow offshore sections.

Based on the pipeline installation procedure, these ships will anchor in predefined locations which will not engage with identified sensible findings on the seabed. Therefore, before construction works commence, items of interest, such as identified ship wrecks or environmentally sensitive areas will be illustrated in the diagrams and incorporated in the ships' navigation system.

A preliminary project implementation schedule developed during the feasibility stage outlines this high level sequence of offshore construction activities:

- Landfall/nearshore construction activities;
- Pre-lay activities including a pre-lay survey to confirm that the pipeline route is free of any obstacles followed by subsea preparation works (i.e. preparation of cable crossing locations and seabed levelling activities to avoid excessive pipeline free spans);
- Pipelay activities;
- Subsea tie-in activities to gas production facility (applicable to OSS1);
- Post-lay seabed intervention (pipeline span rectification works, lateral buckling mitigation, geohazard mitigation works and third party interaction mitigation);
- Pre-commissioning of offshore pipelines (fence to fence).

4.2.1.1 Above-Water Tie-In

An above-water tie-in is the means of connecting two pipe ends to complete the pipeline system installation. Typically, the tie-in will be performed in relatively shallow water.

Prior to the tie-in operation, the pipeline ends will have been laid onto the seabed in a controlled manner. A certain amount of overlength will have been added to the pipeline segments such that they can be recovered and joined on the installation vessel. Prior to abandoning the pipeline ends onto the seabed, clamps are pre-installed for subsequent recovery of the pipeline using davits.

To perform the tie-in, davits are used to pick up the pipe ends and to bring them to a work platform along the side of the lay vessel. The abandonment / pull heads are removed and the pipe is prepared and aligned. Next the tie-in weld above water is executed and after weld acceptance and

field joint coating, the pipeline is lowered onto the seabed. The barge is moving sideward to avoid overstressing the pipe steel. The excess length of pipeline at the tie-in results in a "bulge" in the route.

Figure 4.4 shows a surface tie-in being performed.

Prepared by/reference: EastMed Feasibility Study – Preliminary Design Report - Offshore

Figure 4.4 Surface Tie-in example

4.2.2 Landfall

The shore crossing is the intersection area between the offshore and onshore part of a pipeline, where special construction techniques are required. The size of this intersection area depends on local circumstances such as bathymetry, topography, metocean conditions, seabed characteristics (e.g. seabed material, morphology) and environmental conditions. Generally, the area runs from a water depth of around 10 to 20 meters to the onshore end of the beach.

As described in Section 3.5, Vasilikos Industrial Area has been selected as the area where the onshore facilities will be placed. The shore crossing will take place in a location that satisfies the best alignment between offshore pipeline and onshore facilities.

The landfall evaluated at this stage is LF1, located between Vasilikos port and Zygi port, in the Zygi community of the Larnaca District. The landfall location is 3.1 km south-east from Mari and 1.3 km south-west of Zygi settlements.

Figure 4.7 shows an aerial view of the Cyprus landfall location area.

The shore approach to Vasilikos is long, flat and sandy. For these conditions, the proposed construction method is the traditional open cut method as it has the lowest risk level and it is the quickest construction method. With the data available to date, no constraints are yet identified that rule out the traditional open cut method.

Generally, nearshore section is trenched by a combination of dredging equipment (e.g. deeper sections by cutter suction dredger or trailing suction hopper dredger and shallower sections by pontoon-based backhoe) and the onshore section by common excavators to enable the pipeline to be pulled ashore at a required depth of burial.

Prepared by/reference: EastMed Feasibility Study – Preliminary Design Report - Offshore

Figure 4.5 Open Cut Construction example

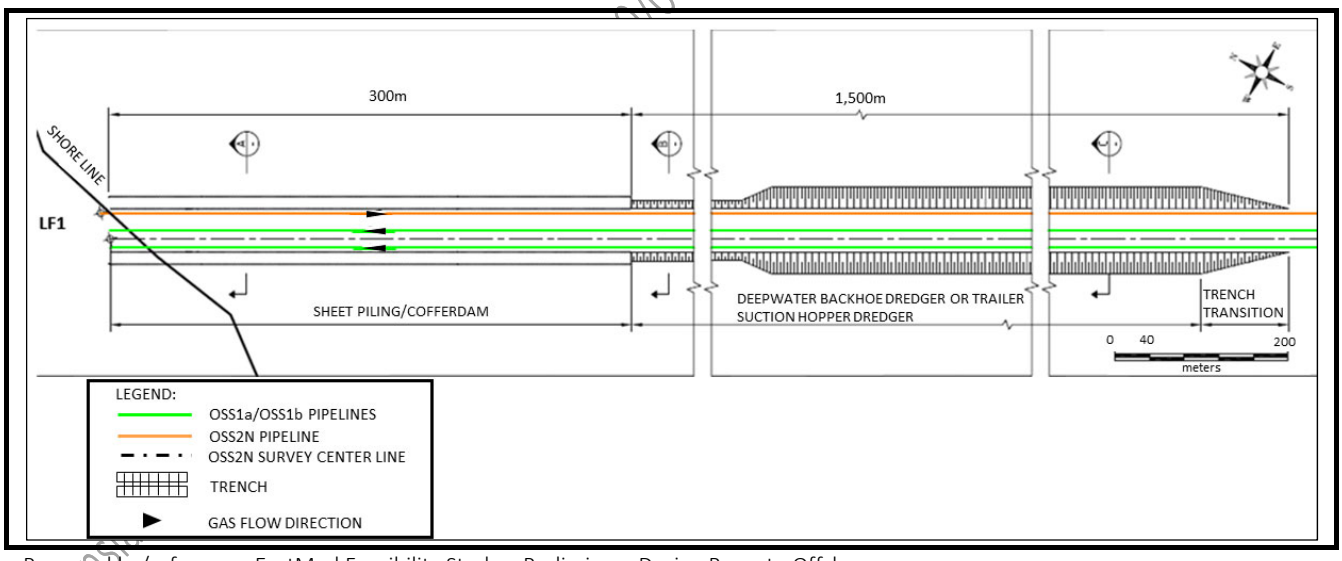
A sufficiently sized beach (preferably min. 50 metres from dune to shoreline and min. 100 metres wide) and good access are necessary to enable the use of needed equipment.

A cofferdam is often used to minimize dredging volumes, to prevent accelerated shore line erosion and to protect the trench from natural backfilling during the period between trench excavation and pipeline installation. A cofferdam is an enclosure within a water environment constructed so that water can be pumped out to create a dry work environment. In this case, the traditional open cut method is proposed with a sheet piled cofferdam on both sides of the pipelines. Preliminarily, the sheet piled cofferdam is determined to be 300 m long.

The design for this landfall assumes that the two pipelines from Northern and Southern lines (OSS2 and OSS1a) will be installed together within the shore approach even though the two lines might be laid in different time accordingly to the timing of development of gas sources and to the availability of reserves. The following construction methodology is expected for shore crossings at the EastMed landfall location:

- Mobilization of construction equipment to the landfall site and construction of an access road to the landfall location;
- Construction of a cofferdam using sheet piles;
- Trenching using excavation equipment suitable for softer soils;
- During pull-in, the pipeline joints are welded on board the lay vessel and pulled towards the trench using a cable running to shore. From a construction and environmental point of view it is practical to install all pipelines in the same trench as this will minimise the amount of excavation activity;
- A lay installation vessel will perform the pipe pull and will continue pipe laying;
- Backfill trench with suitable backfill material to prevent liquefaction and to ensure backfill stability;
- Demobilise cofferdams and reinstate construction site.

The shore crossing design details will be performed during FEED, a preliminary figure of the shore crossing lay -out designed for the landfall LF1 is reported below.



Prepared by/reference: EastMed Feasibility Study – Preliminary Design Report - Offshore

Figure 4.6 Shore crossing preliminary lay-out atLF1 Containing all Pipelines from Northern and Southern Lines

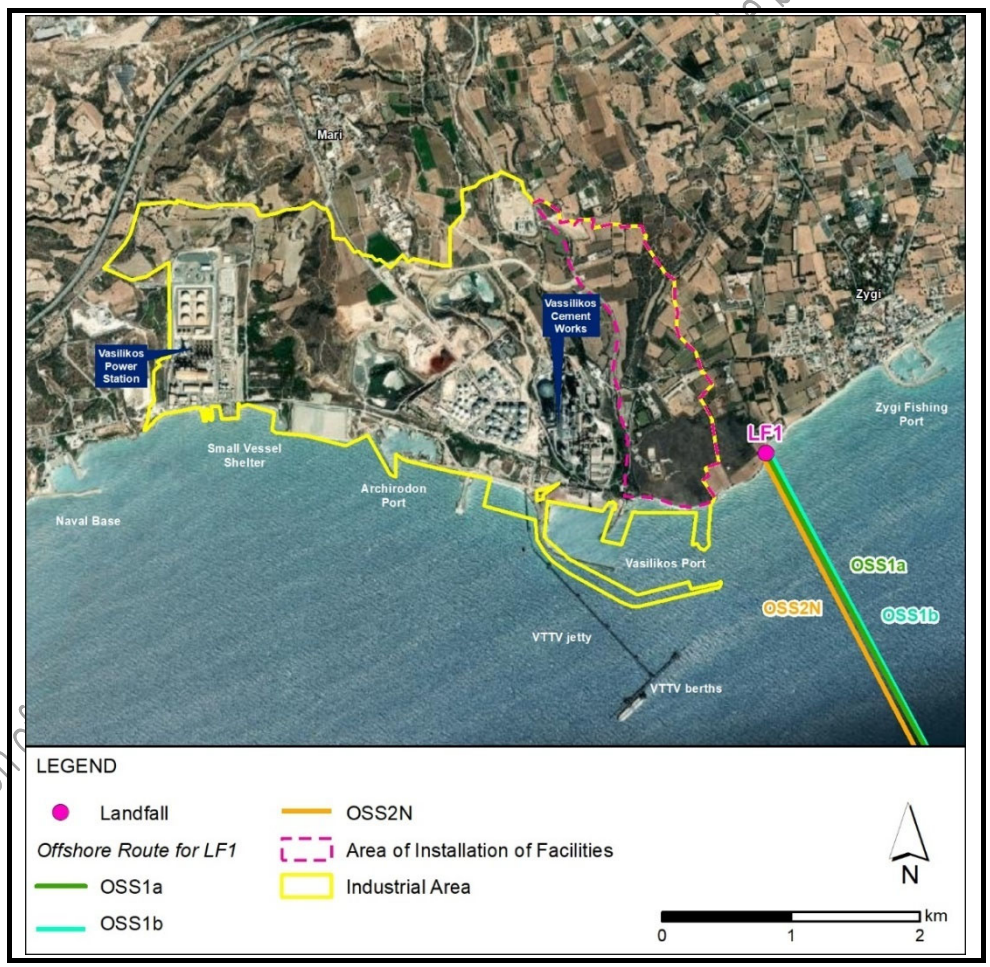
4.2.3 Onshore

The onshore part of the Cypriot section of the project consists of the following main components:

- Onshore pipelines;
- A Metering and Pressure Reduction Station (MS1a/PRS);
- A Compressor and Metering Station (CS1/MS1);
- Associated facilities required during construction (access roads, camps, yards, etc.).

As described in Section 3.6, the location of the facilities and consequently the onshore route have not yet been defined. The alternative locations determined for the pipeline facilities, as well as the associated short onshore pipeline routes are preliminary and indicative.

In a conservative approach, the pink area shown in Figure 4.7 will be considered and studied in order to find the best location to accommodate the facilities.



Prepared by/reference: ERM, Source of data: ESA Sentinel-2

Figure 4.7 EastMed Overview Onshore Infrastructure Map and Landfall site within Cyprus

4.2.3.1 Onshore Pipelines

A system of onshore pipelines will connect the landfall point LF1 with the onshore facilities of the Southern and Northern lines. These pipelines route will be finalized after completing the relevant DMS and FEED routing activities currently ongoing and in accordance with the Vasilikos Port Master Plan.

During construction of the onshore pipelines, a corridor of 20-40 m is usually required to allow for the installation of the pipe as well as transport of goods/materials and personnel. The onshore section of the pipelines will be buried underground along its entire length. For safety reasons and to reduce the impact on existing land uses (i.e. crops), the buried part of the pipeline shall have a minimum soil cover of 1.0 m. A typical section showing the underground section of the pipeline is provided in Figure 4.8.

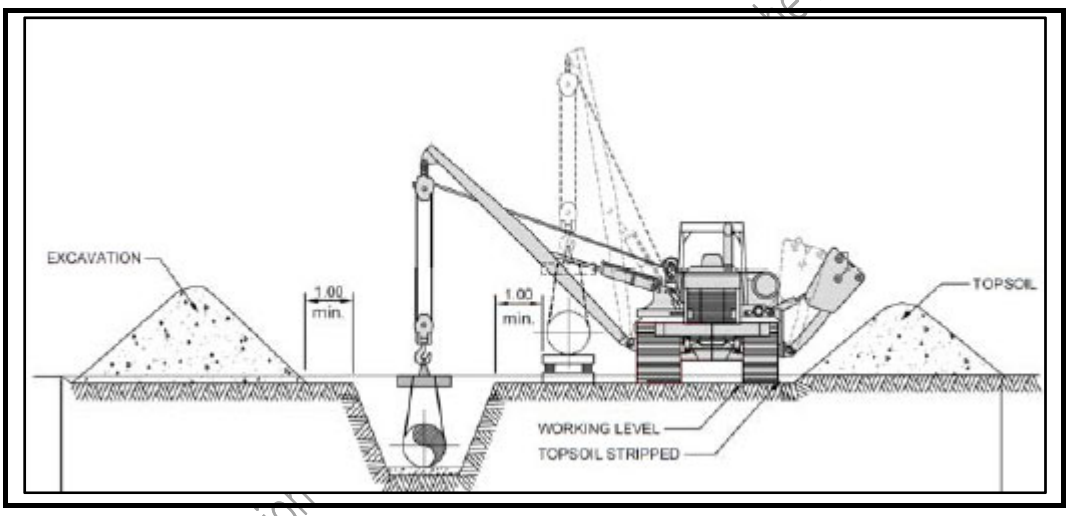


Figure 4.8 Indicative Cross Section of the Pipeline and work zone layout

The pipeline construction is performed using the open excavation method, using suitable machines which move within the pipeline working zone.

The relevant steps are listed below:

- Topographic works to delimit the working zone and trace the pipeline axis;
- Work zone preparation (cleaning, configuration, removal and stacking of plant soil within the work zone);
- Transport, unloading and distribution of pipes along the working zone;
- Preparation of construction site bends;
- Welding, welding control and welding insulation;

- Trench excavation and deposition of excavation products within the work area;
- Pipeline lowering;
- Trench backfilling;
- Hydraulic test (see Pre-Commissioning phase);
- Replacement of topsoil and restoration works in the working zone;
- Above ground pipeline marking.

4.2.3.2 Onshore Facilities

Onshore facilities are proposed to be located in the Vasilikos Industrial Area. The specific location and distribution of facilities on Cyprus have not been decided yet and shall be agreed with the relevant Competent Authorities.

The pink area shown in Figure 4.7 will host the following facilities:

- Two Landfall Stations;
- A Metering and Pressure Reduction Station (MS1a/PRS) for the Southern Line;
- A Compressor and Metering Station (CS1/MS1) dedicated to the Northern Line.

Facilities of Northern and Southern Lines may be located in the same area or in different areas within the above-mentioned perimeter. For more details on the location selection process refer to Section 3.6.

LF1 will be provided with a landfall station (LS1) located near one of the two onshore facilities (MS1a/PRS or CS1/MS1) in the Vasilikos area. The landfall station will be a block valve station which provides separation between the offshore pipeline and onshore sections (pipeline and facilities), isolation of the upstream pipeline sections from the downstream system.

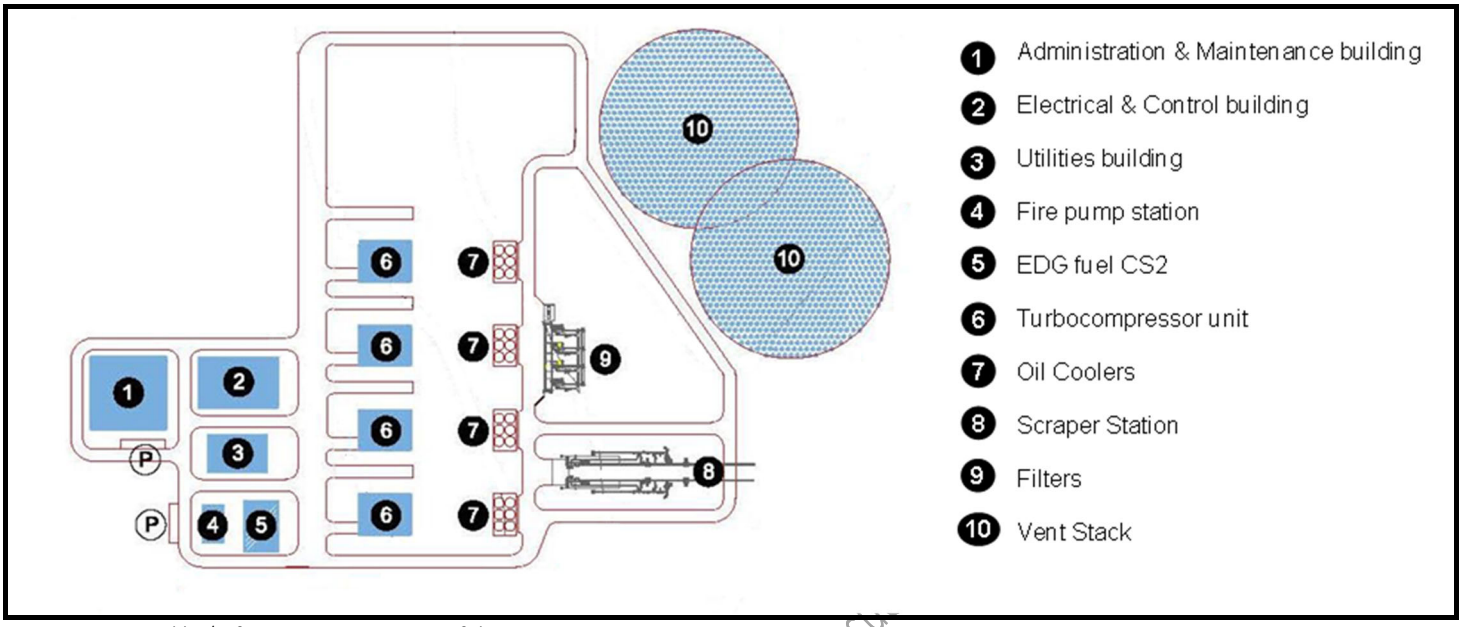
MS1a/PRS is the Metering and Pressure Reduction Station of the Southern Line and has the functionality to measure and regulate the flow before the tie-in to the national gas grid.

CS1/MS1 is the Compressor and Metering Station of the Northern Line and will receive, meter and compress gas coming from gas field in Cypriot waters.

Table 4.3 Associated Facilities Highlights

Element	Approx. Area (m^2)	Annual Flow Rate (BSCM/yr)
LS1	Included in MS1a/PRS and CS1/MS1 areas	
MS1a/PRS	26,000	1
CS1/MS1	125,000	10

An indicative preliminary layout of the facilities (CS1/MS1) is shown in Figure 4.9.



Prepared by/reference: ERM, source of data IGI

Figure 4.9 Indicative Preliminary Layout of CS1/MS1

The works for Compressor/Metering stations construction are categorized in general as civil, mechanical and electrical.

After a site clearance, the first step considers excavation works, which will be trenches for cables and pipe pits for foundations and buildings. The civil works consist of structure and building construction and facility connections. The process equipment installation (turbine-compressor set, gas coolers, air intake filter, …) may be performed prior to piping arrangement activities.

At the present stage, the above-mentioned preliminary assessment suggests locating storage and construction yards for landfall, short onshore pipeline and facilities in the Vasilikos Port Area, taking advantage of existing infrastructure and logistics areas. This might be changed according to the future logistic plans to be agreed with EPCI Contractors.

4.2.4 Preliminary Time Schedule[12]

Schedule for the construction and Pre-commissioning phase of the offshore lines is estimated to be around 36 months with an estimate pipeline laid rate of 3 km/day. It should be noted that works will be performed concurrently in multiple sections of the pipeline lines, however starting and completion dates will be different and specific for each pipeline section.

Construction of the pipelines shore crossing of the landfalls can be executed offline from the offshore pipelaying and are accomplished in advance to provide pre-assembled pipeline ends ready for the connection (AWTI - Above Water Tie In) with the deep-water pipeline. The total time for the excavation of the open trench, pipeline pulling, backfilling of the trench and reinstatement of the shore is estimated to be around 8 months.

The indicative operational duration of the pre-commissioning activities for the large offshore pipelines has been preliminarily estimated during feasibility phase at approximately 13-24 weeks.

The construction activities for the onshore facilities MS1a/PRS and CS1/MS1 will have an indicative, preliminary duration respectively of 24-28 months and 36 months (for both including commissioning phase).

4.3 Pre-Commissioning

4.3.1 Offshore Pipeline and Landfall

After the offshore pipelines have been installed, a number of activities, known as pre-commissioning activities, will be undertaken to ensure that the pipelines meet operational and safety requirements. The primary objective of these activities is to verify that the pipelines have been laid without significant defects and that they are in a suitable condition to transport and deliver the gas at the anticipated pressure and required specifications.

[12] Timings provided should be considered tentative but sufficient for a good overall view of construction requirements. More details on phases and associated timings will be provided as part of the ESIA Report.

This section addresses the following scenarios that could be adopted for the offshore sections of the project:

- Traditional methodology – flooding the pipeline followed by hydrostatic pressure testing to confirm integrity and leak tightness; and
- Alternative methodology– applying for a hydrostatic test waiver for the offshore sections, reducing the hydrotest to the onshore sections and where the waiver is not applicable.

However, during the installation phase, operation of the pipeline will be checked in order to ensure the general functionality and performance of the system and its individual components.

4.3.1.1 Traditional Pre-Commissioning - Hydrotesting

Traditional hydrostatic pressure testing and pre-commissioning include the following basic activities:

- Initial flooding of the pipeline with treated seawater;
- Cleaning of the pipeline to remove any debris;
- Gauging the pipeline;
- Hydrostatic pressure testing;
- Pipeline dewatering;
- Drying the pipeline; and
- Inerting the pipeline.

The exact locations of water intake and water discharge and the locations of compressors and pumps will be determined by detailed studies.

The best industry practice stipulates filtering the water prior of its discharge to the environment. The water will be guided to a break tank, where it will be filtered, checked and then disposed to the recipient according to applicable legislative limits. The objective of water treatment is to remove suspended solids. Consequently, not significant impacts are expected.

If the sea water remains in the pipeline for more than 20 days, chemicals included in the PLONOR (Pose Little Or No Risk) list that was developed by the OSPAR committee (known as Oslo – Paris committee) for protection of the marine environment may be added.

4.3.1.1.1 Alternative Pre-Commissioning Methodology (Hydrotest Waiver)

Based on the ongoing FEED design of the project[13], alternative pre-commissioning methodology is defined such that hydrostatic testing of the offshore section of a pipeline system is waived according to DNVGL-ST-F101. This approach has been successfully used in similar projects such as Turk Stream and Nord Stream 2 and its potential implementation will be defined in subsequent phases of the project design.

Based on experience, waiving hydrostatic testing of a deepwater offshore pipelines system has the following key technical and environmental benefits:

- Environmental effects associated with discharge of the test water after the hydrostatic test will be minimised;
- By reducing the pre-commissioning scope, the construction schedule is shortened;
- The duration of disturbance and temporary land use requirements are reduced;
- The potential risks to pipeline integrity (lateral buckling of the pipeline), which may be caused by the relatively high hydrostatic test pressure, will be eliminated; and
- Compressed air pressure to drive pigs through the pipeline is reduced since the hydrostatic pressure head in front of the dewatering pig train is significantly reduced. This reduces the amount of equipment required for pre-commissioning and the associated fuel usage.

Disadvantages are also associated with the hydrotest waiver that must be weighted against the aforementioned benefits. The most significant of these is the increased complexity and risk of the cleaning and gauging pigging operation, namely the practice of using mechanical devices (inspection gauges) known as 'pigs' to perform maintenance operations scrubbing the insides of the pipeline .

[13]EM-620-20-PL-RPT-001 Rev2 -- PRELIMINARY DESIGN REPORT.

4.3.2 Onshore Pipeline and Facilities

During Pre-Commissioning a number of verification tests are carried out on all piping components and related facilities to ensure that all installed components are functioning correctly, and punch lists are used to record all discrepancies gathered.

Hydrostatic and pneumatic testing will be performed after completion of the Construction works, in accordance with methods described in code of practice DVGW 469.[14]

Performance tests will be undertaken for the compressors set aiming to reveal any adverse upset conditions during start-up for turbocompressor sets (e.g. fuel gas conditions, speed control, performance of strainers in the suction piping).

4.4 Operation

The pipeline system will be brought into service by the introduction of gas from upstream sources (Israel for Southern line, Aphrodite or others for Northern line) only after all control and monitoring systems have been commissioned at both ends of the pipelines.

The external condition of the sub-sea pipelines, including the condition of the cathodic protection system, will be monitored on a regular basis. To allow internal inspection, pig traps will be installed at the inlet/outlet of each pipeline segment to facilitate pigging operations. The pipeline system has been designed to allow use of pipeline inspection gauges (devices that perform pipeline cleaning and pipeline detection), if necessary.

OSS1-OSS2 will have a pig launcher facility most probably on board the ECP in Israel.

To allow pigging of the OSS1a subsea branch pipeline, one 12.75-inch (323.9 mm) subsea pig launcher will be available.

The subsea pig launcher will be a temporary pig launcher equipped with a diverless connection system. The pig launcher will be used for pre-commissioning and regular internal inspection of OSS1a.

[14] 2010 Pressure Testing Methods for Gas Transmission/Distribution (German Code - DVGW G 469-)

Detailed operating procedures for the two pipeline systems will be developed and will be in place ahead of pipeline operation. They will typically address the following:

- A control system for work control and safety;
- Emergency procedures and operating instructions;
- Training of all personnel;
- A comprehensive system for monitoring, recording and continually evaluating the condition of the pipeline and auxiliary equipment;
- Effective corrosion control and monitoring;
- Monitoring restoration, and undertaking remedial work if necessary.

The pipeline system will be monitored and controlled from:

- One Main Dispatching and Operation and Maintenance (O&M) Centre;
- One Backup Dispatching Centre in CS2/MS2.

The monitoring system will be SCADA (System Control and Data Acquisition). During operation, leak detection is performed through continuous measurements of pressure and flow rate at the inlet and outlet of the stations and the pipeline. If a leak is detected, the deactivation system and the emergency shutdown procedures are activated. In order to be able to carry out an internal inspection, scraper stations will be installed at MS1a/PRS and at MS1/CS1.

4.4.1 Maintenance/Inspection and Repair Considerations

The pipeline system will be monitored and maintained to ensure that it will remain adequate and operational as designed, constructed and tested throughout its life-time and in order to minimise environmental and human hazards. In general, pipeline monitoring, operational inspections and monitoring of operating conditions will be performed in order to address any problems and to enable their repair in a short period of time. Maintenance planning will be performed through a combination of modern management techniques, information systems and innovative technical analyses in order to minimize any risk associated with installation and equipment operation in the long run. Integration of scheduled maintenance will be a major component of project development and will be implemented throughout the operation of the pipeline system.

4.5 Decommissioning

4.5.1 Offshore Pipeline and Landfall

The expected service lifetime of the two pipeline systems is 50 years. It may be possible that life expectancy of the project is increased as technology further develops during its operation. Nevertheless, it is expected that at some point the offshore pipeline should be decommissioned. At that point activities will be undertaken in accordance with the legislation prevailing, in liaison with the relevant regulatory authorities and taking into account good practice.

4.5.2 Onshore Pipeline and Facilities

The decommissioning process of the onshore facilities would consist on the removal of structures and the rehabilitation of the area with the aim of creating the conditions that will allow the use of the site for the next planned uses (industrial uses in this case as the onshore facilities are planned within the Vasilikos Industrial Area).

4.6 Use of Resources, Waste and Emissions

The following sections provide an overall view on the land occupations, workforce, raw materials, emissions and wastes for the project. The estimates and statements provided below are typical for operations such as the ones planned by the project. Estimates and more detailed descriptions will be provided in the ESIA report.

4.6.1 Project Workforce during construction and operation

During construction, approximately 600 employees will be required for the construction of the onshore facilities. The construction works will require some highly specialised engineers working with the EPC Contractors but also less experienced engineers, machinery operators and technicians, unskilled workers and staff operating vessels. To the extent feasible, IGI will maximize the participation of local workforce and service providers.

In the operational stage, the workforce is estimated to be around 25 workers per station for routine operation and maintenance.

4.6.2 Land Occupation during Construction and Operation

Temporary occupation areas will be required during the construction phase at the landfall site and in the vicinity of the onshore facilities. At the landfall site, a total footprint of approximately 20,000

m^2 would be typically required for approximately 3 months. All other onshore facilities, temporary or permanent, are planned to be located within the limits of the Vasilikos Industrial Area. In total approximately 150,000 m^2 are estimated for the permanent areas at the CS1/MS1 and MS1/PRS sites.

During construction of the onshore pipeline, the following areas will be temporary occupied:

- A corridor of 20-40 m usually required to allow for the installation of the pipe as well as transport of goods/materials and personnel. The exact width of the corridor can be variable depending on the landscape and existing access roads. After pre-commissioning activities, the onshore corridor will be cleaned and reinstated, to the extent feasible, to its original condition;
- For storage of sheet piles and parking of equipment an area of 50 x 50 m adjacent to the cofferdam area is required;
- The excavated soil from the cofferdam will have to be stored somewhere. Approximately 15,000 m^2 will be required;
- The pull winch spread requires an area of 100 meter behind and in line with the landfall point of the pipe, and a width of 70 meter;
- An accommodation camp is not foreseen at this stage of the project. In case this is needed, an area of 25 x 50 meter should be sufficient;
- Manoeuvring space on the working area will be required, depending on the layout of the various area uses.

During operation of the onshore pipeline, in order to ensure the integrity of the pipeline and provide for safety distances to other land users and owners, some permanent restrictions will be defined. These restrictions will include: a Pipeline Protection Strip (PPS), a Safety Zone and an enlarged safety zone. Each of these will define a corridor along the onshore pipeline. The precise widths and uses allowed within these will be defined in accordance with current legislation and best practice and details will be presented in the ESIA report. However, the PPS, which is the most relevant restriction (i.e. no buildings or deep-routed cultivations or trees are allowed) would typically occupy approximately 4 m on each side of the pipeline.

4.6.3 Raw Materials, fuel and water

Most important raw materials required for the construction include line pipes, concrete, Polyethylene tape (coating) and sand.

Fuel and water will also be required during all construction activities. Fuel will be mainly used for the standard construction vehicles/machinery onshore and for vessels (pipelaying and support vessels) in the offshore pipelines. It is estimated by analogy with corresponding projects that more than 100,000 m^3 of fuel will be required in total during the construction phase.

Water will be, to a large proportion, be used in the onshore construction and be mainly related to wetting the construction sites to reduce dust emissions due to earthworks as well as on the onshore pre-commissioning (i.e. hydrotest). For the offshore pipelines seawater, would be typically used which is subsequently disposed of in the sea. Quantities and procedures are dependent on the magnitude of the project.

4.6.4 Gas Emissions

During construction activities, dust particles will be emitted from the soil due to excavations and transport of materials.

Gas pollutants will be also be released because of combustion of fuel (i.e. exhausts of construction machinery and vessels). In addition pre-commissioning activities can also be a relevant source of emissions due to the use of compressors and pumps.

Dust emissions during operations will be negligible and exhaust would be just minimal and limited to the operation of the onshore facilities.

4.6.5 Noise

Noise will be generated by heavy construction equipment in working areas, construction sites at landfall locations and from the operation of vessels and ships.

In addition to the above, Pre-Commissioning noise can be particularly relevant, depending on the specific site conditions, as it requires the use of pumps and compressors over certain periods of time.

Simulation calculations on the noise levels expected will be will be included in the ESIA.

4.6.6 Waste

During construction, wastes will be produced on both onshore and offshore portions of the project. For the Offshore construction wastes will be managed in accordance with international good practice (e.g. MARPOL requirements). Where required, wastes will be stored on-board and transferred to licensed service providers onshore.

Onshore construction wastes will be similar to those expected for a standard construction/civil works site and include among others excavation material, grey and blackwater, office waste, vehicle oil, paint, scrap wood, etc.. All these wastes will be managed following current legislation and best practice principles.

All waste materials will be collected, stored and transported separately in appropriate and approved bins and containers. Only companies certified by the relevant authorities will be used for transportation, recycling and disposal of waste. The overall objective of the waste management will be to:

- Minimise the amount of waste that is generated;
- Maximise the amount of waste that is recovered, reused or recycled (including segregation of recyclable wastes at source);
- Minimise the amount of waste that is deposited at landfill;
- Ensure any hazardous wastes (e.g. used oils, lead-acid batteries) are securely stored and transferred to appropriate facilities;
- Ensure all wastes are properly contained, labelled and disposed of in accordance with local regulations.

Details on the expected quantities and more detailed management will be provided as part of the ESIA.

During the operation of the project waste production will be minimal and limited to small quantities from the maintenance/cleaning of the installations. Standard best practice for waste management will also apply during operation.

5 BASELINE CONDITIONS

This section provides a general description of the environmental, socioeconomic and cultural heritage baseline of the project area before starting project activities. The information reported summarises the relevant data gathered mainly from the Revision of the Master Plan of the Vasilikos area (Rogan Associates, 2020) and the Strategic Environmental Assessment (SEA) of the Master Plan (Poten & ALA, 2015b). Other sources of data, such as institutional reports and databases like European websites, statistical service of Cyprus, published scientific paper, etc. have also been used (see Section 9 for References).

The study area for gas pipelines, such as the EastMed project is generally defined as a buffer corridor along the axis of the pipe and around the compressor station and other project features (e.g. construction camps, access roads, etc.). The buffer areas considered can vary on the basis of the environmental layer analysed and on the basis of relevant receptors identified. In this case, the baseline has been focused on a minimum distance of 1 km around the pipeline and other onshore facilities but in most cases a description for a wider area is provided to be able to identify values/receptors that may be found beyond the planned areas of work and provide context.

The proposed landfall and onshore facilities are located in the context of the Vasilikos Industrial Area and close to the port (i.e. just 1 km to the East). This area is already planned to accommodate industrial uses (see Section 2.1.4. for details on the Vasilikos Master Plan and objectives). In general terms, it is an area that is already subject to a number of anthropogenic pressures in comparison to other close-by areas to the north or east.

The baseline findings provided below should be considered as preliminary and subject to further investigations and definition during the ESIA preparation and project refinement.

5.1 Offshore

5.1.1 Environment

This section provides a preliminary description of the study area's baseline environment based on publicly available information at the time this Scoping report was drafted.

The offshore route is distinguished in the nearshore section and deepwater section. The nearshore includes sea waters (and ecosystems) from the coastline up until the 40 m isobaths (WD of 40 m), whilst the deepwater section includes the rest of the sea waters (and ecosystems) beyond 40 m of water depth.

Nearshore seabed, biodiversity, air quality, underwater noise, ecosystem services, sensitive and protected areas, as well as records of any pre-existing pollution.

5.1.1.1 Climate and Meteorology

The climate of the Eastern Mediterranean region, including the island of Cyprus and its offshore waters, is divided into cold and warm periods, with seasonal (spring, autumn) transient periods also evident (CSA International, 2011). The cold period (December to March) is characterised by the low index circulation associated with intense cyclogenetic activity. The warm period (June – September) is characterised by high index circulation where North Atlantic lows pass over Europe and only edges of the fronts reach the northeast part of the Mediterranean (Kallos et al., 1993).

In general, during the winter, the winds are from the south-west to north and occasionally from the north to east. During spring, winds are from the west to north, while during the summer and autumn, they are from the west to north-west (CSA International, 2011).

5.1.1.2 Air Quality

Climate conditions in the Greater Mediterranean Region (GMR) are known to have significant regional scale characteristics capable of long-range transport (CSA International, 2011).

Major pollutant sources of anthropogenic origin in the East Mediterranean region are related to the existence of mega-cities (e.g., Istanbul, Cairo and Athens), industrial activities and energy production/consumption, resulting in elevated emissions of several pollutants such as NOx, sulphur, CO, non-methane hydrocarbons (NH$_3$), ammonia, etc. During the last few decades' traffic, shipping and airport activities have become significant air pollution sources.

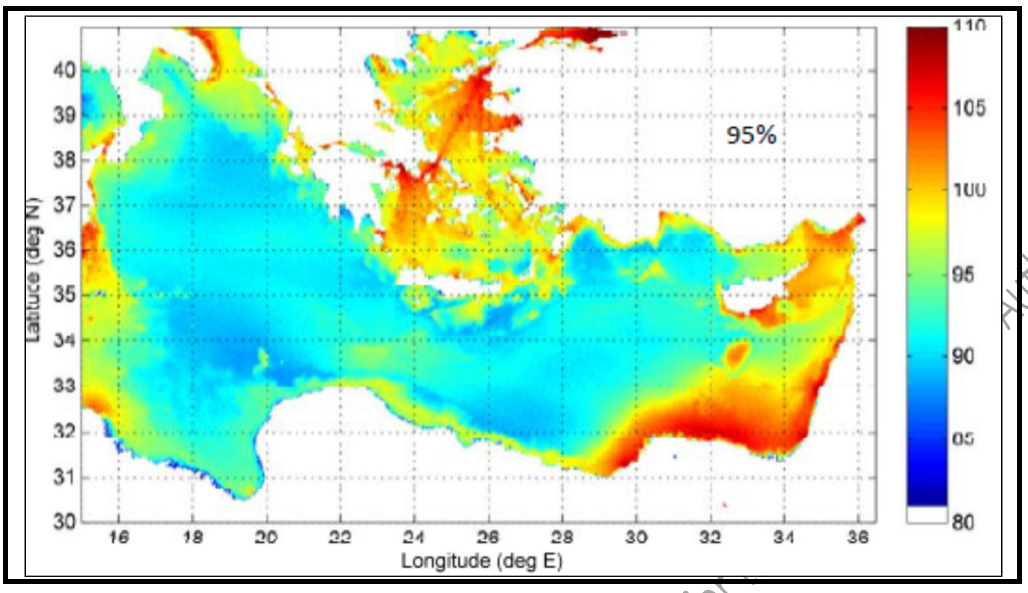
Long-range transport of anthropogenic pollutants towards Cyprus is more efficient during the warm period of the year because of trade winds and the absence of precipitation. The offshore location is also affected by long-range transport of air pollutants of natural origin (Ministry of Commerce, Industry and Tourism of the Republic of Cyprus, 2008); desert dust arising in the Sahara is transported towards Cyprus, mainly during the transient seasons of spring and autumn (Michaelides et al., 1999).

5.1.1.3 Underwater Noise

According to the "Strategic Environmental Assessment of Hydrocarbon Activities in the Exclusive Economic Zone of the Republic of Cyprus" (Ministry of Commerce, Industry and Tourism of the Republic of Cyprus, 2008), the most likely sources of underwater ambient noise across the study area have been identified as local and distant shipping and industrial noise.

Estimates suggest that underwater noise has increased significantly during the past few decades, especially due to expanding use of the sea for commercial shipping and the presence of offshore natural gas production installations (Department of Fisheries and Marine Research, 2012). However, with respect to main international underwater noise indicators, existing data are insufficient to evaluate the current status of underwater noise in Cyprus.

A prediction model for shipping noise in the eastern Mediterranean Sea has been developed combining real-time ship data (AIS data), typical acoustic emissions characteristics, environmental data, acoustic propagation codes, and taking into account the seasonal variation of the temperature (and sound speed) profile (E.K. Skarsoulis et al., 2017). The following Figure 5.1, presents the results of this model with the distribution of noise level at a depth of 50 m for June 1, 2017. The noise levels are high in shallow water areas, close to major ports and shipping lanes, e.g. in the south-eastern part of the basin near the port of Alexandria and the entry of the Suez canal or in the Aegean Sea and in the south of Cyprus, whereas they are lower in the deepwater areas of the Eastern Mediterranean Sea, e.g. in the deep Ionian basin. In particular, the area in the close proximity of Vasilikos port is reported as having high noise levels. A physical explanation of this behaviour can be given in terms of the lower amplitudes of the propagating modes in deep water, as contrasted to the higher amplitudes in shallow water. The major shipping routes can be identified in the 95% percentile results.



Prepared by/reference: E.K. Skarsoulis et al., 2017

Figure 5.1 Predicted Spectral Noise Level (dB re 1μPa2/Hz) Distribution on 1 June 2017 at a Depth of 50 m and Frequency of 100 Hz – 95% Percentile Values over 24 hr (E.K. Skarsoulis et al., 2017)

5.1.1.4 Water Quality

As per the findings of the Initial Assessment of the Marine Environment of Cyprus Part I (2012)[15], The marine waters of Cyprus are contained in the wider Levantine Basin which is considered one of the most oligotrophic areas in the world with inputs of organic carbon 15-80 times lower than in the western basin and very low concentrations of chlorophyll-a in offshore surface waters.

Nutrient levels in the euphotic zone are extremely low year-round. Average values of 0.21 ± 0.23, 0.02 ± 0.01, and 1.33 ± 0.30 μmol/L for NO_3^-, NO_2^-, PO_4^{3-}, and Si $(OH)_4$ are reported for the euphotic zone (0-85 m depth) of the northern Levantine Basin.

[15] Initial Assessment of the Marine Environment of Cyprus Part I – Characteristics Nicosia, Cyprus July 2012 Implementation of Article 8 of the Marine Strategy Framework-Directive (2008/56/EC)

The Levantine Basin is characterised by high oxygen levels throughout the water column. Oxygen concentrations in surface waters remain around saturation levels over different seasons and decrease gradually to 70 % in deep waters.

There are four major water masses in the Levantine Basin, and all of these are present in Cyprus waters: Levantine Surface Water (LSW), Atlantic Water (AW), Levantine Intermediate Water (LIW) and Eastern Mediterranean Deep Water (EMDW).

The Levantine Surface Water is present in a thin surface layer (approx. 20 m thick) of very salty and warm water (up to 26.9°C), a result of extensive evaporation and intense solar radiation during the summer season. Surface temperature range throughout the year is approximately 17-28°C, based on in-situ and remote sensing averages of temperature over the Levantine and upper10 m averages of temperature and salinity from research cruises. In some regions, a meandering jet transferring Atlantic Water can be found below the surface mixed layer, identified by a salinity minimum. The relatively warm and saline Levantine Intermediate Water is found from about 200-400 m and it is characterised by a temperature of 15-16°C. Eastern Mediterranean Deep Water is found below depths of approximately 500 m; this slow-moving and relatively homogeneous water mass is typically 13.3 - 13.38°C.

Cyprus coastal areas boast excellent water quality status (EEA, 2020b). That is, the European Environment Agency acknowledged that it has the greatest number of 'excellent' beaches for swimming. According to European Blue Flag (EEA), Governor's beach and Kalymnos' beach, located respectively at 5 km and 4.6 km from the Landfall, are considered blue flag awarded sites since 2001.The landfall site, however is located right on the East of the Vasilikos Industrial port (next to it) and therefore it can be expected that the site is under the influence of the port activities already when compared to other areas located further to the East.

5.1.1.5 Seabed Geology and Geomorphology (Deepwater and Nearshore)

Seabed topography (Figure 5.2) in southern Cyprus consists of uniform and smooth gradients with no major irregularities or obstructions, with slopes out gradually to depths of about 10 m by 800 m and 20 m by 1500 m offshore (Poten & ALA, 2015b).

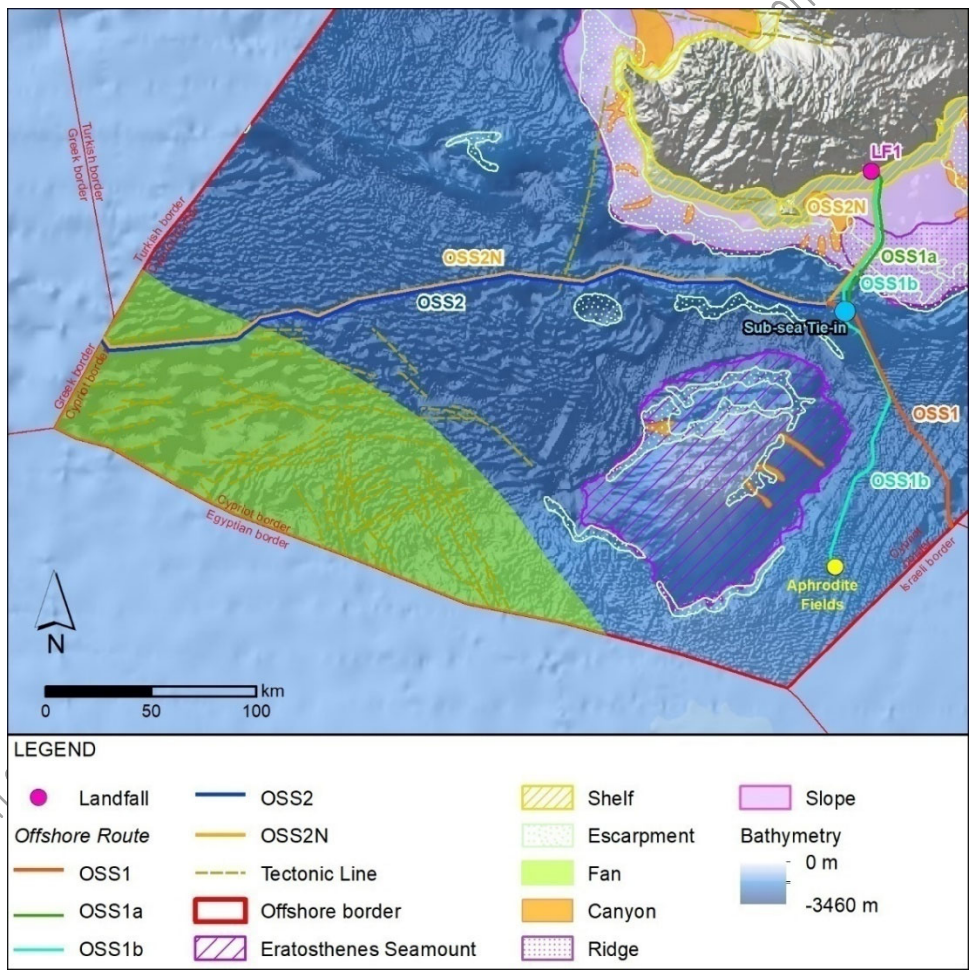
The continental shelf, defined as the seafloor at water depths shallower than 200 m, is generally narrow in the north and wider in the south, reaching the deepest point within the Cyprus waters.

The most prominent feature beyond the continental shelf south of Cyprus is the Eratosthenes Seamount, an elliptical massif with its major axis which is 120 km long, oriented north-west-south-

west, while its minor axis is 80 km wide. It rises from a depth of 2700 m to a maximum peak of approximately 690 m.

Submarine canyons characterise seafloor morphology of the offshore area and have an important role in benthic and pelagic ecosystem functioning. Almost 518 submarine canyons have been identified in the Mediterranean Sea, and five (5) of them are within the Cyprus waters, namely Famagusta, Larnaca, Akrotiri, Chrysochou and Morphou.

Local bathymetry near Vasilikos follows the outline curve of the coastline, and marine deposits comprise silt, sand and gravel (Poten & ALA, 2015b). Sandy and rocky seabed which can be found up to 10 m of depth grades gradually into sandy composition within 50 m of depth and become finer with depth.



Prepared by ERM. Source: Global Seafloor Geomorphic Features Map Data (GRID-Arendal, Geoscience Australia and Conservation International)

Figure 5.2 Seabed Geomorphology of the Cypriot waters

5.1.1.6 Sensitive and Protected Areas

Offshore and coastal Protected and Designated Areas

Cyprus protected areas are mostly terrestrial areas covering 38.6% (3,498km^2) of the land area, while marine protected areas is 8.62% (8,472km^2) of national marine area (98,280 km^2) (UNEP-WCMC, 2021) (see Map n.4 in Appendix A).

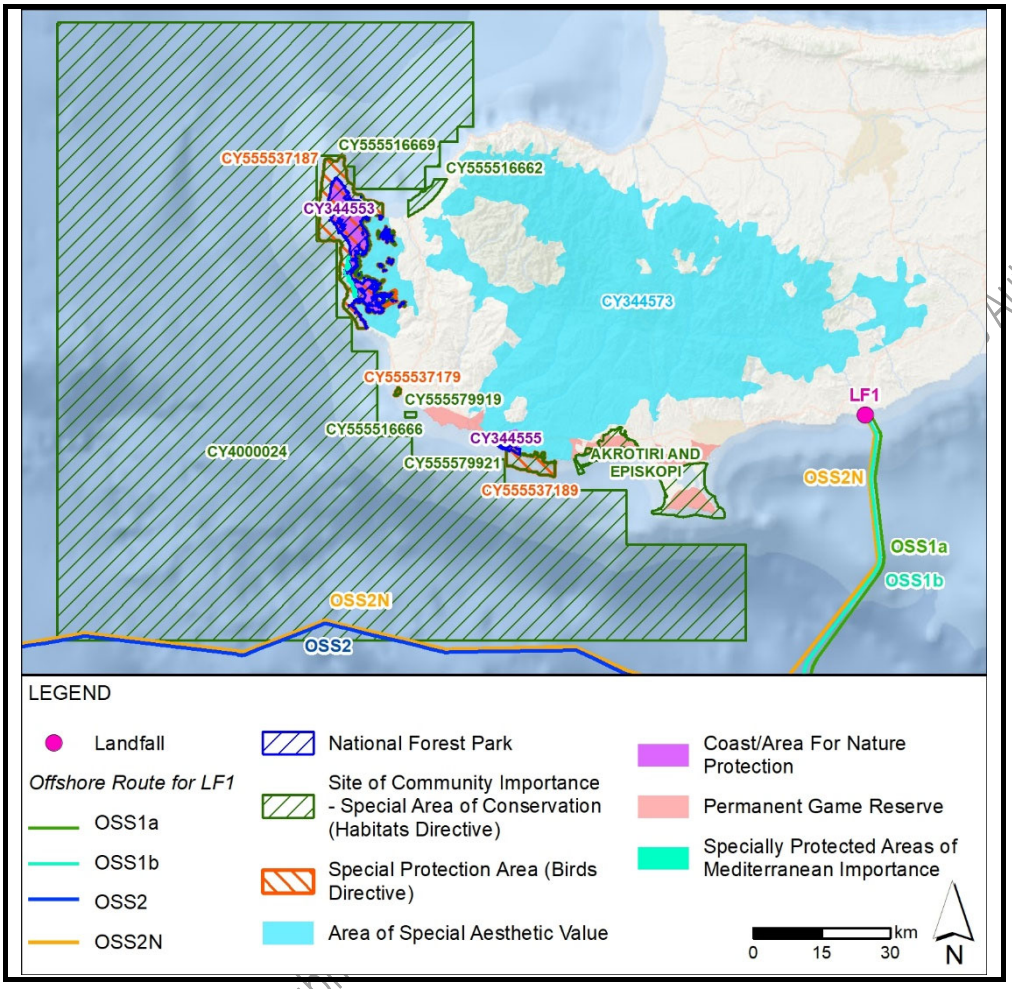
According to the national classification, per authority recommendation (DFMR, 2020), the following coastal and marine protected areas are established in Cyprus.

Table 5.1 Marine and Coastal Protected Areas

Designation	Categories	N°
International designation	Ramsar Site, Wetland of International Importance	1
Regional designation	Sites of Community Importance (Habitat Directive)	40
	Special Protected Areas (Birds Directive)	30
	Specially Protected Areas of Mediterranean Importance (Barcelona Convention)	1
National designation	Marine Protected Areas	12

Figure 5.3 shows that pipeline routes are in all cases far from the offshore and coastal designated areas with the only exception of a Site of Community Importance located south and East of Cyprus and covering a vast region all around the island. The proposed routes travel parallel to the southernmost limit of the site and in a couple of sections enters the geometric boundary of the site. The area is named Oceanid and has been proposed as SCI (pSCI CY4000024) for inclusion in the Natura 2000 Network according to the approval of the Council of Ministers dated January 23, 2019 (Proposal no. EM147/2019).

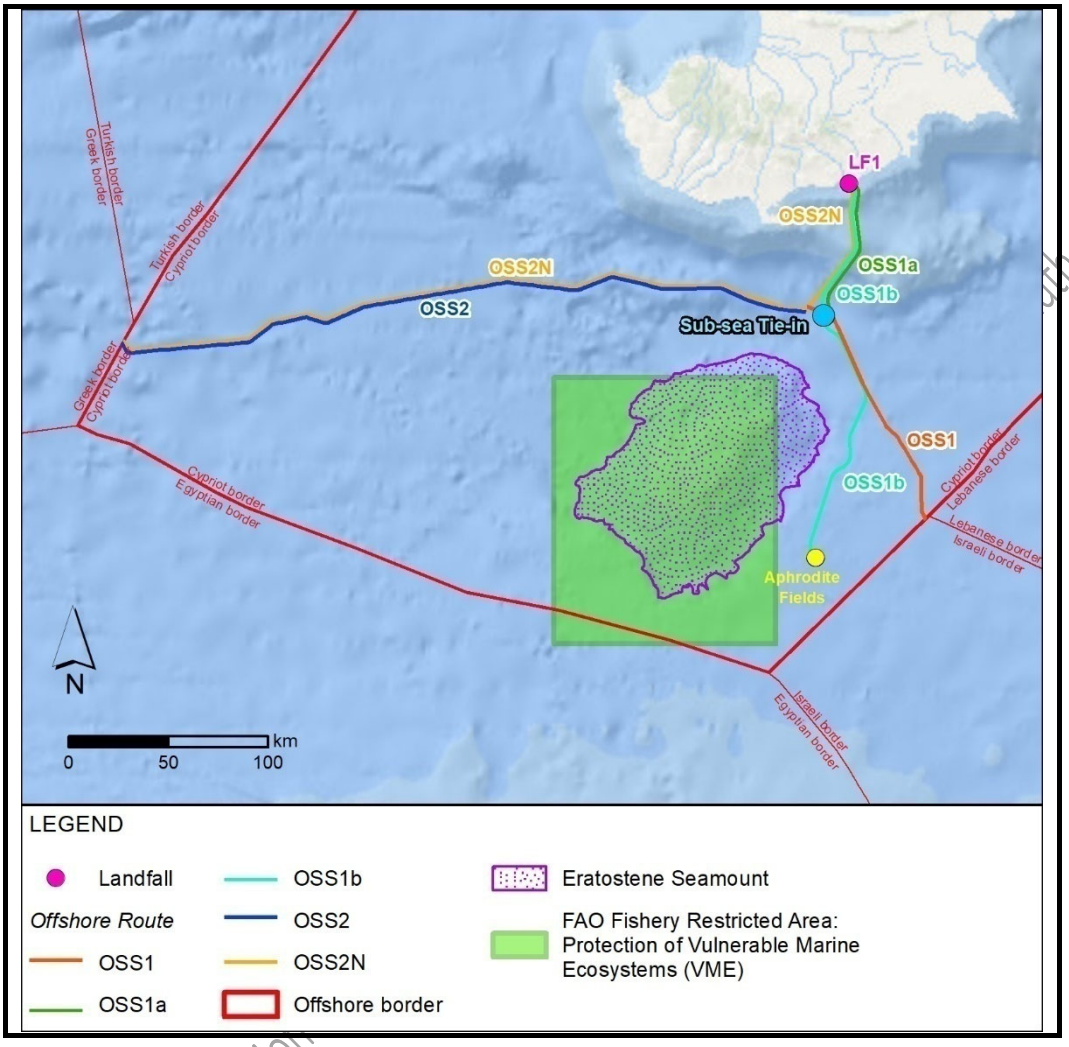
The Oceanid Site is a 100% marine area extending for 8,317 km^2 off the west coast of Cyprus. The proposed SCI area aims to ensure migratory corridors and create a marine protected area for sea turtles offshore as well as to ensure a favourable conservation status for all marine mammals and their habitats. It starts approximately from the 200 m isobaths to include small marine mammals like the bottlenose dolphin (*Tursiops truncatus*) and monk seal (*Monachus monachus*), and continues with a geometric boundary onto the continental shelf and deeper areas down to more than 2 km deep where a number of other cetacean species were visually and acoustically identified.



Prepared by/reference: ERM

Figure 5.3 Offshore Protected Areas at Project Scale

Moreover, the Eratosthenes Seamount (which is at an approximate distance of 24 km from the closest offshore route of the Northern line and 10 km from closest OSS1b) has been classified as a Fisheries Restricted Area under the General Fisheries Commission for the Mediterranean (Recommendation 2006/3) due to the presence of chemosynthetic communities and fragile habitats such as black and stony corals (UNEP MAP RAC/SPA, 2015; UNEP-WCMC, 2017) (Figure 5.4).



Prepared by/reference: ERM

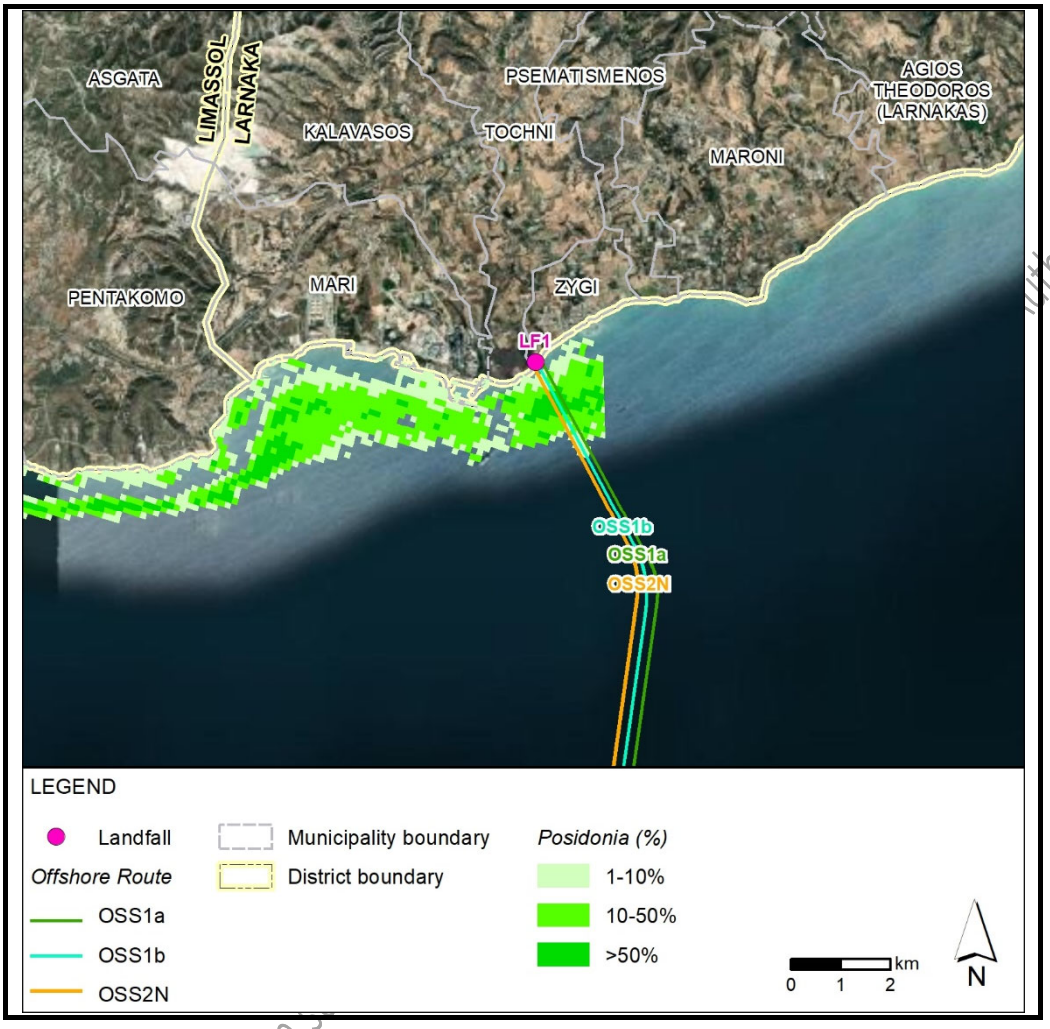
Figure 5.4 Fishery Restricted areas in the Cypriot waters

In particular, with Recommendation GFCM/2006/3 a 10,298.47 km^2 fisheries restricted area has been established where fishing activities with towed dredges and bottom trawl nets are prohibited. The same recommendation states that the relevant authorities of GFCM Members (including the Republic of Cyprus) shall pay particular attention to protecting these areas from the impact of any other activity jeopardizing conservation of the features that characterise these particular habitats.

Protected & Designated Habitats

In the nearshore area, two (2) main habitats have been identified in Vasilikos Bay which are characterised by benthic macrophyte communities of *Posidonia oceanica*, *Cymodocea nodosa* and the green alga *Caulerpa prolifera* (1120 Posidonia beds and 1110 Sandbanks which are slightly covered by sea water all the time). *Posidonia oceanica*, which represents a priority habitat per European Habitats Directive (Dir. 92/43/CEE) and the Barcelona Convention, in particular, forms extensive underwater meadows that grow on rocks and sandy bottoms in clean water at a depth from less than 1 metre to over 40 metres (Department of Fisheries and Marine Research, 2012; Hemminga and Duarte, 2000). More specifically, Vasilikos Bay accommodates an extensive ancient seagrass meadow, covering about 200 ha across 10 km of coastline (Figure 5.5), over soft substrata at ~10–30 m depth, and over hard substrata at ~ 0–6 m depth (Kletou et al., 2020). In the shallow depth range *P. oceanica* grows in patches on rock, as is often the case in high-energy conditions. At 10–30 m depth, a belt of *P. oceanica* meadow covers about 200 ha of sandy substrata along ~10 km of coastline where the seagrass matte often is higher. Noteworthy is the coexistence of a highly diverse coralligenous community within the shallow *P. oceanica* meadows, but only in areas away from coastal developments, an indication of higher ecological status, thus adding a greater value to the ecosystem services these meadows provide (Kletou et al. 2020).

The details on the distribution of the benthic macrophyte communities at the proposed landfall and nearshore are not available but will be subject to specific investigations to confirm detailed coverage and distribution. The results will be included in the ESIA report.



Prepared by/reference: ERM. Source: shapefiles provided by DFMR

Figure 5.5 *Posidonia oceanica* Distribution in the Vicinity of the Project's Area

With regards to the offshore area, reference is made to the EUNIS (European Nature Information System) habitat classification, which provides a comprehensive pan-European approach, including all types of marine habitats, which is not exhaustively addressed by the Habitats Directive classification. In particular, the offshore area of Vasilikos is mostly included in A6.51 Mediterranean communities of bathyal mud, which comprises variable grain size and thickness of the sediment, almost total absence of light and a constant homeothermy of around 13°C (EUNIS, 2019). The results of DMS activities, scheduled around the landfall area, will provide a better understanding of the abiotic and biotic conditions of the nearshore area crossed by the project.

5.1.1.7 Biodiversity and Species

Many marine species which are found in Cyprus are considered endangered and in need of protection: sea turtles (Chelonia mydas, Caretta caretta), pen shell (Pinna nobilis), Mediterranean monk seal (Monachus monachus), common dolphin (Delphinus delphis), sperm whale (Physter macrocephalus), etc. As reported by the Ministry of Agriculture, Rural Development and Environment, all the above-mentioned species are recognized for high biodiversity and ecological importance for the Mediterranean.

For benthic deep-sea communities, there is a general trend that species richness decreases from the western to the eastern basin, which is attributed to decreased productivity observed in the Eastern Mediterranean Sea (Danovaro et al., 2010a). Ecological quality changed from "Good" to "Moderate" on a local scale in Vasilikos Bay, according to the OIKAPAB Project (MER et al., 2013) moving from west to east.

A recent study which was conducted as part of the Environmental Impact Assessment (EIA) for dismantling of an underwater pipeline in Archirodon port demonstrated the presence of several fish species within the *P. oceanica* meadows of Vasilikos (MER 2020). The most common species in the water column were damselfish (*Chromis chromis*) and pikeperch (*Spicara* spp.), while the most abundant fish near the depth and in the meadows were wrasses (family Labridae, *Coris julis* and *Thalassoma pavo*), seabream (*Diplodus annularis*), and perch (*Serranus scriba*), as well as the non-indigenous rabbitfish (*Siganus* spp.), goat fish (*Parupeneus forsskali*), and puffer fish (*Torquigener flavimaculosus*). The presence of the critically endangered (CR IUCN) species *Pinna nobilis* (Pen shell) is recorded living in *Posidonia oceanica* meadows.

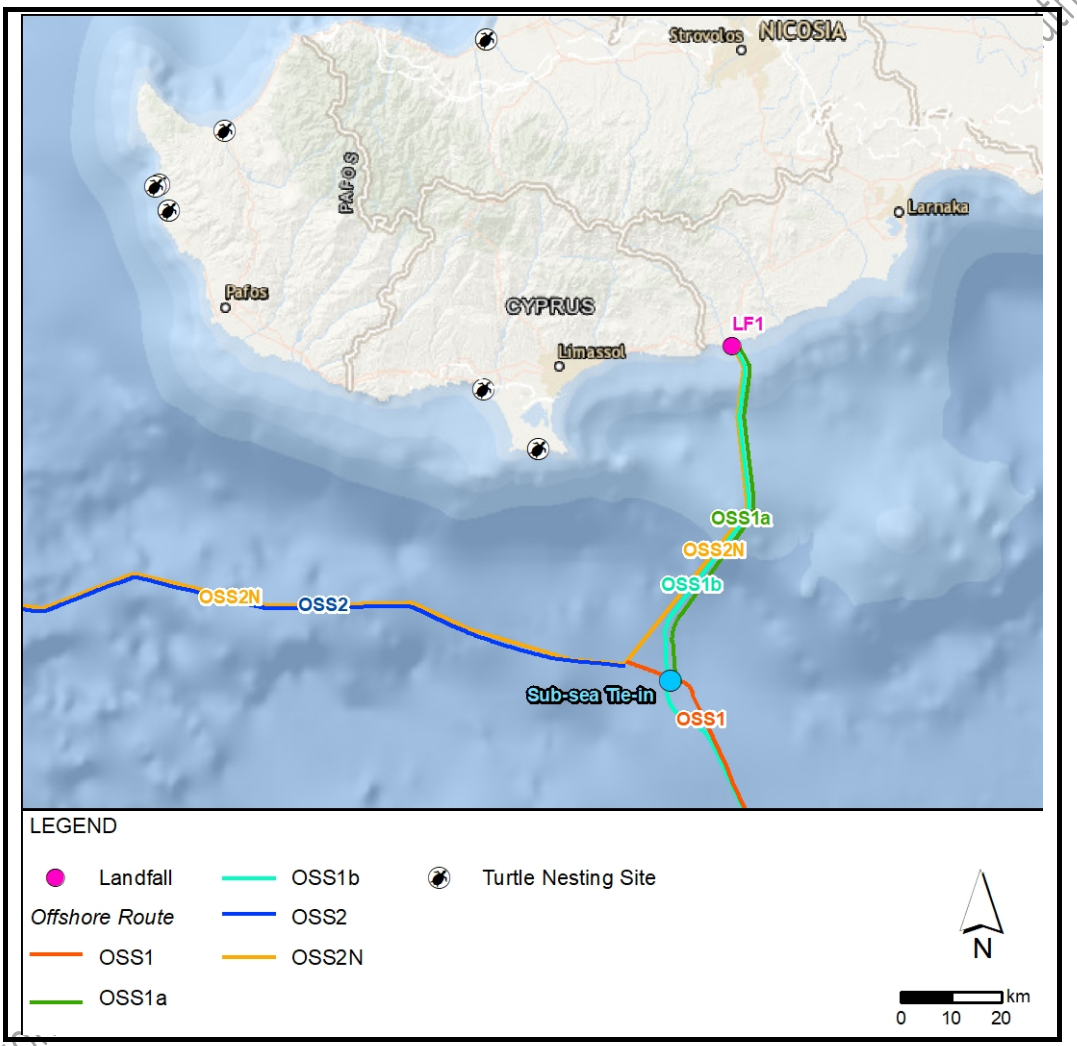
Sea Turtles

Only two sea turtle species are present in the eastern Mediterranean Sea, namely the green turtle (*Chelonia mydas*) and the loggerhead turtle (*Caretta caretta*) with occasional sightings of a third species, the leatherback turtle (*Dermochelys coriacea*). The green turtle and loggerhead turtle are listed as Endangered in the IUCN Red list, while the leatherback turtle is listed as Vulnerable in the IUCN Red list.

Population sizes and trends for *Caretta caretta* are increasing based on nesting activities (increasing every year since 2007). For *Chelonia mydas* there are wide fluctuations in nesting which appear to be wider in recent years and a clear trend cannot be established.

Cyprus coasts host some of the most famous nesting locations of the green and loggerhead turtles e.g. the tip of Lara Bay, located at the north-western part of the island (Snape et al., 2016). The bibliography and preliminary data does not provide any evidences of nesting activities at the shores

located close to the Vasilikos Bay. Figure 5.6 provides the location of the most relevant nesting grounds which are in all cases far from the project area. The known foraging areas of this species in Cyprus are mainly in Chrysochou Bay, but both species can be sighted all around the coastline, with *C. mydas* showing a high preference for areas with seagrass meadows where it feeds. Sightings of *C. caretta* have also been confirmed by divers in the vicinity of fish farms in Limassol, where they attempt to feed on dead fish that fall to the bottom of the enclosed fish farm nets.



Prepared by/reference: ERM

Figure 5.6 Turtles Nesting Sites in Cyprus (extract)

Seabirds

More than 390 bird species have been recorded in Cyprus. Two of these species and four subspecies are endemic. As a result, Cyprus is the only country in Europe included in the list of Endemic Bird Areas of the World. In addition, due to Cyprus geographical location, it is one of the most important staging posts in the south-east Mediterranean for millions of migrating and wintering birds travelling between Europe, Africa and the Middle East. Almost 200 species occur as regular passage migrants while another 20 or so occur irregularly. The migrants include seabirds, water birds and raptors, among others, which are found offshore or in terrestrial coastal areas and wetlands.

Only two species are monitored regularly in coastal areas annually, while birds that occur offshore tend to be overlooked. Cyprus supports internationally important populations of the greater flamingo (*Phoenicopterus ruber roseus*), demoiselle crane (*Grus virgo*), Eurasian thickknee (*Burhinus oedicnemus*) and common shelduck (*Tadorna tadorna*). It also regularly hosts endangered species such as the greater sand plover (*Charadrius leschenaultii*), Audouins gull (*Larus audouinii*) and Mediterranean shag (*Phalacrocorax aristotelis desmarestii*). The spur-winged lapwing (*Vanellus spinosus*) that has a predominantly African distribution is of European importance; in Europe it breeds only in Cyprus, Greece and Turkey (BirdLife International 2004).

In the vicinity of the fish farms in the area of Zygi, at an approximate distance of 2 km from the landfall, a flock of ~100 yellow-legged gulls was observed in circular formation on set buoys, with some individuals displaying feeding behaviour. The majority of bird species that frequent wetlands, coastal and offshore areas are protected by Cypriot legislation under the Barcelona Convention (UNEP 2005), the EU Birds (79/409/EEC) and Habitats (92/43/EEC) Directives, and Cyprus Law 152 (I) of 2003.

Marine Mammals

Among the dolphin species present in Cyprus waters, the population of *Delphinus delphis* in this sea, once common in the Mediterranean, has dwindled in recent years. The Mediterranean sub-population of *Delphinus delphis*, presently listed as Endangered in the IUCN Red List, is evidently now verging on being critically endangered (Bearzi 2011). In Cyprus it is known mainly from stranding of dead specimens.

Other common species of dolphins that are found in Cypriot continental waters are the striped dolphin (*Stenella coeruleoalba*) and bottlenose dolphin (*Tursiops truncates*). The Mediterranean populations of both species are decreasing and listed as Vulnerable in the IUCN Red List.

Sightings and stranding of sperm whales (*Physter microcephalus*) have been recorded in past years around the coasts of Cyprus. Marine noise pollution and naval traffic are some of the factors threatening this species. The Mediterranean subpopulation of sperm whales is considered Endangered by the IUCN Red List.

Besides cetaceans, there are a few monk seals found around Cyprus. Breeding in the caves of the island was confirmed in 2009 and 2011 by the Cyprus Wildlife Society monitoring programme in cooperation with the Department of Fisheries and Marine Research. The Mediterranean monk seal is listed as Critically Endangered in the IUCN Red List (Aguilar and Lowry 2010); it is classed as a Priority species in the Habitats Directive (Annex II and IV); it is listed as a protected species in the Bern Convention Annex II (1996-98) and the Barcelona Convention Annex II of the SPA/BD Protocol (1995).

As anticipated in Section 5.1.1.6, these mammals, together with loggerhead turtle (*Caretta caretta*) and green turtle (*Chelonia mydas*), are species which constantly live within the boundaries of the proposed "Oceanid" Sites of Community Importance (pSCI).

The species of interest mentioned above and additional species included within the "Oceanid" pSCI are shown in the Table 5.2 below, detailed with their conservation status according to the IUCN Red List.

Table 5.2 List of Offshore Species of Interest with their Related Conservation Status (IUCN Red List of Threatened species)

Scientific Name	Common Name	Group	Conservation Status
Chelonia mydas	Green Turtle	Reptile	Endangered
Caretta caretta	Loggerhead Turtle	Reptile	Endangered
Dermochelys coriacea	Leatherback Turtle	Reptile	Vulnerable
Delphinus delphis	Dolphin	Mammals	Endangered
Physter microcephalus	Sperm Whale	Mammals	Endangered
Stenella coeruleoalba	Striped dolphin	Mammals	Vulnerable
Tursiops truncates	Bottlenose dolphin	Mammals	Vulnerable
Monachus monachus	Monk Seals	Mammals	Critically Endangered
Calonectris diomedea	Cory's Shearwater	Birds	Least Concern

Scientific Name	Common Name	Group	Conservation Status
Chlidonias hybridus	Whiskered Tern	Birds	Least Concern
Chlidonias leucopterus	White-winged Black Tern	Birds	Least Concern
Falco eleonorae	Eleonora's Falcon	Birds	Least Concern
Larus audouinii	Audouin's Gull	Birds	Near Threatened
Larus melanocephalus	Mediterranean Gull	Birds	Least Concern
Puffinus yelkouan	Levantine Shearwater	Birds	Vulnerable
Sterna albifrons	Little Tern	Birds	Least Concern
Larus michahellis	Seagull	Birds	-
Phalacrocorax aristotelis	Shag	Birds	-
Phalacrocorax carbo	Cormorant	Birds	-
Physeter macrocephalus	Sperm Whale	Mammals	Vulnerable
Stenella coeruleoalba	Striped Dolphin	Mammals	Least Concern
Ziphius cavirostris	Cuvier's Beaked Whale	Mammals	-
Pinna nobilis	Pen shell	Invertebrates	Critically Endangered

5.1.1.8 Ecosystem Services

Ecosystem services are the benefits that people derive from the environment and biodiversity.

The Ecosystem Services guide and checklist developed by IPIECA (IPIECA, 2011) help to identify ecosystem service dependencies and impacts on oil and gas activities. Separate checklists are provided with reference to six generic habitat types: 1) forests, 2) wetlands, river and lakes, 3) polar, 4) desert, 5) deep water, 6) near shore/transition zone.

The marine section of the EastMed Project includes a number of habitats and associated services. Considering the wider areas crossed by the project some of those potentially found are presented below[16]:

- Nearshore/transition zone, including seagrass beds, beaches and rocky zones. In nearshore waters, artisanal and subsistence fishing are critical provisioning services. Construction materials (e.g. sand, shingle, rocks and coral rubble) and ornamental and pharmaceutical products are other common provisioning services found in the nearshore environment. Key regulating services are provided by these habitats such as coral reefs water filtration, waste assimilation and carbon sequestration. The nearshore environment offers cultural services in the form of tourism and recreation (e.g. swimming, diving, sunbathing), and supports a variety of iconic species including reef-associated fish, turtles and coastal seabirds. Note that, specifically, at the proposed landfall, site and immediate surroundings these are of limited relevance provided the status of the shores and the presence of several industrial sites.
- Deepwater, characterising the majority of pipeline routes within Cyprus waters. The deepwater biological environment includes a range of macrofauna species which have evolved to cope with the specific conditions found at these water depths (e.g. sea cucumbers, sea urchins and molluscs) as well as a range of fish species and marine mammals. Of particular note in the deepwater environment are fauna assemblages found around specific geological formations, for example banks or mountains and hot springs. In particular, 'chemosynthetic' ecological communities exist that get their energy from chemical reactions rather than photosynthesis.

The following Table 5.3 (IPIECA, 2011) presents the typical ecosystem services associated with each habitat type identified in the study area. Note that a likely relevance is indicated for each ecosystem service: high (HI), medium/low (M/L) or not relevant/negligible (NR).

[16]The extent to which each of these is present within the area of influence will be subject to further investigations during the ESIA preparation. However, considering that the project is located within the Vasilikos industrial Area and the landfall very close the port, ecosystem services may be limited.

Table 5.3 Ecosystem Services Associated with Habitat Types in the Study Area (IPIECA, 2011)

	Ecosystem Services	Nearshore/Transition Zone	Deep Water
PROVISIONING	Livestock	NR	NR
	Capture fisheries	HI	HI
	Aquaculture	HI	M/L
	Wild foods	HI	M/L
	Timber and other wood fibres	M/L	NR
	Fibres and resins	M/L	NR
	Animal skins	NR	NR
	Sand, gravel, etc.	HI	NR
	Ornamental resources	HI	M/L
	Biomass fuel	M/L	NR
	Fresh water	M/L	NR
	Genetic resources	HI	HI
	Biochemicals, natural medicines and pharmaceuticals	HI	HI
REGULATING	Air quality regulation	M/L	M/L
	Global climate regulation	HI	HI
	Regional/Local climate regulation	M/L	NR
	Water regulation	HI	NR
	Water purification	HI	HI
	Waste assimilation	HI	HI
	Disease regulation	M/L	NR
	Soil quality regulation	M/L	NR
	Pollination	M/L	NR
	Natural hazard regulation	HI	NR
CULTURAL	Recreation and ecotourism	HI	NR
	Ethical/non-use value	HI	HI

5.1.1.9 Pre-existing Pollution

Cyprus is strategically located at the crossroads of three (3) continents and accepts significant marine traffic within its maritime borders (Kirkos G. et al., 2017). Moreover, hydrocarbon discoveries in the region between Israel, Egypt and Cyprus is bringing a potential increase in oil traffic in the area, posing the threat of increasing oil spill events. Only seven (7) serious marine accidents have been recorded in the last decade but more than 1000 possible oil spills were detected in the Levantine Basin through satellite observation systems. Incidents have been recorded in both the northern (Thomson Reuters, 2013) and southern parts (Lacava T., 2017) of the island.

According to annual reports issued by the Department of Fisheries and Marine Research (DFMR), in the period between 2006-2019, a general increasing trend of minor oil spill events has been observed, doubling in particular from 2011 to 2019 (58 and 135 events, respectively).

5.1.2 Socioeconomic

5.1.2.1 Introduction

This section describes the main assets related to socioeconomic offshore activities in Cyprus and in the Vasilikos area. A broad description of Cyprus characteristics is provided in the onshore section of the baseline (Section 5.2.2.1).

5.1.2.2 Fisheries

On the whole, Cyprus has a longstanding fisheries tradition and history. Despite its limited contribution to the gross domestic product (GDP) and a drop in the activity in recent years, the Cypriot fisheries sector holds primary significant cultural and socioeconomic importance, particularly in coastal areas (EMFF, 2017).

The capacity of the Cypriot national fleet counted 858 vessels in 2019 (84 of them are inactive), an increasing number compared to the declining trend of the previous decade. It consists of small scale coastal fishing vessels (that represent approx. 90% of the fleet), large-scale fleet (vessels over 12 metres length) and 6 demersal trawlers.

Employment was estimated at 1,246 jobs in 2018, a 10% increase from the 1,134 jobs in 2017 (STECF, 2020).

In general, small-scale coastal, multi-purpose and trawl fishing in international waters are active throughout the year. The tuna (albacore) fishing season which is the main fishing activity lasts from

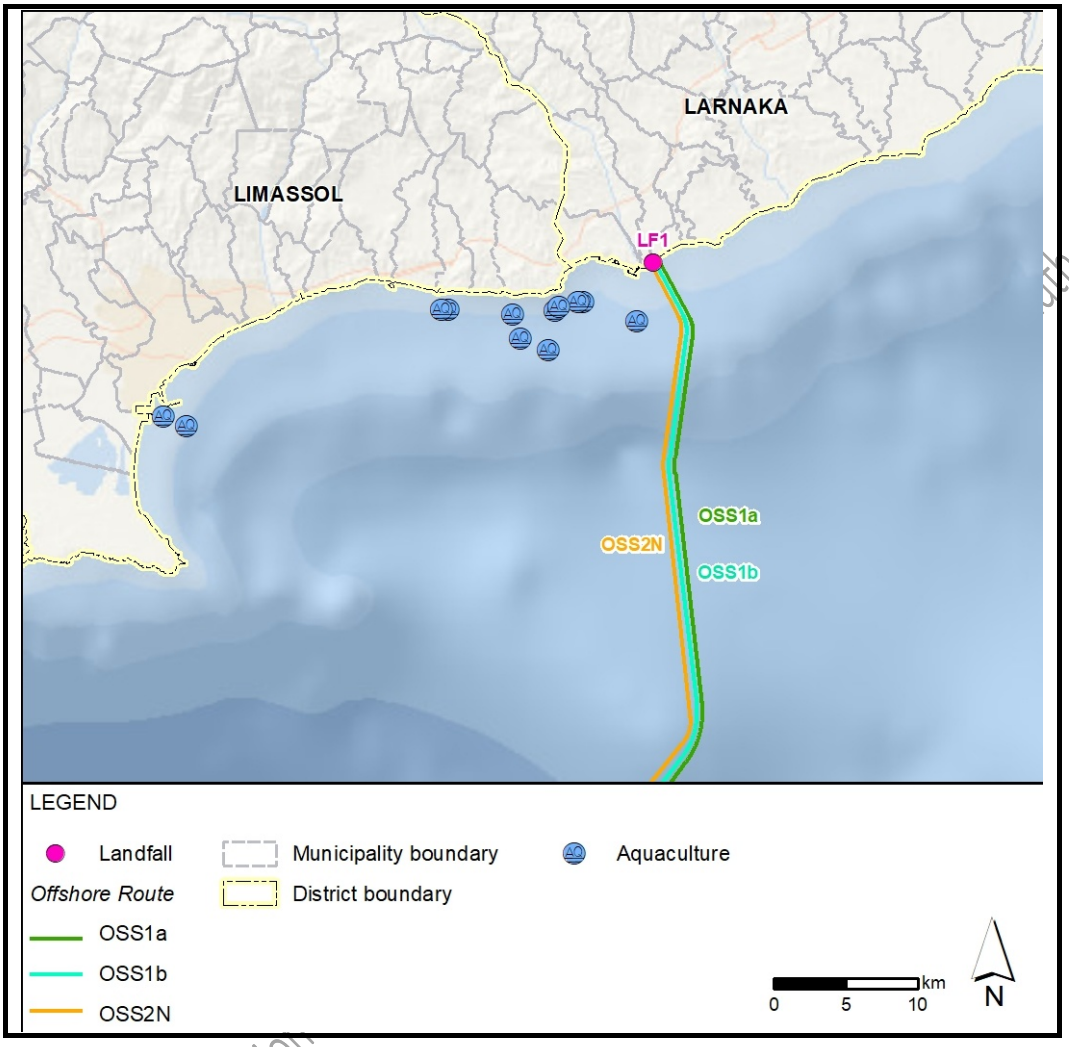
May to September and is prohibited during October and November. Trawling in Cyprus territorial waters only takes place between November 7th and May 30th.

As shown in Figure 5.4, the Eratosthenes Seamount, located 95 km south of Cyprus and on south-west of Vasilikos, has been classified as a Fisheries Restricted Area under the General Fisheries Commission for the Mediterranean (GFCM) (Recommendation 2006/3) due to the presence of chemosynthetic communities and fragile habitats such as black and stony corals (UNEP MAP RAC/SPA, 2015; UNEP-WCMC, 2021). The pipelines route does not interfere with this fishery restricted area (minimum distance between the pipelines and the restricted area is 10 km approximately).

Five Artificial Reef Areas (ARA) have been established, based on Article 5A of Fisheries Law 106(I)/2004, along the southern coast of Cyprus. The creation of marine protected areas with the use of artificial reefs aims to recover marine ecosystems and enhance marine biodiversity. There are no artificial reefs located near the project area in the Vasilikos area.

A recent study which was conducted as part of the Environmental Impact Assessment (EIA) for dismantling of an underwater pipeline in Archirodon port demonstrated the presence of several fish species within the *P. oceanica* meadows of Vasilikos (MER 2020). According to data from the Department of Fisheries and Marine Research (DFMR) in that area, during the year 2019 a total of 44 tonnes were dumped, corresponding to approximately 10% of the total catch for Cyprus in quantity and value. It was further observed that the most common catch within the top 10 species in the wider study area is the bogue (*Boops boops*) followed by *Serranus cabrilla*, *Sparus aurata*, *Pagellus acarne*, *Mullus surmuletus*, *Spicara smaris*, *Dicetrarchus labrax*, *Sardina pilchardus* and *Scorpaena* spp. Large predatory fish such as the greater amberjack (*Seriola dumerili*) were also found in the wider study area from the local fishery catches.

Local fishery shelters are located in both Vasilikos Port and Archirodon Industrial Port (Figure 5.7). Zygi is the main fishing village close to the Vasilikos area with approximately 50 licensed fishermen. Aquaculture is a significant business activity in the Vasilikos area with seven (7) out of nine (9) fish farms in Cyprus being based in this area, focusing mainly on sea bream, sea bass and tuna (Poten & ALA, 2015b).



Prepared by/reference: ERM

Figure 5.7 Aquaculture sites

5.1.2.3 Tourism

According to the Statistical Services of Cyprus (2019), tourism and travel generates 22.7% of GDP in the Cyprus economy. It has proved to be the most resilient of Cyprus' commercial sectors and contributes a great deal to local employment (Statistical Services of Cyprus, 2020).

A recent trend in the Cyprus tourism industry concerns the development of nautical tourism (Cyprus Tourism Strategy Report, 2017). Nautical tourism encompasses aspects of marine recreation such as sailing, yachting, cruising and scuba diving, as well as harbour-side

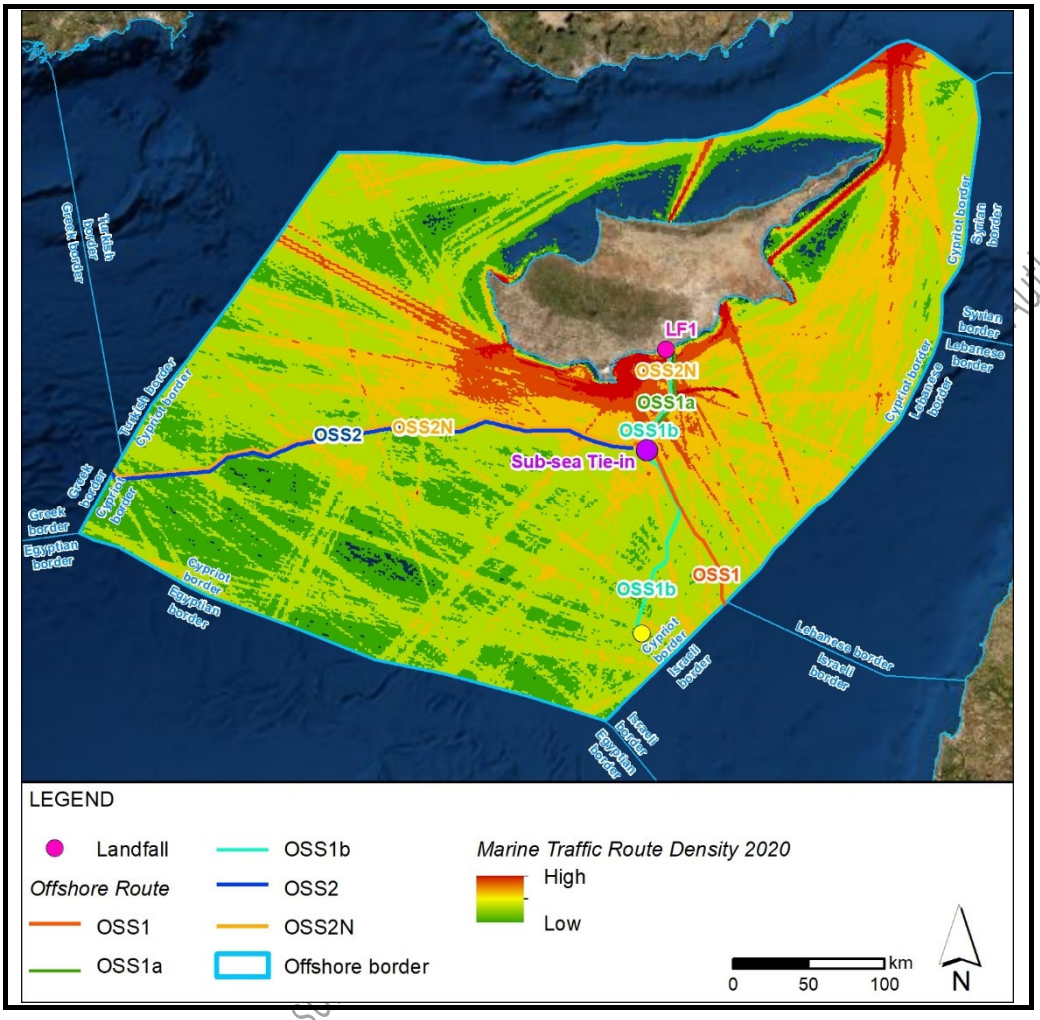
developments, coastal water sports, boat shows, port tours and marine heritage destinations (Lukovic, 2013).

Maritime tourism in the Project area is located at Governor's Beach west of the Vasilikos area and among other tourist facilities at an approximate distance of 5 km from the LF1: it has a camping site which has high occupancy during the summer season (Poten & ALA, 2015b). For further information on onshore tourism refer to section 5.2.2.2.

With regards to the landfall, it should be noted that the proposed landfall site, specifically, is located just adjacent to the Vasilikos port and the shores at the landfall site show evidences of erosion and some waste/debris is scattered in the vicinity. Therefore, it can be inferred that it is not an area with relevant touristic activities.

5.1.2.4 Navigation and Maritime Transport

Cyprus is strategically located in the north-eastern corner of the Mediterranean Basin at the crossroads of three continents and at the intersection of major international and regional shipping lines. Its location has made Cyprus a natural place for vessels, sailing in and out of the Mediterranean region, to call with 100 different lines servicing Cyprus regularly, providing wide, regular and frequent connections between the island and the rest of the world. During FEED study on shipping activities, it was calculated that over 600 crossings are taking place per year close to Zygi Port area. During summer, the activity reaches 208crossings/month, meaning possibly a maximum around 2000-2500 annual crossings. For reference, see the density of maritime traffic shown in the maps from the Mediterranean Quality Status Report (2017) in Figure 5.8. The number of vessels is likely to increase in the future depending on the needs for aquaculture activities (Poten & ALA, 2015b).

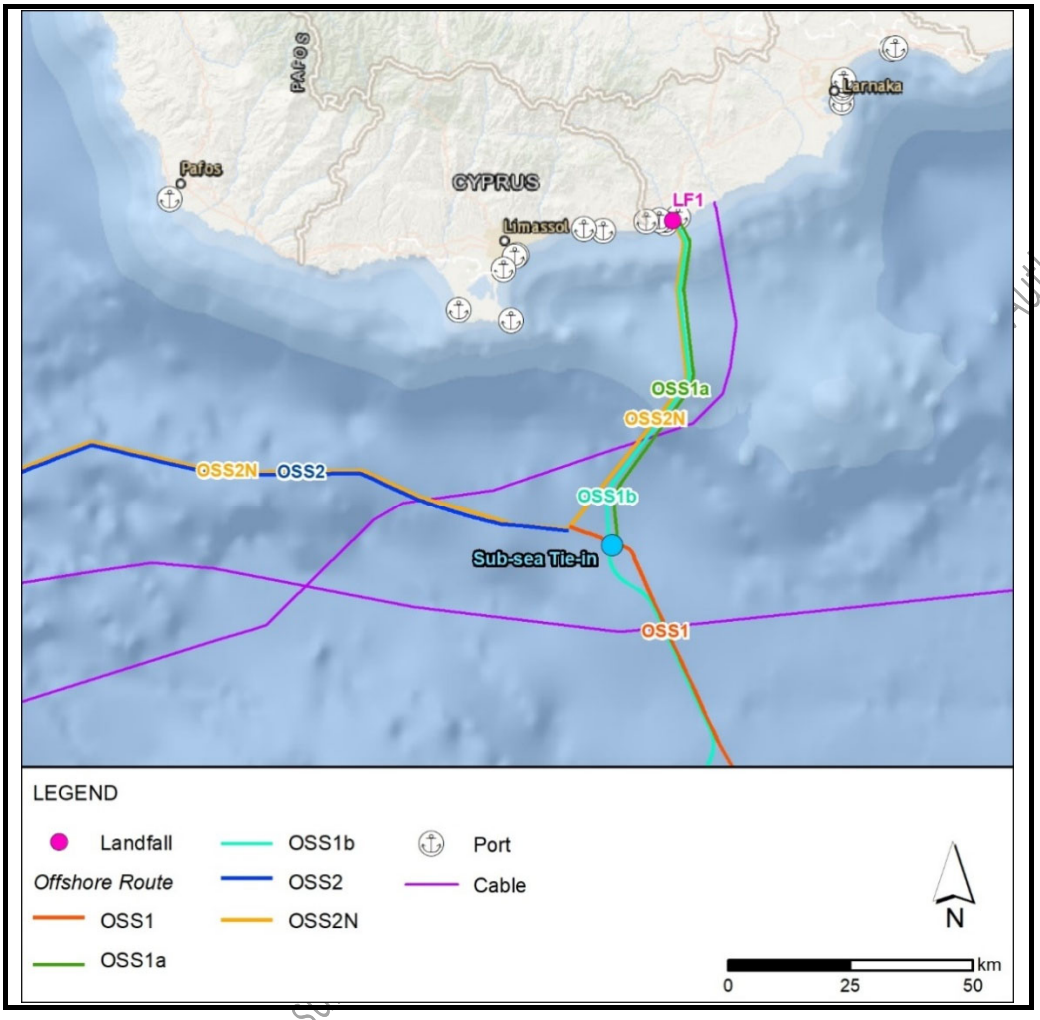


Prepared by/reference: ERM

Figure 5.8 Density of Marine Traffic (Mediterranean Quality Status Report, 2017)

5.1.2.5 Cables crossing

Several cables are identified in the offshore of Cyprus, particularly in the south part of the island, which are mainly related to communication activities (i.e. fibre optic cables) (Figure 5.9). According to the FEED investigation, the offshore sections of the project in Cypriot waters will cross several cables, but the crossings will be at an angle as close as possible to perpendicular and a part of these cables are currently out of service.



Prepared by/reference: ERM. Source: EMODnet Human Activities https://www.emodnet-humanactivities.eu/

Figure 5.9 Cables Routes

5.1.3 Cultural Heritage

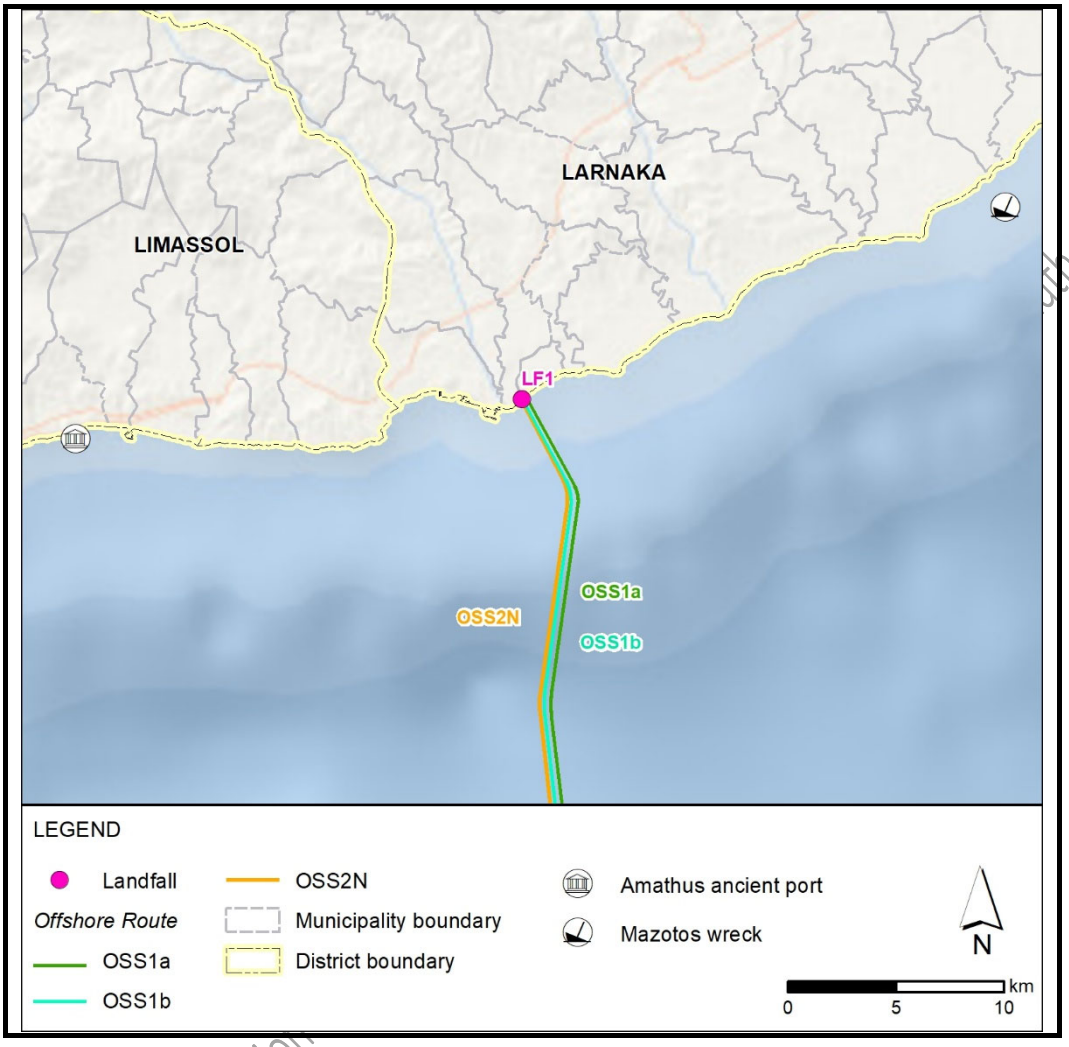
5.1.3.1 Marine Archaeology

The eastern Mediterranean, in particular the area between Cyprus and the Middle East and North African coast, is one of the richest areas for marine cultural heritage in Europe. Recent exploration in the region have led to some significant discoveries17, often preserved in excellent conditions18. The offshore waters of Cyprus are relatively unexplored from a Cultural heritage perspective, but discoveries such as the previously undisturbed roman era shipwreck found in 2019 near Protaras (70 km to the north-east) highlight the potential for further finds. Unfortunately, as a result of these discoveries, there is increasing illegal activities in the location and salvage of ancient artefacts from the eastern Mediterranean. The Department of Antiquities, which is the Cultural heritage regulator for Cyprus, takes an active role in monitoring and protecting the country's marine cultural heritage19.

The offshore archaeological sites closer to the project area are:

- A classical period wreck known at Mazotoslies, approx. 18 km east of the landfall LF1, where an estimated 500-800 amphorae lie on the seabed (Sewell, 2013).
- An ancient port (Amathus) at approx. 17 km west of the landfall LF1. It was built in the late 4th century. B.C. by Demetrius the Poliorketis for the defence of Amathus, in a period of conflict with the Ptolemies because of the claim of power in Cyprus.

[17] https://www.theguardian.com/science/2020/apr/18/mediterranean-shipwrecks-reveal-birth-of-globalisation-in-trade
[18] https://www.irishtimes.com/news/world/europe/ancient-shipwreck-carrying-secrets-of-roman-trade-discovered-off-cyprus-1.3940508
[19] https://www.pio.gov.cy/en/press-releases-article.html?id=13374#flat



Prepared by/reference: ERM. Source: http://www.ucy.ac.cy/marelab/documents/Publications/Demesticha2010.pdf and georeferenced by Google Earth

Figure 5.10 Offshore Archaeological sites

5.2 Onshore

Cyprus is the third largest island in the Mediterranean with an area of 9,251 km^2, a maximum length of 240 km from east to west and a maximum width of 100 km from north to south (Republic of Cyprus, 2021).

Cyprus is divided into six (6) administrative districts, namely Famagusta, Keryneia, Nicosia, Paphos, Limassol and Larnaca. Larnaca includes the Vasilikos area with a harbour and industrial area included in the communities of Kalavasos, Mari, Tochni and marginally Zygi (Union of Cyprus

Communities, 2021) which are currently under development with a view to optimal development of industrial and gas storage and distribution related facilities.

5.2.1 Environment

This section provides a preliminary description of the onshore study area's baseline environment based on publicly available information at the time this Scoping report was drafted.

The following subparagraphs outline the general characteristics of climate conditions, geology and geomorphology of the study area, biodiversity, air quality, noise, ecosystem services, sensitive and protected areas, landscape, as well as records of any pre-existing pollution.

5.2.1.1 Climate

Cyprus has an intense Mediterranean climate with the typical seasonal rhythm strongly marked in respect of temperature, rainfall and weather generally. Hot dry summers from mid-May to mid-September and rainy, rather changeable, winters from November to mid-March are separated by short autumn and spring seasons of rapidly changing weather conditions (Republic of Cyprus, Department of Meteorology, 2019).

The annual mean temperature for Cyprus varies from year to year, from 16.1°C to 19.7°C, with an average of 17.5°C. Annual precipitation in Cyprus has decreased on average by about 100mm in 80 years. Winds over the island of Cyprus are quite variable in direction with orography and local heating effects playing a large part in determining local wind direction and strength.

5.2.1.2 Air Quality

Air pollution in Cyprus has become a major problem in several areas during the last decades.

Transportation (photochemical pollution) has become a prominent source of pollution, also due to increasing tourism on the island, ever more replacing industrial pollution.

Natural sources of pollution (sea salt and natural dust) still play an important role on the less populated parts of the island as can be seen for $PM_{2.5}$ and PM_{10}. In particular, contribution from Sahara and Middle East dust, soil erosion from the Balkans and Turkey, as well as sea salt in combination with the dry climate significantly affect Cyprus air quality, resulting in several exceedances (Department of Labour Inspection, 2020).

O_3 exceedances have also been registered in 2019 due to the prevalent climate conditions in Cyprus where high ambient temperatures and high solar radiation contribute to its production as well as O_3 precursor's transportation from the east Mediterranean and neighbouring countries.

These events are even more intense in rural areas, where the lack of NO produced from vehicles emissions cannot hinder the generation of O_3 during photochemical reactions.

Despite that, emissions of all pollutants generally show a decreasing trend (Environmental European Agency, 2020) with the exception only of heavy metals from 2000 to 2018, mainly due to the use of cleaner fuels, the use of new technology vehicles, and reduction of emissions from industrial plants and the application of relevant European environmental legislation.

In order to meet national annual emission reduction targets, additional measures must be taken in the transport, industrial and agricultural sectors which contribute significantly to the overall emissions of Cyprus (Department of Labour Inspection, 2020).

Cyprus air quality is assessed through a network of advanced monitoring stations operated by the Department of Labour Inspection (DLI), of the Ministry of Labour and Social Insurance. The Zygi Industrial Station is located near both the Vasilikos Power Plant and Vasiliko Cement Factory (Coordinates: 34 43‘ 46‘‘ N 33 20‘ 15‘‘ E). The station is representative of air quality in an area of at least 250 m × 250 m and has been placed downwind of these sources in the nearest residential area, 1 km from the project area. According to Air Quality Index (AQI) and PM2.5 air pollution reported on the IQAir portal, the air quality in areas surrounding Zygi are good, with a score of 48 in US AQI and PM2.5 the main pollutant with a concentration of 11.5µg/m^3 (10/03/2021).

No specific air data quality is available at the landfall site but provided the area is located adjacent to the Vasilikos port it is expected that the site is already exposed to a certain level of pressure although air quality may be good and would depend a lot on the dynamics of the site and levels of emissions in the surrounding areas.

5.2.1.3 Noise

Environmental noise, per Directive 2002/49/EC is defined as unwanted or harmful outdoor sound created by human activities, including noise emitted from transport, road traffic, rail traffic, air traffic, and sites of industrial activity.

The Department of the Environment, which is the competent authority, oversees the preparation of strategic noise maps, relevant action plans and reports to the European Commission every five (5) years (Department of Environment, 2021). Two cycles of noise mapping were completed in 2008 and 2015 focusing on maximum limits for major roads in Nicosia, Limassol, Larnaca and Paphos and minimum limits for major roads in Nicosia and Limassol.

An actual representation of the noise levels in certain areas, especially near the Vasilikos area, still need to be implemented, as noted in the reasoned opinion published in December 2020 (European Commission, 2020).

Provided the onshore areas are is located adjacent to the Vasilikos port and the presence of some industries (e.g. cement industry) it is expected that the site is already exposed to a certain level of anthropogenic noise.

5.2.1.4 Geomorphology, Geology and Hydrogeology

An average ground elevation of 10-15 m.s.l. characterises the coastal plain in the area, with a gentle inclination to the south, while a small valley expands between the Vasilikos and Maroni rivers to the north and east. To the west, the smooth trend is terminated abruptly by a very steep cliff that dominates over the flat sub recent coastal plain (Atlantis, 2019).

The local geology of the wider area included in the Revised Master Plan for the Vasilikos Area (2020) mainly consists of the following geological formations:

- Q – Biocalcarenites, sandstone, sandy marl and conglomerates (Apalos-Athalassa Kakkaristra formation)
- H – Sand, silt, clay and gravel (Alluvium -Colluvium formation);
- Ml-Mu – Chalk, marl, marly chalk, chalky marl and calcarenites (Pachna formation);
- Ku3-Ou – Chalk, marl, marly chalk, chalky marl in places as bands or nodules (Lefkara formation);
- Ku2 – Melange of Triassic and Cretaceous blocks of yellow quartz sandstone, grey siltstone, serpentinite and other lithologies, integrated in a marble of silt and bentonite clay (Moni formation);
- Q2 – Calcarenites, sand and gravel (Terrace deposits).

According to the World Reference Base for soil (Food and Agriculture Organization of the United Nations, 2015), the dominant soil types consists of Calcaric Cambisols and Regosols, surrounded by Calcaric Lithosols and, minimally northward, Gypsic Xerosols.

The project area designed for the construction of EastMed facilities lies on three bodies of groundwater, namely:

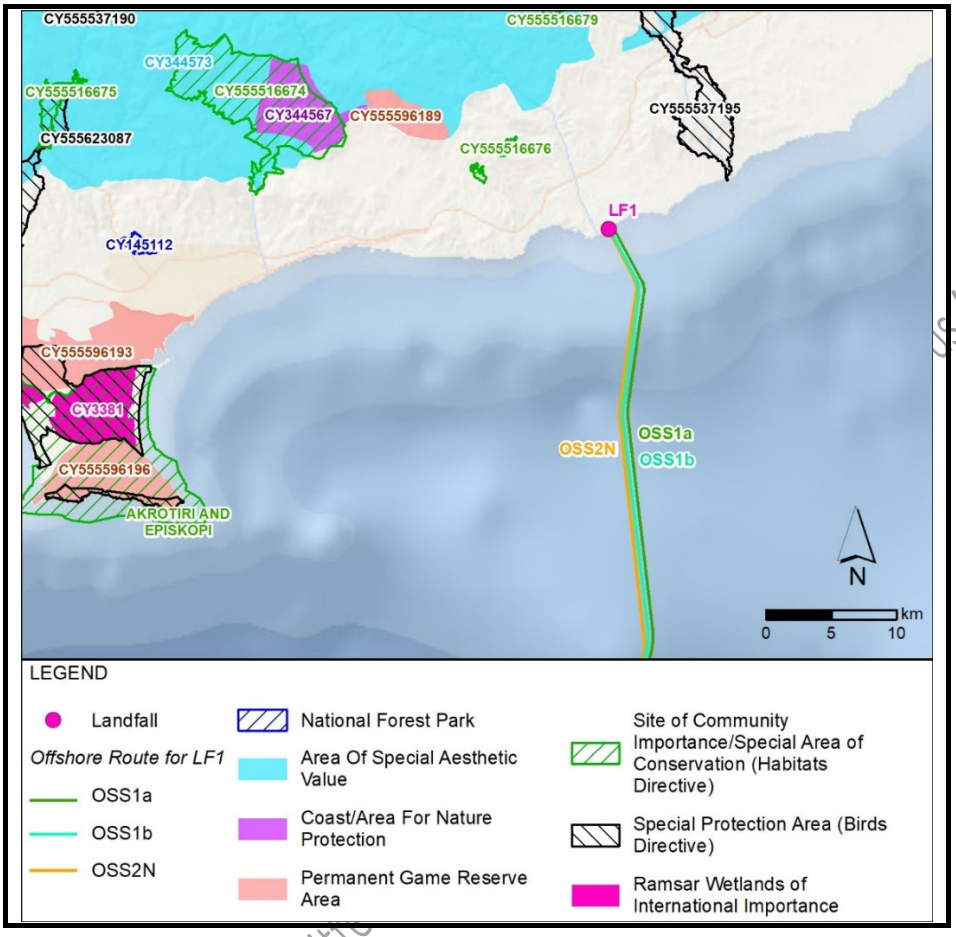
- Maroni Gypsum Aquifer on the coast; the aquifer lies 250 to 300 m b.g.l.;
- Softades-Zygi Coastal Plain Aquifer which develops along a 25-km-long coastal strip, stretching from Softades village to the Vasilikos River in the Mari village area;
- Vasilikos Riverbed Aquifer which overlies the Maroni Gypsum Aquifer and is directly connected through karstic sinkholes and other openings occurring across the riverbed 4.5 km from the sea, which drain the groundwater into the gypsum, resulting in limited quantity downstream.

5.2.1.5 Sensitive and Protected Areas

In Vasilikos Bay an intense industrial activity and human exploitation have led some level of deterioration of the natural environment with noise, dust and pollution (Poten & ALA, 2015b). No sensitive habitats have been identified in the vicinity of the onshore installations location. The areas located around are in most cases either cultivations or brownfields with previous activities.

Closest protected areas are Potamos Pentaschinos (Special Protection Area - CY6000008) and Periochi Asgatas (Site of Community Importance - CY5000007), both at some 7.5km from the landfall site.

Figure 5.11, below, shows the distribution of the sensitive in the wider area around the landfall site including the protected area above mentioned.



Prepared by/reference: ERM. Source: https://www.protectedplanet.net/en and https://www.protectedplanet.net/en

Figure 5.11 Onshore Protected Areas at Project Scale[20]

5.2.1.6 Landscapes

The main landscapes of the Cypriot south-east coast find a correspondence in the land cover classification.

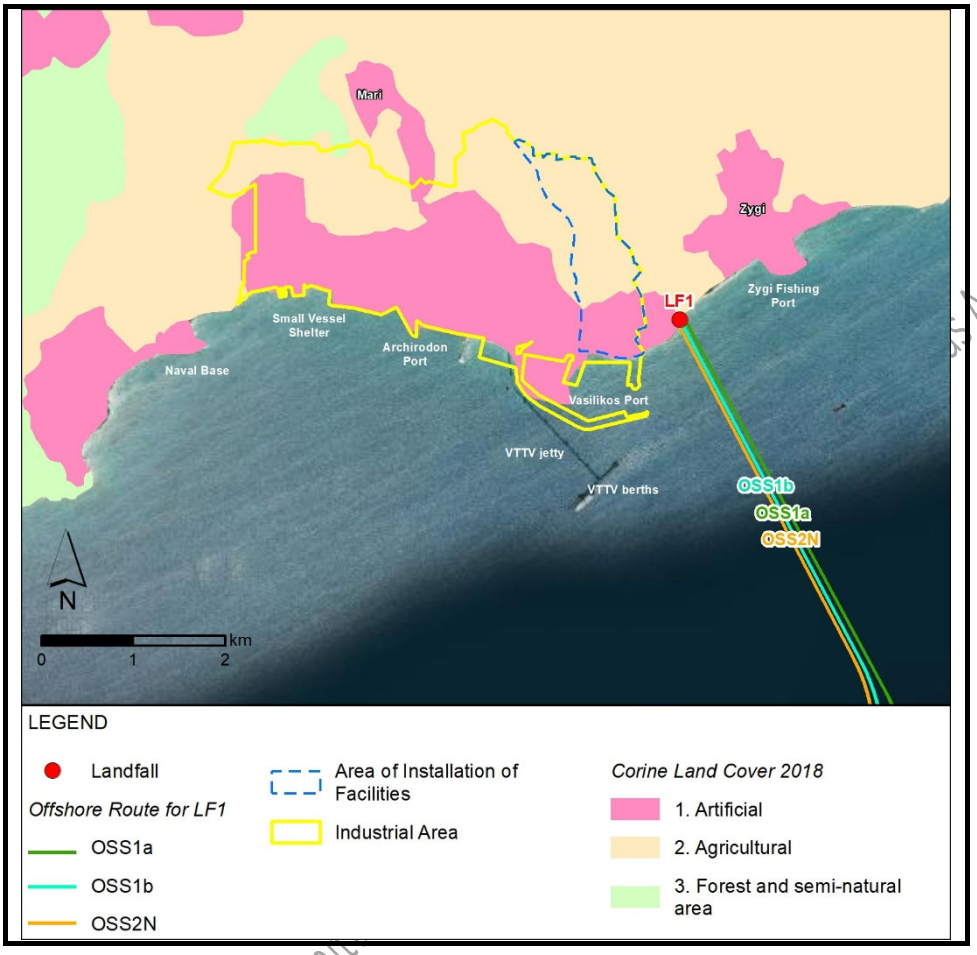
[20] No Protected Areas designated under Cypriot National System are located in the project footprint and/or in the Vasilikos area

The major urban areas (Paphos, Limassol, Larnaca, Famagusta) are spread along the southern coast; relevant ecological areas like wetlands and coastal lagoons are close to these main urban settlements.

The overall shoreline is uneven and rocky with sandy beaches and many small coves. The coastal zone is characterised by rich wildlife, beaches, open areas, cliffs, capes, harbours, sand dunes, accumulations of pebbles, and marine and shore areas of prime ecological and scientific value (Constantinides, 2002).

As is the case for most Mediterranean coastal zones, the coastal area of Cyprus is characterised by a high concentration of population and economic activities. Almost half of the total population live and work in this narrow strip where the higher percentage of the tourism industry is located (Coccossis et al., 2008). Coastal urbanization and coast-centred economic growth started in the seventies have affected the quality of coastal landscape in many parts of the island.

The Vasilikos area is mostly occupied by artificial and agricultural areas and marginally by forest and semi-natural areas (Figure 5.12).



Prepared by/reference: ERM. Source: https://land.copernicus.eu

Figure 5.12 Land Cover in the Wider Area of Vasilikos

Vasilikos Bay has been shaped by long-term industrial and other forms of intensive human activity which over the years had an impact to its natural environment, as well as to the landscape aesthetic character (Poten & ALA, 2015b). Tall structures dominate the horizon, such as the EAC Vasilikos Power Station chimney with a height of 125m and the Vasiliko Cement Works, while quarrying activities in the area and the creation of pits and spoil tips have resulted in further disfiguration of the natural landscape. In particular, two quarries owned by Vasiliko Cement Works are located in Mari and Vasilikos respectively and exploited for cement production (Vasiliko Cement, 2021). West of the EAC Vasilikos Power Station a new power station of private interest (Power Energy Cyprus) has acquired all necessary permits and is under construction. Three terminal stations related to petroleum product storage and management are also located within the Vasilikos area (Petrolina

(Holdings) Public Ltd Terminal Station, YUGEN LTD Terminal station and VTT VASILIKOS Ltd Terminal Station) (Rogan Associates, 2020). A new Power Energy Cyprus (PEC) station is under construction, north to the new port area, and two tank farms (the ELPE and KODAP storage areas) are planned north to the area of installation of facilities.

In addition, several coastal infrastructures are located in the area, such as Archirodon Port which will implement further infrastructure in their vicinity, like the Floating Storage and Re-gasification Unit (FSRU) terminal (S&P Global Platts, 2020), and Vasilikos Port currently under evaluation for implementation in the near future. Moreover, other smaller scale infrastructure can be found within the Vasilikos Energy Centre area including pier for the transfer of aggregates (M.S. (Skyra) Vassas Ltd), sulphuric acid storage tanks, fodder warehouse, fish farms, unit for the collection, treatment and separation of olive products and a scrap metal process unit. A Navy Base of the National Guard (Marios Florakis Navy Base) is located at the wider area of Vasilikos approximately 3.3 km west of the Vasilikos Energy Centre (industrialised area) which is expected to be further developed for the exclusive use of the Ministry of Defence (Rogan Associates, 2020).

5.2.1.7 Biodiversity

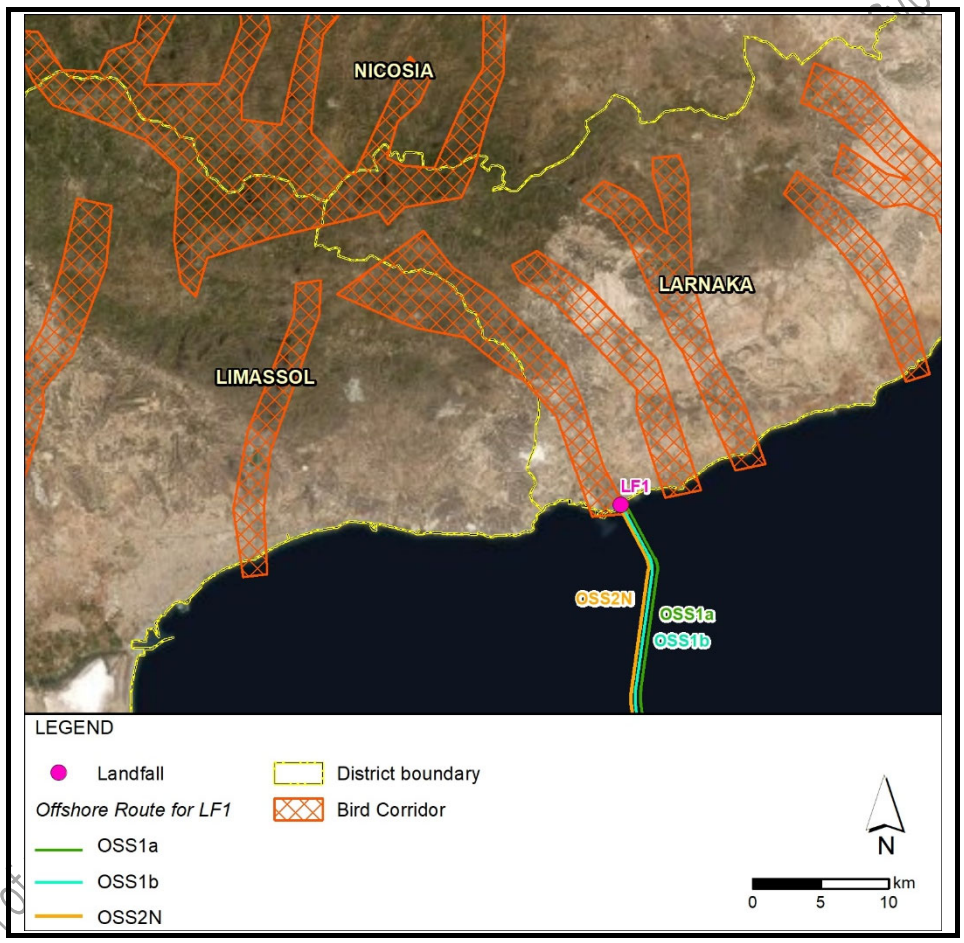
The geographic position of Cyprus, its location at the crossroads of three continents, its isolation over the centuries from the mainland and its climate conditions have all led to great biological diversity and a significant number of native and endemic species. Being an island, Cyprus has a strong evolution of endemic elements, while surrounded by big continents it incorporates elements of neighbouring land masses.

According to the latest data (2019) provided by the Department of Forests (Ministry of Agriculture, Rural Development and Environment), 1649 native flora species and subspecies have been recorded in Cyprus, as well as 254 naturalised (non-native) flora species, 43 hybrid and 85 undefined species. Endemic plants in Cyprus account for 141 species and subspecies, with a respective percentage of 8.55% for subspecies and 7.15% for species. Currently, the fauna of Cyprus includes 33 mammals, 25 species of amphibians and reptiles, 400 species of birds, 250 fish species and a great variety of insects (approximately 6000). Furthermore, the presence of 42 terrestrial habitats is confirmed in Cyprus, 11 of which are characterised as priority habitats (endangered habitat types) which are mainly distributed within the European Union.

A survey was performed in 2015 in the greater Vasilikos area in order to provide information for the Strategic Environmental Assessment (SEA). No protected or endangered animal species were identified during the site visits, and the literature outlined that fauna within its boundaries was restricted to the presence of common lizards, weasels and mice, as well as common invertebrates

(Poten & ALA, 2015b). Mammals (7), reptiles (20) and birds (33) species recorded in the area are listed in the relevant Strategic Environmental Assessment (SEA) to which reference should be made for further information.

The consistent number of birds recorded in the area could be attributed to the presence of the Vasilikos, Maroni and Pentaschinos rivers, which are crossed by three migratory bird corridors. Indeed, Cyprus lies along one of the major flyways between European breeding grounds and overwintering areas in Africa and the Middle East with over 200 species occurring as regular passage migrants in varying numbers (Figure 5.13).



Prepared by: ERM. Source: Strategic Environmental Assessment of the Vasilikos Area Master Plan (Poten & ALA, 2015b)

Figure 5.13 Migratory Bird Corridors in the Wider Vasilikos Region

Based on the information presented above it can be concluded that the area is, in general terms, not considered as an area of significant ecological value. The areas where the EastMed facilities are planned to be built include a combination of agricultural uses (i.e. yearly crops), areas where past activities where developed such as British East Mediterranean Relay Station and patches of natural habitats, although not in optimal conditions.

Considering the greater Vasilikos area (i.e. including areas beyond the proposed project footprint) the most relevant ecological values can be found along the rivers and temporary watercourses, including numerous taxa such as *Platanus orientalis* (plane tree), *Acacia saligna* (acacia), *Eucalyptus gomphocephaia* (eucalyptus), *Cupressis sempervirens* (cypress), *Olea europaea* (olive tree),*Ceratonia siliqua* (carob), *Lavandula stoechas* (lavender), *Helichrysum conglobatum* (golden Cassidy), *Capparis spinosa* (caper brush), *Opuntia ficus-barbarica* (opuntia ficus-indica) and *Arundo donax* (giant reed).

Furthermore, five (5) rare plants have been identified in the greater Vasilikos region, which include *Erodium crassifolium, Phlomis brevibracteata Turrill, Ophrys kotschyi, Astragalus macrocarpus DC* and *Rumex vesicarius L*. A number of endemic species have been recorded in the area; however these are common throughout Cyprus. According to the Strategic Environmental Assessment (SEA) of 2015, the Department of Forests has confirmed the existence of one out of the five rare plant species (*Erodium crassifolium*).

More recent studies (Atlantis 2017, 2018) confirmed the scarcity of species in the area, providing a list of the most abundant species for flora and fauna. A partial list, according to the conservation status reported in the Red List of IUCN, is provided in the Table 5.4. In addition to these, several bat species are expected to be found on the area.

Table 5.4 List of the Onshore Species of Interest with their Related Conservation Status (IUCN Red List of Threatened Species)

Scientific Name	Common Name	Group	Conservation Status
Crocidura russula cypria	Cypriot shrew	Mammals	Least Concern
Rattus rattus	Black rat	Mammals	Least Concern
Mus musculus	House mouse	Mammals	Least Concern
Mus cypriacus	Cypriot mouse	Mammals	Least Concern
Falco vespertinus	Red-footed falcon	Birds	Near Threatened
Columba livia	Rock pigeon	Birds	Least Concern

Scientific Name	Common Name	Group	Conservation Status
Streptopelia turtur	European turtle dove	Birds	Vulnerable
Merops apiaster	European bee-eater	Birds	Least Concern
Upupa epops	Eurasian hoopoe	Birds	Least Concern
Hirundo rustica	Barn swallow	Birds	Least Concern
Hirundo daurica	Red-rumped swallow	Birds	Least Concern
Anthus pratensis	Meadow pipit	Birds	Near Threatened
Erithacus rubecula	European robin	Birds	Least Concern
Phoenicurus ochruros	Black redstart	Birds	Least Concern
Saxicola rubetra	Whinchat	Birds	Least Concern
Saxicola torquata	African stonechat	Birds	Least Concern
Oenanthe isabellina	Isabelline wheatear	Birds	Least Concern
Oenanthe oenanthe	Northern wheatear	Birds	Least Concern
Monticola solitarius	Blue rock thrush	Birds	Least Concern
Turdus merula	Common blackbird	Birds	Least Concern
Turdus iliacus	Redwing	Birds	Near Threatened
Hippolais pallida	Eastern olivaceous warbler	Birds	Least Concern
Sylvia communis	Common whitethroat	Birds	Least Concern
Lanius senator	Woodchat shrike	Birds	Least Concern
Pica pica	Eurasian magpie	Birds	Least Concern
Corvus corone cornix	Hooded crow	Birds	Least Concern
Passer hispaniolensis	Spanish sparrow	Birds	Least Concern
Fringilla coelebs	Common chaffinch	Birds	Least Concern
Emberiza caesia	Cretzschmar's bunting	Birds	Least Concern
Miliaria calandra	Corn bunting	Birds	Least Concern
Acanthodactylus schreiberi	Fingered lizard	Reptiles	Endangered

Scientific Name	Common Name	Group	Conservation Status
Chalcides ocellatus	Mediterranean ocellated skink	Reptiles	Least Concern
Mediodactylus kotschyi	Kotschy's gecko	Reptiles	Least Concern
Ophisops elegans	Snake-eyed lizard	Reptiles	Least Concern
Phoenicolacerta troodica	-	Reptiles	Least Concern
Stellagama stellio cypriaca	Cypriot stellion	Reptiles	Least Concern
Dolichophis jugularis	Large whip snake	Reptiles	Least Concern
Hemorrhois nummifer	Coin-marked snake	Reptiles	Least Concern
Macrovipera lebetina	Levantine viper	Reptiles	Least Concern
Malpolon insignitus	Eastern Montpellier snake	Reptiles	Least Concern
Typhlops vermicularis	European blind snake	Reptiles	Least Concern
Bufo viridis	European green toad	Amphibians	Least Concern
Rana ridibunda	Marsh frog	Amphibians	Least Concern

5.2.1.8 Ecosystem Services

The onshore section of the EastMed Project, considering wider Vasilikos area, includes a number of habitats and agricultural lands and their associated ecosystem services. These are described, in general terms, within the paragraphs below. However it should be noted that the areas where agricultural lands or natural habitats are present are rather limited.

According to the checklist developed by IPIECA and described in Section 5.1.1, habitat types found in the onshore section are the nearshore/transition zone and cultivated land, which include any areas that have been converted to support human agricultural uses.

Generic services provided by cultivated land can include food in the form of grains, fruits and vegetables, plant fibres for clothing and other uses, and woody products for a variety of uses. In addition, biofuel crops can be grown to provide energy. Some types of agriculture provide local climate and air quality regulation services (most likely from tree species). Certain crops may have a net carbon sequestration role when compared to fossil fuel use. When poorly managed, cultivated crops can lead to severe erosion problems.

Agriculture is culturally valued as a source of livelihood and independence. Some areas may have served as cultivated land for generations, and hence have cultural significance to the communities and individuals who rely upon them (IPIECA, 2011). No preliminary evaluation is provided by IPIECA for agricultural land, and nationally the methodology for the estimate of ecosystem services is still under implementation (Vogiatzakis I. et al., 2020).

5.2.1.9 Pre-existing Pollution

A European survey was conducted in 2011 (Joint Research Centre, 2013) to determine the status and management of contaminated sites within the member states.

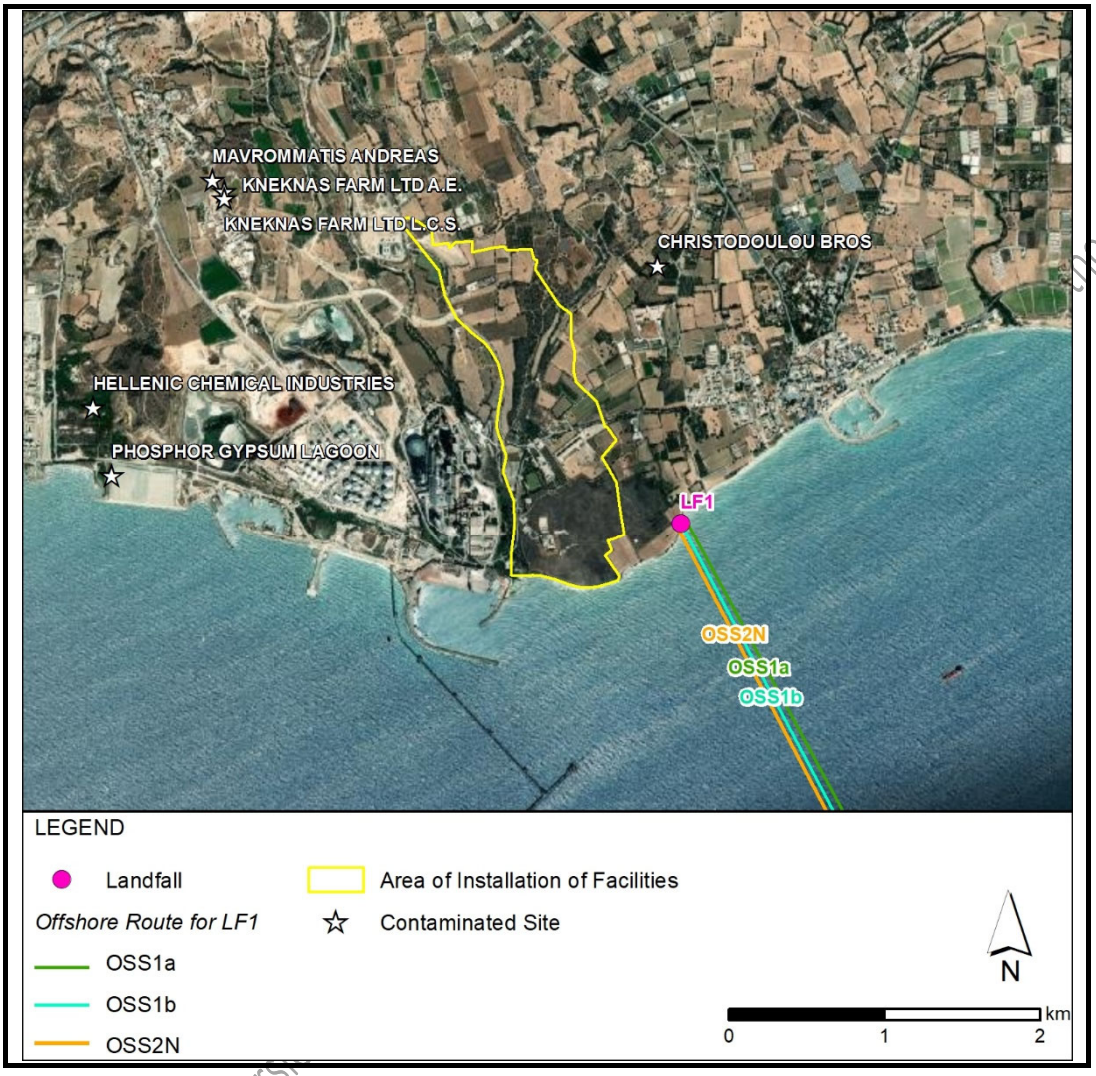
As a result, 114 potentially contaminated sites (PCS) and 4 contaminated sites (CS) were identified at the national level. Major industrial and commercial activities responsible for contamination were related to energy production, mining sites and gasoline stations, reflecting the major pollutants responsible for soil and water contamination (i.e. heavy metals, BTEX and other pollutants).According to the statistical data retrieved from the Environmental European Agency related to the management of contaminated sites, the production sector accounts for 41% in total as responsible for soil contamination, while mining and other services and service sectors account for 30% and 29%, respectively. More specifically, the breakdown of the activities causing soil contamination is classified as follows: 55% municipal waste treatment and waste disposal, 10% industrial waste and disposal, 27% industrial and commercial activities, 7% storage and 1% transport spills on land.

Locally, six (6) contaminated sites have been reported (Poten & ALA, 2015b) in Vasilikos, namely:

- Mavrommatis Andreas (1);
- Kneknas Farm Ltd A.E (2);
- Kneknas Farm Ltd L.C.S (3);
- Hellenic Chemical Industries (4);
- Christodoulou Bros (5);
- Phosphor Gypsum Lagoon (6).

All these sites, with the only exception for Christodoulou Bros (5), are located in the western part of the greater Vasilikos area and even the latter is located at an approximate distance of 1 km from the proposed project location (Figure 5.14). Since in July 2019 the Cypriot government commissioned a company to restore the phosphogypsum deposit area in the Vasilikos area, the phosphors stock is expected to be removed within next years.

In addition to the above, it should be noted that abandoned litter had been found scattered in the vicinity of the landfall and surrounding areas, which is possibly the result of littering.



Prepared by/reference: ERM. Source: Geological Survey Department

Figure 5.14 Contaminated Sites (stars) in the Vasilikos Area (Geological Survey Department)

5.2.2 Socioeconomic

5.2.2.1 Introduction

Cyprus is divided into 6 administrative districts (i.e. Famagusta, Keryneia, Nicosia, Paphos, Limassol and Larnaca), each named for its administrative capital.

The Cyprus local government system consists of unitary (single tier) urban municipal councils (30) and rural community councils (351) which are governed by separate laws (Union of Cyprus Municipalities, 2021; Union of Cyprus Communities, 2021).

The Vasilikos industrial area is located in the Larnaca district in the southern part of the island, specifically at 30 km from the city of Larnaca near the boundary with the Limassol District, and surrounded by nine (9) main communities (i.e. Mari, Zygi, Kalavasos, Tochni, Maroni, Psematismenos, Choirokoitia, Asgata and Pentakomo).

In 2011, the nine (9) communities surrounding the Vasilikos area had a population ranging between 158 and 737 people. The specific communities in the area are Mari (158 people), Zygi (589 people), Kalavasos (737 people), Tochni (424 people), Maroni (710 people), Psematismenos (271 people) and Choirokoitia (632 people) within the Larnaca district, and Asgata (417 people) and Pentakomo (644 people) in the Limassol district. In the period 2001-2011, the majority of the communities registered an increase in the population, whereas Mari experienced a10% reduction in the population (Poten& ALA, 2015b).

5.2.2.2 Socioeconomic Context

Specifically, as reported in the Vasilikos Master Plan of 2020 (Rogan Associates, 2020), the current uses within the Vasilikos industrial area starting from the west are the following:

- Power Energy Cyprus (PEC) (north of the Naval Base);
- Vasilikos Electricity Generation Station of the EAC;
- Petrolina (Holdings) Public Ltd Liquid Fuel Terminal (north of Archirodon Port);
- Vasiliko Cement Factory (north of Vasilikos Port);
- Ecofuel Cyprus Facilities (northwest of Port Vasilikos);
- Sulphuric acid storage facilities (near its land edge pier VTTV);
- Liquid Fuel Storage Terminal of the company Hellenic Petroleum Cyprus;
- Facilities of the company Economides Scrap Metal;
- Feed Storage.

The Vasilikos Master Plan Study area is included in Map n. 3 – Appendix A.

The Vasilikos industrial area is connected to Limassol, Larnaca and Nicosia via the A1 Nicosia-Limassol highway and the old B1 Nicosia-Limassol road. Furthermore, there is a network of secondary (E) and local roads (F), mostly connecting the areas of the district.

Cyprus has an open, free-market, service-based economy. The World Bank classifies Cyprus as a high-income economy.

Last updated data from 2018 divides the labour force per sectors as follows: 81.2% services, 16.6% industry and 2.2% agriculture (Statistical Services of Cyprus, 2019).

The Vasilikos area is the major growth hub for the area of study, in which there is a concentration of large numbers of industries such as the cement factory, the petroleum facilities and more. The primary sector is a significant contributor to the local economy and more particularly from agriculture, livestock and fisheries (Poten & ALA, 2015b).

The Cyprus energy sector is gaining serious momentum due to the already established involvement of major oil and gas companies in Cyprus in the hydrocarbon sector – establishing the country as a key player in the region, following the discovery of natural gas reserves in the Cyprus offshore.

In the Vasilikos area in 2003 and 2008, the Government of Cyprus expropriated land for construction of the Vasilikos Energy Centre (VEC) which was to comprise an LNG re-gasification terminal to import LNG and storage for oil products. As stated in the SEA (Poten & ALA, 2015b), the policy to import gas would benefit the Electricity Authority of Cyprus (EAC) by eliminating the need to retrofit flue gas desulphurization (FGD) at two oil-fired units at the Vasilikos power station and also by reducing CO2 emissions because the availability of natural gas would permit construction of more efficient, gas-fired combined cycle gas turbine (CCGT) power plants. Furthermore, the area of Vasilikos was characterized as suitable for industrial development, as it already hosts the power station of the Cyprus Electricity Authority in Vasilikos, the cement production facilities of Vasiliko Cement Factory, oil storage terminals and other local industries.

Cyprus has several commercial, industrial and tourist seaports and in the recent years became a strategic cargo transhipment and cruise liner hub.

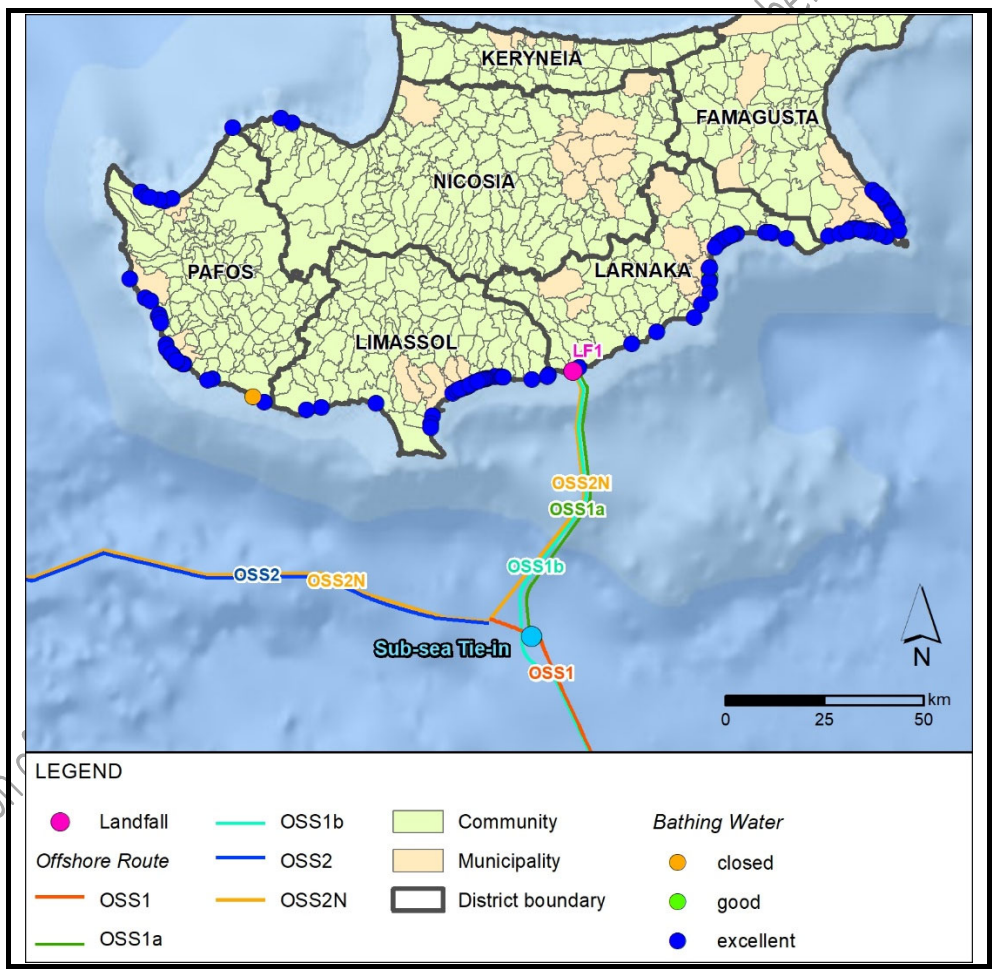
Currently, Vasilikos Port is mostly dedicated to cement import/export. The planned developments for the Vasilikos onshore and nearshore area follow the recently developed daft updated Master Plan (October 2020): future LNG developments, a bitumen berth, an upgrade of the VTTV jetty, submarine power cable (EurAsia Interconnector) and relocation of Archirodon Port (which now includes a small harbour used by local fishing vessels) (see Section 2.1.4).

A small harbour is located on the west side of Vasilikos Bay (i.e. the 'Evangelos Florakis' Naval Base) that often carries out naval and shooting exercises in the Zygi firing range area. In the nearby community of Zygi, there are a fishing shelter and a marina, with a capacity for berthing approximately 250 vessels (Poten & ALA, 2015b).

In the area of Vasilikos, there are some anchorage areas that could be of interest to the project area. Moreover, there are several marine safety and exclusion zones within the Vasilikos Port related to the activities of the area that impact shipping and marine activities (Poten & ALA, 2015b).

Tourism occupies a dominant position in the Cyprus economy at22.7% of GDP (Statistical Services of Cyprus, 2019). It has proved to be the most resilient of Cyprus' commercial sectors and contributes a great deal to local employment (Statistical Services of Cyprus, 2020).

Key tourist areas in Cyprus are Paphos, the Famagusta region, Nicosia, Limassol and Larnaca (Cyprus profile, 2018).Cyprus coasts boast excellent water quality status (EEA, 2020b) (Figure 5.15). That is, the European Environment Agency acknowledged that it has the greatest number of 'excellent' beaches for swimming, and the EU ranked Cyprus as first in Europe for the ratio of beaches that received a 'Blue Flag' status. The closest high quality beach from the landfall site/onshore facilities is located some 5 km to the east (Kalymnos' beach). The precise landfall site, in fact, is currently exposed to coastal erosion and there are no touristic facilities as it usually corresponds to rather industrialized sites.



Prepared by/reference: ERM

Figure 5.15 Status of Beaches for Swimming in Cyprus (extract) (EEA, 2020b)

Cyprus is currently developing a new tourism strategy aimed at attracting tourists with greater spending power. For this reason, luxury marinas and hotel developments are springing up in all coastal towns. Another recent trend in the ROC's tourism industry concerns the development of nautical tourism.

The Vasilikos area plays a role in the development of the touristic sector in Cyprus. Many coastal and inland communities host a number of touristic accommodation, especially agritourism and other supplementary facilities such as restaurants and coffee shops that have been operating for many years (Poten & ALA, 2015b).

5.2.3 Cultural Heritage

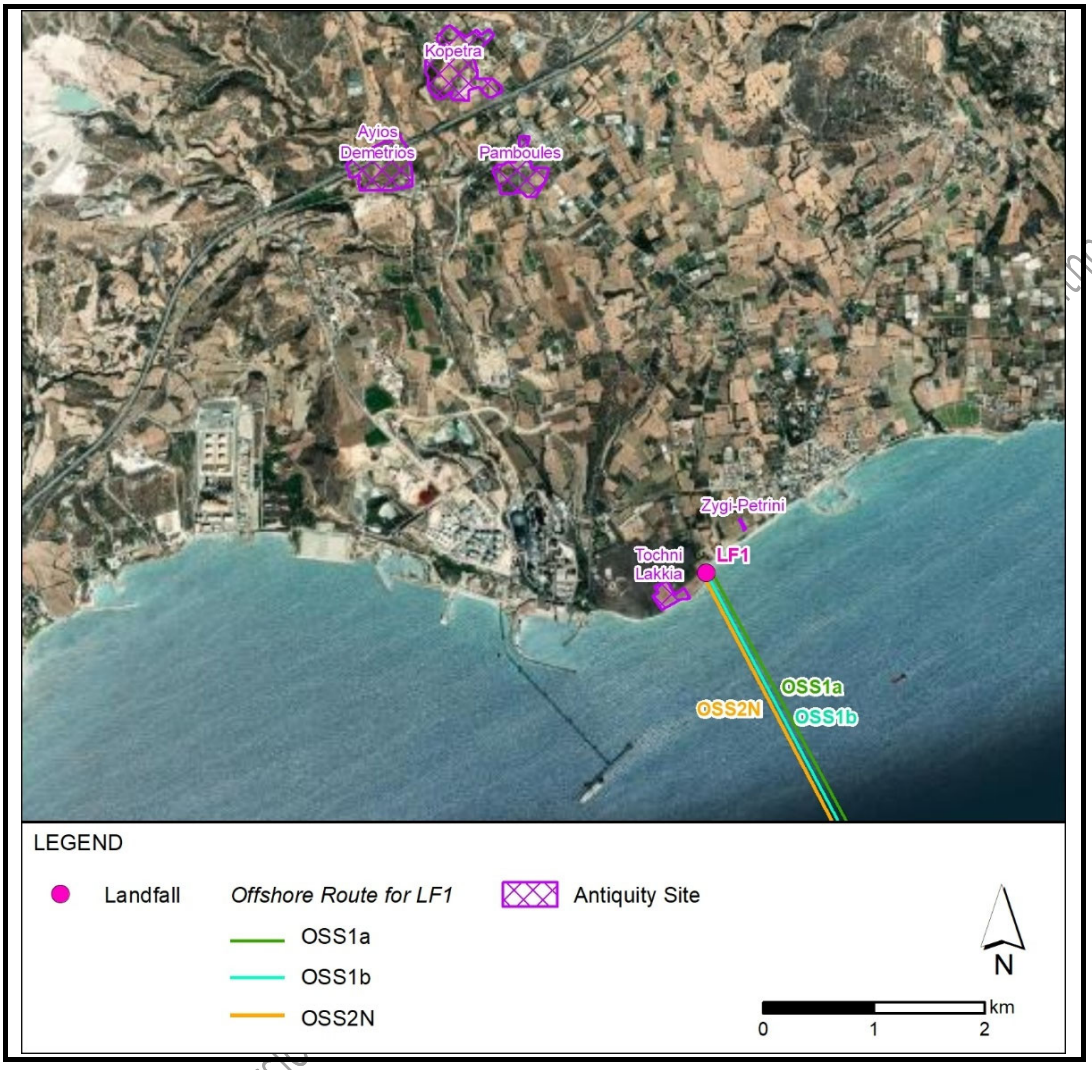
Cyprus presents a rich cultural landscape that involves hundreds of archaeological sites scattered throughout the island representing various historical periods in its evolution (Ministry of Foreign Affairs, 2021). According to the Antiquities Department, there are ten (10) archaeological sites in the Vasilikos area. Under Cypriot law, the Department of Antiquities of the Ministry of Transport, Communications and Works categorizes antiquity sites either as Class A (no development allowed), or Class B (any development requires authorisation and supervision by the Antiquities Department).

To the north of the Vasilikos industrial area, in the Kalavasos administrative area, there are three (3) sites that include both Class A (i.e. Pamboules) and Class B (i.e. Kopetra, Ayios Dhimitrios) antiquities. The rest of the sites are currently classified as Class B antiquities (Figure 5.16).

Since 1976, the Vasilikos Valley Project has been subjecting the wider area to archaeological research and survey and has identified numerous archaeological sites across the region. Among the sites to be discovered was Tochni-Lakkia in the 1980s, a Late Bronze Age site along the coast close to the location identified for LF1. The full horizontal extent of Tochni Lakkia has not yet been firmly established, and a number of small surveys in 2013 & 2014 have suggested that it possibly extends over a large area, including offshore (see section 5.1.3 above). It is thought that Tochni-Lakkia likely served as the port and entrepôt for Ayios Dhimitrios. Tochni Lakkia is currently classified as a Class B antiquity site (Poten & ALA, 2015b).

A short distance east lies the important Late Roman site of Zygi-Petrini, which stretching to 2 ha in size, has recently been identified as a possible production centre for a smaller sub-type of the LRA1 amphorae (LRA1a), ubiquitous across the Late Roman world of the 5th to 7th centuries AD[21]. The Vasilikos Valley Project surveyed and examined the site in the 1980s, as did the Maroni Valley Archaeological Survey Project in the 1990s. It represents just one of a number of Late Roman settlements in the Maroni and Vasilikos valleys that were likely engaged in the sea trade in the eastern Mediterranean.

[21]Manning, S., Monks, S., Sewell, D., Demesticha, S. 2000. Late Roman Type 1a Amphora production at the Late Roman Site of Zygi-petrini, Cyprus.



Prepared by/reference: ERM. Digitized from SEA of the Vasilikos Area Master Plan (Poten & ALA, 2015b)

Figure 5.16 Onshore Archaeological sites

6 POTENTIAL IMPACTS AND MITIGATION MEASURES

6.1 Introduction

This section presents the main potential impacts expected from the project. These cover environmental, social and cultural heritage aspects of both the onshore and offshore portions of the EastMed Pipeline Project. In addition, the potential prevention and mitigation measures preliminarily identified as a precaution shall be confirmed as soon as the final project configuration will be fixed and more baseline data will be gathered during the ESIA phase.

Information is presented in a tabular format and organized in a number of tables as follows:

1. Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Offshore and Nearshore Construction and Pre-Commissioning Phase (Table 6.1);
2. Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Offshore and Nearshore Operation (Table 6.2);
3. Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Onshore Construction and Pre-Commissioning Phase (Table 6.3);
4. Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Onshore Operation (Table 6.4).

For activities and approach to the Decommissioning refer to Section 6.3.3.

Table 6.1 to Table 6.4 present the following information:

Baseline Component	Potential Significant Impacts	Potential Receptors	Potential Prevention/Mitigation Measures
Component potentially affected by the project (environmental, socioeconomic or cultural)	List of impacts that the project could cause on the basis of information currently available (project and baseline)	*Potential receptors:* list of potential environmental, socio-economic and cultural heritage entities that may be affected by the project	Preliminary control measures proposed to mitigate and prevent significant adverse impacts

Construction, pre-commissioning, operational and decommissioning impacts are organised in baseline components as follows:

- Air quality and climate factors;
- Noise and vibration;

- Geology and soils;
- Resources and waste;
- Water environment, water quality;
- Biodiversity and nature conservation;
- Socioeconomic Impacts and Community Health and Safety;
- Cultural Heritage.

It has to be noted that during the development of the ESIA also the cumulative impacts will be assessed, taking into account the existing and planned projects of the Vasilikos area, including the planned extension of the Vasilikos Port.

6.2 Offshore and Nearshore

6.2.1 Construction and Pre-Commissioning

Table 6.1 Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Offshore and Nearshore Construction and Pre-Commissioning Phase

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
Air Quality and Climate Factors	Impacts from emissions to the atmosphere from machinery and vessels (i.e. power generator equipment, on-board cranes, excavators, compressors for hydrotesting, etc.).	Receptors will potentially include residential population or recreational users (where close to the landfalls), workers, fauna and flora species, atmosphere, water quality, etc.	• Equipment, vehicle and vessel certifications (e.g. compliance with EU and Marpol); • Use of low sulphur fuels; • Equipment and vehicle maintenance; • Training operators on machineries' optimal use; • Modelling pollutant dispersion from main emission sources (generators, compressors) in order to optimize schedule of construction; • Pipeline-laying vessel will comply with Directive 2012/33/EU amending Directive1999/32/EC as regards the sulphur content of marine fuel.
Noise and Vibration	Impacts from noise and vibration from machinery, construction machinery, and compressors for hydrotesting.	Noise receptors will include residential population and recreational users in the landfall area, fishermen, workers, fish and marine mammals.	• Regular machinery and engine maintenance; • Good construction site management; • Using specific mitigation on noisy equipment (acoustic shielding) if required; • Adequate personal protective equipment (PPE) for workers;

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
			• Underwater noise modelling of main noise emission sources (vessels) in order to optimize schedule of construction.
Geology, Soil	• Physical disturbance or accidental contamination of seabed through pipe laying vessels, hydrotest and excavation/trenching, seabed occupancy for pipe laying.	Sediment	• Construction site management plan; • Oil & chemical spill contingency prevention & planning.
Resources and Waste	• Use of large quantities of construction material; • Disposal of construction waste; • Transportation of construction material and waste; • Vessel and machinery fuel consumption; • Sewage (black and grey water) management and disposal; • Water use for pre-commissioning (hydrotesting).	Local communities	• Materials sourced and disposed of with sustainable procurement principles and from as close as possible to the project so as to minimise impacts of production and transport; • Identify beneficial uses or opportunities for recycling construction spoil and other waste wherever possible; • Waste management plan and system to be implemented; • Evaluation/assessment of water sources for hydrotesting so as to minimise impacts to other water users and aquatic habitats.
Water Environment - Water Quality	Accidental Oil & chemical contamination from machinery during construction and discharges from vessels.	Marine Habitats Local Economy (fishing).	• Operate all vessels in accordance with national and international standards (e.g. MARPOL); • Fuelling/bunkering procedure for machinery, generators, etc. on vessels; • Bounded or contained oil/fuel storage;

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
			• Oil & chemical spill contingency prevention & planning; • Chemical handling procedures; • Oil & Chemical spill response kit on vessels (where applicable); • Waste water management; • HSE training of all on-site personnel on environmental awareness and oil & chemical spill prevention and response; • Adoption of the Best Environmental Practices (BEP).
Biodiversity and Nature Conservation – Marine Ecology	<u>Potential impacts in shallow waters:</u> • Impact on relevant benthos communities/habitats such as seagrass species (especially *Posidonia oceanica*); • Potential loss of breeding grounds and nurseries for fish and shellfish populations due to seagrass habitat disturbance; • Impact on marine benthic fauna due to construction activities; • Depending on the precise location of the coastal and nearshore infrastructure there is a potential risk of adversely affecting rare or protected fauna of low mobility found	Includes receptors such as: Benthos habitats (e.g. *Posidonia* meadow, which is known to be present in the area), marine benthic fauna and localized rare or protected fauna species of low mobility (e.g. *Pinna nobilis*).	• Define pipeline alignments and techniques for landfall taking into account surveys result and design actions on the nearshore portion of the pipeline; • Training for support and supply vessels to avoid or minimise disturbance to marine mammals, sea turtles and monk seal and any other species to be identified in the ESIA phase • Operate all vessels in accordance with national and international standards (e.g. MARPOL); • Pipeline micro-rerouting to avoid core seagrass areas and other potential key benthos (where applicable); • Use equipment minimising silt loss and thus sediment re-suspension when crossing sea-grass areas. Also, plan dredging in short, intensive periods as sea-grasses can overcome shorter periods (days) with poor light conditions without major impact on their physiology; • Evaluate sediment dispersion during construction at the landfall area;

Translation of the official version submitted on 29/07/2021, issued for the benefit of Cyprus Authorities

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
	sporadically in the general project area due to construction activities near the coastline; • Introduction of alien marine species.		• Monitor impacts on flora and fauna at sensitive locations; • Prepare action plans for specific important species and habitats where necessary and possible; • Develop project-specific measures to prevent the import of alien species in compliance with the European Strategy on Invasive Species which includes the following actions: ➢ Prevention at source and on arrival; ➢ Early detection and rapid response.
	<u>Potential Impacts in deep water:</u> • Potential loss of localized deep water habitats (e.g. submarine canyons) in case construction works take place in their immediate vicinity; • Potential impact on megafauna as a result of surveys required for the pipeline installation, e.g. high resolution seismic surveys; • Introduction of alien marine species.	Includes marine mammals, deep water habitats and fauna species.	• Training for support and supply vessels to avoid or minimise disturbance to marine mammals, sea turtles and monk seal and any other species to be identified in the ESIA phase; • Operate all vessels in accordance with national and international standards (e.g. MARPOL); • Pipeline micro-rerouting to avoid core seagrass areas and other potential key benthos (where applicable); • Use equipment minimising silt loss and thus sediment re-suspension when crossing sea-grass areas. Also, plan dredging in short, intensive periods as sea-grasses can overcome shorter periods (days) with poor light conditions without major impact on their physiology; • Monitor impacts on flora and fauna at sensitive locations; • Prepare actions plans for specific important species and habitats where necessary and possible

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
			• Development of project specific measures to prevent the import of alien species, in compliance with the European Strategy on Invasive Species which includes the following actions: ➢ Prevention at source and on arrival; ➢ Early detection and rapid response.
Socioeconomic Impacts and Community Health and Safety	• Temporary disruption to vessel traffic; • Temporarily limiting of activities to fishermen; • Potential risk of collision with other sea users, or interference with other users which can involve safety issues • Temporary disruption of tourism activities; • Indirect effects from construction activities (see onshore).	Residential population, recreational users in the landfall area, fishermen in the local communities.	• Where feasible, minimise impacts to fishing/shipping areas by not expanding exclusions zones and planning of activities, for example, where possible reduce the time needed for construction activities; • Information to authorities/fishermen/mariners. Navigational warnings; • Lights, radio communications and other safety devices. • Consultation with communities to explain need and importance of exclusion zone, potential compensation for loss of livelihoods; • Social Management Plan; • Grievance Mechanism.
Cultural Heritage	• Direct impact – Damage or destruction of cultural heritage sites and artefacts through ground disturbance activities (dredging, ploughing, pipelaying etc.); • Direct impact – restriction of activities	• Marine archaeology sites (shipwrecks, plane wrecks, submerged settlements); • Cultural Heritage artefacts;	• Detailed and comprehensive Cultural Heritage baseline studies, including specialised geophysical field surveys and specialist interpretation of the results; • Strong engagement with regulators to develop an agreed approach to mitigation; • Develop a Cultural Heritage Management Plan for the

Baseline Component	Potential Significant Impact	Potential Receptor	Potential Prevention/Mitigation Measures
	in areas associated with intangible heritage traditions; • Indirect effects (e.g. through dredging, scouring), leading to deterioration, loss, or loss of access to cultural heritage.	• Intangible Cultural heritage traditions (fishing, etc.);	project (to include awareness training, any required monitoring or mitigation as required by regulators, a marine chance finds procedure and finds management plan among other elements). • ESMP within the ESIA to outline the Cultural Heritage Management Plan.

6.2.2 Operation

Table 6.2 Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Offshore and Nearshore Operation

Baseline Component	Potential Impact	Potential Receptor	Potential Prevention/Mitigation Measures
Air Quality and Climate Factors	• Limited standard emissions to atmosphere from pipeline maintenance activities (limited to vessel use for maintenance purposes).	Receptors will potentially include residential population or recreational users (where close to the landfalls).	• Environmental and Social Management System (ESMS) in place with specific maintenance and monitoring, waste management and recordkeeping procedures; • Standard good practice for operation of vessels; • Adoption of the Best Available Techniques (BAT) & Best Environmental Practices (BEP water).
Noise and Vibration	• Limited noise and vibration emissions from maintenance due	Noise receptors will include residential population in the coastal areas and	• ESMS in place with specific maintenance and monitoring, biodiversity management plans (as

Baseline Component	Potential Impact	Potential Receptor	Potential Prevention/Mitigation Measures
	to the use of vessels for maintenance purposes.	recreational users in the landfall area, fishermen, workers, nearshore fauna (including fish and marine mammals).	needed) and recordkeeping procedures.
Resources and Waste	• Generation, treatment and disposal of limited waste produced during maintenance operations (e.g. pigging operations where required); • Use of materials for repairs; • Use of fuel for vessels and machinery to undertake maintenance works.	Local communities	• ESMS in place with specific maintenance and monitoring, waste and raw materials sourcing plans and recordkeeping procedures; • Materials sourced and disposed of with sustainable procurement principles and from as close as possible to the project so as to minimise impacts of production and transport; • Identify beneficial uses or opportunities for recycling construction spoil and other waste wherever possible; • Waste management plan and system to be implemented.
Biodiversity and Nature Conservation – Marine Ecology	• Disturbance/ displacement of marine species during maintenance; • Physical presence of pipeline on the seabed.	Benthic communities and species	• ESMS in place with specific maintenance and monitoring, biodiversity management and monitoring plans, and recordkeeping procedures; • Develop project-specific measures to prevent the import of alien species; • Operate all vessels in accordance with national and international standards; • Post-ESIA monitoring of nearshore areas sensitive

Baseline Component	Potential Impact	Potential Receptor	Potential Prevention/Mitigation Measures
			habitats (in alignment with needs to be established in the ESIA per detailed benthos and sensitive species).
Socioeconomic Impacts and Community Health and Safety	• Interaction with fishing gear and risk to fishing vessels if pipeline becomes exposed or spans develop in the pipeline; • Vessel anchor impact, emergency anchoring or dragged anchoring in the vicinity of the pipeline;	• Local communities benefiting from tax paid at local / municipal level and national economy benefiting transport tariffs; • Interference with other sea users either national or international fishermen or fishing boats depending on origin of fishing vessel.	• Monitoring/surveillance of pipeline Stakeholder Consultation and Grievance Management; • In case the pipeline becomes a hazard for fishing vessels (e.g. hooking risk in case of a large free span gap, free span rectification works to be performed); • Identification of the EastMed offshore pipelines on the admiralty charts to create awareness to other users; • Agreements for proven damage compensation.
Cultural Heritage	• Direct impact - Modification of hydrodynamics, with subsequent effects on seabed scouring, exposure, deterioration, theft of Cultural Heritage sites such as wrecks, artefacts, debris fields etc.	• Known or unknown Cultural Heritage sites in the vicinity of the pipeline.	• Monitor pipeline as part of the routine maintenance to confirm no modification of seabed are occurring; • Monitor, in conjunction with the regulators, known and discovered cultural heritage sites in the vicinity of the pipeline.

6.3 Onshore

6.3.1 Construction and Pre-Commissioning

Table 6.3 Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Onshore Construction and Pre-Commissioning Phase

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
Air Quality and Climate Factors	• Impacts from dust generated by earth movement, excavation, vehicle movement, stockpiles, unpaved surfaces, etc. along the working strip, access roads, yards and camps.	• Receptors will include residential population, workers, fauna and flora species, cultural and historic aspects, atmosphere, water quality, etc.; • Typically in the vicinity of working strip of pipeline (within 100 m) and associated facilities (new access paths, construction camps). Specific distances depend on local conditions and could be up to hundreds of metres in certain unfavourable meteorological situations.	• Good construction site management practices such as covering loose materials, vehicle speed limits, watering dusty surfaces in dry weather, sheeting of trucks, etc.; • Environmental and social management plan; • Adoption of the Best Available Techniques (BAT) & Best Environmental Practices (BEP).
	• Impacts due to emissions to the atmosphere from machinery and vehicles (i.e.	• Receptors will include residential population, workers, fauna and flora species, water quality, as	• Equipment and vehicle maintenance; • construction traffic plans avoiding away from sensitive areas, densely populated areas or historic centres;

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	generators, excavators, bulldozers, side booms, trucks, cars, compressors for hydrotesting. etc.).	well as the overall Global - Greenhouse gases emissions (e.g. CO2). • The receptors are typically in the vicinity of working strip of pipeline (within 100 m) and up to hundreds of metres. Specific distances depend on local conditions.	• Train operators and drivers; • Use of low sulphur fuels; • Modelling of pollutant dispersion from main emission sources (generators, gas turbines) in order to optimize specific mitigation measures; • Monitoring of main emission sources (generators, compressors) -Environmental Monitoring Plan; • Environmental and social management plan; • Adoption of the Best Available Techniques (BAT) & Best Environmental Practices (BEP).
Noise and Vibration	• Impacts from noise and vibration from machinery, construction vehicles and pumps for hydrotesting.	• Noise receptors will include residential population (and sensitive receptors like schools and hospitals), workers, fauna, cultural/historical buildings, etc.). • Specific distances of impact depend on local conditions and source (typically between working strip and up to hundreds of metres).	• Good construction site management; • Limiting working hours close to sensitive receptors; • Use CE certified models of machines and vehicles; • Use specific mitigation on noisy equipment (acoustic shielding); • Locating noisy equipment (e.g. generators, compressors) away from noise sensitive receptors, if feasible; • Speed limits for vehicles; • Adequate Personal Protective Equipment (PPE) for workers; • Modelling of main noise emission sources (generators, compressors) in order to optimize specific mitigation measures; • Monitoring of main emission sources (generators, compressors) - Environmental Monitoring Plan; • Environmental and social management plan.

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
Geology, Soil	• Excavation works during construction including off-site quarrying where needed (Compressor and metering stations); • Clearance of working strip, logistic sites (yards, camp sites) and access roads will affect topsoil with the risk of resource loss; • Physical damage through soil compaction and accidental contamination should also be considered.	• Receptors include topsoil, mineral soils and geology of the area within working strip and the footprint of associated facilities (metering and pressure reduction station, compressor, metering station).	• Construction site management plan; • Topsoil preservation; • Reinstatement of topsoil following completion of construction activities; • Oil & chemical spill contingency prevention & planning; • Excavated soil should be returned maintaining its original composition (without mixing with the lower parts of the soil).
Resources and Waste	• Use of large quantities of construction material; • Disposal of construction waste; • Transportation of construction material and waste; • Vehicle and machinery fuel consumption; • Sewage (black and grey water) management and	• Receptors can vary depending on the facilities and sites involved (e.g. specific location of waste disposal sites and origin of construction material and fuel).	• Materials sourced and disposed of with sustainable procurement principles and from as close as possible to the project so as to minimise impacts of production and transport; • Identify beneficial uses or opportunities for recycling construction spoil and other waste wherever possible; • Waste management plan and system to be implemented; • Environmental and social management plan; • Evaluation/assessment of water sources for hydrotesting so as to minimise impacts to other water

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	disposal; • Water use for construction activities, camps, yards; • Water use for pre-commissioning (hydrotesting).		users and aquatic habitats.
Water Environment	• Sediment plumes and siltation from working strip, yards, camps and access roads due to rainwater runoff into local streams up to the sea.	• Local impact and only in case the footprint of onshore section interferes with local streams (temporary or permanent).	• Manage working strip, access roads, yards and camps to minimise sediment runoff into water courses or natural drainages. Where appropriate silt fences, silt traps, vegetation stockpiles and other measures will be adopted); • Monitor water courses/water bodies - Environmental Monitoring Plan (if applicable).
	• Oil & chemical contamination from machinery on working strip, yards, camps and access roads	• Local, typically within working strip. Specific distances depend on local conditions (e.g. topography, land use, etc.) and the volume and type of liquid in case of accidental spills.	• Fuelling/bunkering procedure for machinery, generators, etc.; • Bounded or contained oil/fuel storages; • Oil & chemicals spill contingency prevention & planning; • Chemical handling procedures; • Oil & chemical spill response kit on sites; • HSE Training of all on-site personnel on environmental awareness.
	• Generation of wastewater and solid waste (from camps,	• Local, specific distances depend on local conditions (e.g. topography,	• Control and in case treat waste water prior to discharge in any water body;

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	working strip).	land uses, etc.).	• Locate yards and camps away from water courses/water bodies; • Waste management plan.
Biodiversity and Nature Conservation	• Impacts from habitat loss. The impacts could be both temporary and long-term/permanent; • Temporary impacts will arise from the working strip, camps and yards, which will be reinstated to pre-construction conditions once construction is completed.	• Habitats found within and along the vicinity of the project footprint (i.e. working strip, access roads and footprint of associated facilities).	• Route and associated infrastructure location selection avoiding sensitive areas to the extent possible; • Alternative construction techniques to open cut trenching and backfilling (e.g. Horizontal Directional Drilling) where considered appropriate based on detailed baseline findings; • Minimise footprint wherever possible (e.g. narrow working strip); • Restore pre-construction conditions as far as possible (e.g. revegetation of working strip) - Vegetation/Landscape Restoration Plan.
	• Impacts on fauna and flora species of nature conservation interest from the project's onshore activities (if any. such as nesting ground, wetlands/streams, riparian vegetation, etc.).	• Fauna and flora species present in the area. Area of influence on these depend on source of impact and local conditions. Typically immediate vicinity of working strip of pipeline and associated facilities (new access paths, construction camps...). Specific distances depend on local conditions and could be up to	• As above for water quality, air quality noise & vibration impacts; • Management of dust, air emissions, aqueous discharges and waste to minimise impacts on flora, fauna and ecosystems (e.g. locating fixed machinery as far as possible from sensitive habitats); • Restrict construction during certain periods/seasons at certain areas; • Monitor impacts on flora and fauna at sensitive locations - Environmental Monitoring Plan;

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
		hundreds of metres in certain unfavourable conditions.	• Environmental and Social Management Plans (specific to detailed ESIA findings); • Relocate endemic/rare plant species to suitable nearby habitats.
Landscape and Visual Impacts	• Temporary and permanent landscape and visual impacts from land take and aboveground structures. Impacts will be temporary for the working strip, camps and yards which will be reinstated to preconstruction conditions to the extent feasible taking into consideration the current industrial planning in the Vasilikos Master Plan.	• Landscape is the receptor of the impact. It is a local effect and area depends on local conditions (e.g. topography.	• Minimise footprint wherever possible (e.g. narrower working strip); • Restore pre-construction conditions as far as possible where appropriate; • Visual mitigation measures where deemed necessary. • Location of new roads, temporary accesses and camps away from sensitive landscape locations.
Displacement of Existing Land Use, Property and People	• Temporary impacts on land use. Temporary impacts will arise from the construction of the landfall area and pipeline which will be re-instated following completion of construction activities returning the land to its	• Owners and users of land which is needed permanently and temporarily for the project; • Owners and employees of businesses which may be affected by land take for the project.	• In case expropriation is required, implement a Resettlement Action Plan (RAP) to set out how resettlement for permanent and temporary acquisition of land will be managed and mitigated in line with IGI's Land and Easement Acquisition Strategy; • Implement a land restoration plan to ensure, to the extent possible, previous use and users returning on completion of construction.

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	original use. Permanent Impacts will also arise as a result of establishing the Compressor Station, Pressure Reduction Station and associated facilities. Impacts on annual crops are expected.		
Socioeconomic Impacts	• Increased government revenues (e.g. construction fees, and levies: property tax).	• Local, regional and national economy.	• Early engagement with national government stakeholder.
	• Impacts to local livelihoods and loss of household income as a result of construction works (e.g. temporary and long term occupation of agricultural land).	• Owners and users of land which is needed permanently and temporarily for the project; • Owners and employees of businesses which may be affected by land take for the project.	• In case expropriation is required, ensure that the Resettlement Action Plan (RAP) includes a strategy for land acquisition based on compensation for loss of livelihoods (i.e. Livelihoods Restoration Plan) in alignment with EBRD standards; • Community Engagement Plan (CEP) as part of IGI stakeholder engagement strategy; • Ensure local Community Liaison capacity to manage and monitor IGI's community relations.
	• Economic benefits to households and to the local economy as a result of	• Local and regional communities from employment and procurement opportunities.	• Develop an Employment and Procurement Strategy to ensure maximisation of opportunities for local people and businesses;

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	direct/indirect job creation during construction works; • Benefit to the local community and economy as a result of local procurement of materials for construction and other services to supply the project.		• As far as possible, maximise local employment during construction and provide a fair and transparent recruitment process and to enhance local skills base through training provided by IGI; • As far as possible, procure goods from local suppliers through subcontracts to local firms (subject to availability, quality and cost) and purchasing of goods from local retailers; • As far as possible, incorporate the above mitigation/management into the requirements for the Project contractors.
	• The presence of workers on the site during construction works could have an impact on social infrastructure (water, electricity, roads, health centres); • While there might be a temporary pressure on this infrastructure in the short term, there may also be a positive impact on infrastructure development in the medium to long term.	• Local in communities near the construction sites.	• In case needed, ensure provision of social infrastructure to workforce; • Facilitate access of local communities to new infrastructures, in particular new access roads (if any).

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	• The presence of workers on the site and the money they earn and spend may cause changes to local customs and norms. • Impacts on local livelihoods (e.g. farming) from project construction could also impact social institutions and cohesion of the local community since livelihoods and social institutions are often closely bound with each other.	• Local, working strip of pipeline and footprint of associated facilities.	• Implement a Community Engagement Plan (CEP) as part of IGI Poseidon stakeholder engagement strategy; • Ensure sufficient and qualified local Community Liaison capacity to manage and monitor the satisfactory implementation on effectiveness of all community relation procedures; • Develop a Workers Code of Conduct that will include disciplinary measures for those that break the Code requirements.
Community Health and Safety	• Safety risks for communities as a result of construction works; • Increased traffic loads on roads adjacent to the project.	• Local, communities currently using and living along the roads to be transited by the project's vehicles. Communities along transportation routes.	• Develop a Community Health, Safety and Security Management Plan to address safety risks for communities, including traffic related risks; • Provide traffic awareness training at local schools and at the community level to raise community awareness regarding avoiding road related accidents.
	• The project has the potential to impact neighbouring communities through changes in noise and air	• Local, communities located in the vicinity of construction sites.	• Manage impacts in relation to environmental change. • Grievance mechanism; • Engagement of local communities to understand and mitigate concerns;

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	quality, water quality, water resources, visual impact and changes in accessibility (see above).		• Develop a Community Health, Safety and Security Management Plan.
	• Potential increase of local incidence of introduced diseases and pressures on local services (health, leisure, police, etc.) from the project's workforce.	• Local and regional, communities near workers' camps.	• Apply strict worker management policies and prevention measures; • In case needed, Provide medical assistance for all workforce to avoid burdens being placed on local services to the detriment of the local community; • Develop Code of Conduct for workers to abide.
	• Location of workforce in camps near local communities could result in disruption and nuisance.	• Local, communities inhabiting the vicinity of worker camps.	• Avoid locating work camps close to local communities • Pay careful attention to the final location and services provided to its workforce. In case needed, IGI will ensure access to facilities and services to reduce pressures on local community facilities (i.e. hospitals, transport, etc.).
Working Conditions	• Risk of injuries for workforce as a result of major excavations, and working in the vicinity of active roads.	• Local, communities located in the vicinity of construction sites.	• Develop a HSE management system for the project in accordance with international good practice. The HSE plan will identify risks to worker health and safety and describe the HSE management system; • Good site management practice (training and qualification of staff, appropriate work standards) will be implemented to reduce health and safety risks.
Cultural Heritage	• Direct impact – Damage or	• Known and unknown cultural	• Detailed and comprehensive Cultural Heritage

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	destruction of cultural heritage sites and artefacts through ground disturbance activities; • Direct impact – restriction of activities in areas associated with intangible heritage traditions; • Indirect impact – The setting of upstanding cultural heritage sites (noise, visual impact etc.).	heritage sites, both upstanding and buried in the ground; • Intangible heritage traditions.	baseline studies, including specialised geophysical field surveys and specialist interpretation of the results; • Strong engagement with regulators to develop an agreed approach to mitigation; • Develop a Cultural Heritage Management Plan for the project (to include awareness training, any required investigation, monitoring or mitigation as required by regulators, a robust chance finds procedure and finds management plan, among other elements); • ESMP within the ESIA to outline the Cultural Heritage Management Plan.

6.3.2 Operation

Table 6.4 Potential Environmental and Socioeconomic Impacts and Prevention/Mitigation Measures Related to Onshore Operation

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
Air Quality and Climate Factors	• Impacts due to air emissions from the Compressor Station (turbines); • Non-routine events such as emergency venting (and depressurisations for maintenance) at the Compressor Station have a higher potential to reduce air quality (but these are low probability/emergency scenarios and not part of the routine operation of the installations).	• Receptors will include residential population, workers, fauna and flora species, cultural and historic aspects, atmosphere, water quality, etc.; • Greenhouse gases Emissions.	• Maintenance and monitoring; • State of the art equipment; • Air quality monitoring; • Location of Compressor Station away from sensitive receivers; • Monitoring of main emission sources (generators, turbines) – Environmental Monitoring Plan; • Adoption of Best Available Techniques (BAT) for air pollutant abatement; • Air modelling relevant to the operation phase.
Noise and Vibration	• Impacts from noise emissions during normal operation of the Compressor Stations (e.g. compressors, turbine engines); • Non-routine events such as emergency venting.	• Noise receptors will include residential population (and sensitive receptors like schools and hospitals), workers, fauna, cultural/historical buildings, etc.); • Specific distances depend on local conditions and location of these sensitive receptors.	• Maintenance and monitoring; • Location of Compressor Station away from sensitive receptors; • Monitoring of main emission sources (generators, turbines) – Environmental Monitoring Plan; • Use specific mitigation on noisy equipment where appropriate (e.g. acoustic shielding); • Locate noisy equipment (compressors)more far from noise sensitive receptors; • Noise modelling relevant to operation phase of

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
		Noise from Compressor could be several hundred meters in certain unfavourable meteorological conditions.	the Compressor Station.
Resources and Waste	• Waste and wastewater generated by the Compressor Station and onshore facilities during operation and maintenance.	• Receptors can vary depending on the facilities and sites involved.	• Waste Management Plan considering standard good practice (i.e. Waste Management Hierarchy: reduce, reuse, recycle, recover, dispose).
Displacement of Existing Land Uses, Property and People	• Permanent land acquisition/easement during operation; • Permanent changes to land uses in particular agricultural land for permanent crop production.	• Areas to be occupied by Compressor Station and other permanent infrastructure; • Right of way for the pipeline.	• In case expropriation is required, develop a Resettlement/Livelihood Restoration Action Plan setting out how resettlement for permanent and temporary acquisition/easement of land will be managed and mitigated during operation and decommissioning. According to EBRD requirements; • Follow the legal requirements in force with regard to restoration of land use at the time of decommissioning the project; • Develop a Community Engagement Plan (CEP) as part of IGI stakeholder engagement strategy; • Ensure local Community Liaison capacity to manage and monitor IGI's community

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
			relations and restoration plans.
Socioeconomic Impacts	• Increased government revenues as a result of tariffs on gas transport.	• National, regional.	• No enhancement.
	• Economic benefits to households and to the local economy as a result of direct/indirect job creation during operation (e.g. Compressor Station).	• Local and regional benefitting from employment and procurement opportunities.	• Develop an Employment and Procurement Strategy to ensure maximisation of opportunities for local people and businesses; • As far as possible, Maximise local employment during operation and provide a fair and transparent recruitment process and enhance local skills base through training provided by IGI; • As far as possible, procure goods from local suppliers through subcontracts to local firms (subject to availability, quality and cost) and purchasing of goods from local retailers.
	• Land use restriction for safety reasons (built permanent and semi-permanent, such as greenhouses, infrastructure).	• Safety areas per national regulations.	• During design phase, the Stations site selection process and the pipeline route selection process will take into consideration (among others) the safety criteria as per national legislation and any plans for future developments / infrastructures resulting from the contact with the authorities.
Community Health and Safety	• Safety risks for communities as a result of project operation activities, in	• Local, communities currently using and living along the roads	• Implementation of a Community Health, Safety and Security Management Plan to

Baseline Component	Potential Impact	Potential Receptors	Potential Prevention/Mitigation Measures
	particular those related to traffic operations.	to be transited by project vehicles. Communities along transportation routes.	address safety risks for communities, including traffic related risks.
Working Conditions	• Risk of injuries for workforce as a result of routine project operation activities like maintenance.	• Local, communities currently using and living along the roads to be transited by the project vehicles.	• Develop a HSE management system for the project in accordance with international good practice. The HSE plan will identify risks to worker health and safety and describe the HSE management system; • Good site management practice (training and qualification of staff, appropriate work standards) will be implemented to reduce health and safety risks.
Cultural Heritage	• No specific impacts or risks are expected during the operation.		

6.3.3 Decommissioning

Any decommissioning activities will be subject to permitting requirements applicable at that time and subject to consultation with affected owners and stakeholders of affected properties and structures.

A plan covering all relevant items will be prepared and approved before any decommissioning works. The plan will also include an assessment of the environmental and social impacts of the proposed decommissioning technique and the proper mitigation measures.

Based on the current practice, the offshore pipeline would be typically expected to stay in place as the risks and challenges of recovering deep pipelines would raise relevant environmental and social impacts (to some extent similar to those of construction). Only those sections located close to the shores or shallow areas would be typically considered for recovery should their abandonment raise HSE risks.

For the onshore pipeline and facilities it is expected that decommissioning would consist on the removal of structures and the rehabilitation of the area with the aim of creating the conditions that will allow the use of the site for the next planned uses (industrial uses in this case as the onshore facilities are planned within the Vasilikos Industrial Area). For the onshore pipeline section decommissioning would consist of the removal of the pipeline unless there are specific segments where the removal operations would be technically impossible or would have a detrimental effect on the natural or social environment. If a section of the pipeline needs to be abandoned under the ground, the section would be inactivated possibly by filling it with a suitable concrete or a mixture of bentonite (to prevent the collapse of the empty duct).

6.4 Main Findings of Preliminary Assessment

The preliminary impact identification presented in the tables above was based on project information currently available, baseline information collected to date and experience gained in similar projects constructed in similar environmental and socioeconomic contexts. The likelihood, magnitude and significance of the impacts will be further assessed, subsequently to a complete baseline data collection, in the next stages of the project during the ESIA phase.

However, the preliminary assessment highlights that construction impacts of pipelines and associated facilities are in most cases typically temporary in nature and localised. These include temporary noise and air emissions from construction machinery, impacts on seawater quality, loss/disturbance of natural habitats (flora and fauna), impacts on soil or seabed from excavation and construction activities and impacts on land use.

In general terms, the onshore section is considered to be of low environmental and social sensitivity because it covers a small area, with industrial features and limited natural habitats (mainly small scattered areas between plots of agricultural lands or areas where former activities have been decommissioned). Impacts will be mainly temporary since agricultural uses will be allowed along the pipeline after construction (except deep rooted plantations on the PPS) and all construction camps and working sites will be decommissioned once construction is completed. Also it should be noted that the project footprint will be located within the Vasilikos Industrial Area, thus minimizing impact on other nearby areas that may hold more relevant environmental features, land use and other socioeconomic activities such as tourism.

From the cultural heritage perspective, construction impacts of pipelines and associated facilities are in most cases typically permanent and from a cultural heritage point of view the onshore study area is considered of high sensitivity, considering the presence of an archaeological site in the vicinity of the landfall. A detailed baseline data gathering will be required during the ESIA preparation and possibly before construction. This interference with potential cultural heritage resources would be managed through standard good practices and in alignment with the requirements of the authorities.

The nearshore section, on the contrary, crosses areas with potential for a number of sensitive receptors (e.g. local fisheries, other sea users, known relevant areas with *Posidonia oceanica* and other sensitive species and habitats). Receptors identified in the offshore sections are typical of any offshore pipeline, and based on the information available, the marine fauna are the main receptor identified. In all cases, the magnitude and significance of construction impacts will depend on the local conditions and details of the findings of site surveys and final project design and are typically construction impacts that can be managed and mitigated efficiently.

It is also worth mentioning that nearshore areas locate further to the East should be subject to less pressures derived from the presence of the Vasilikos Port and thus be possibly equally or more sensitive and certainly imply an increase of onshore impacts due to a longer onshore pipeline and crossing of areas outside the Vasilikos Industrial Area.

As preliminarily assessed, the operation phase causes impacts associated with permanent land occupation, emissions and maintenance operations. These include noise and air emissions from machinery and vessels (if required), use of materials for repair and pigging systems. The physical presence of the offshore pipeline can interfere with trawling activities but this impact is expected to be limited to a relatively short section of the pipeline only and can be managed through standard mitigation measures. The operation of the Compressor Station will generate air emissions and noise and will have an impact on the landscape. The magnitude and significance of these impacts are comparable to those of a small, co-generation gas power plant but the area where the facilities are

proposed to be installed is included within a wider industrial location. Landscape impacts would be permanent onshore but would be managed through the restoration of the original landscape along the pipeline route and standard landscaping from the onshore facilities.

Best practice and prevention and mitigation measures will be adopted to minimise construction and operational impacts.

7 TERMS OF REFERENCE FOR THE ESIA

7.1 Introduction

A key outcome of the scoping process is the definition of the Terms of Reference for the Environmental and Social Impact Assessment (hereafter referred to as an ESIA). The ESIA study will be prepared in compliance with national Cypriot standards and regulations as well as international standards, namely EBRD and IFC.

The following sections present the Terms of Reference of the ESIA which will be performed for the Cypriot section of the EastMed Pipeline Project. This section is structured as follows:

- ESIA objectives and steps;
- Specialist studies;
- Stakeholder engagement;
- Outline structure of the ESIA report;
- Provisional schedule for the ESIA process.

7.2 ESIA Objectives

The purpose of the ESIA is to evaluate potential impacts on environmental, social, economic and cultural components caused by the project and by project-related activities and, where applicable, to design appropriate prevention and mitigation measures to avoid, remove or reduce negative impacts.

Comprehensive planning and management of environmental and socioeconomic issues are essential to the execution of any successful project and, therefore, environmental and socioeconomic considerations will be fully integrated into the project life cycle.

The ESIA will be conducted in compliance with the Cypriot legislation and the requirements of the Cypriot authorities. The provisions of EU Directives and national laws will be taken into account while carrying out all activities related to the ESIA study for the section of the project within Cyprus jurisdiction.

7.3 ESIA Steps and Impact Assessment Methodology

At the end of the Scoping Phase of the project, the following activities must be carried out in order to develop the environmental and social impacts assessment and outline findings in a comprehensive ESIA report:

- Complete the project description incorporating relevant information as further engineering details become available, such as refinement and confirmation of base-case route alignments, onshore facilities locations, construction details (e.g. techniques for landfall, corridor constraints) pre-commissioning activities (e.g. hydrotesting) and operation (e.g. Compressor Station);
- Conduct specific investigations to further support the alternatives assessment process (if necessary) and to document detailed findings (E&S constraints and general baseline) along the base-case route as well as the permanent and temporary footprint/facilities;
- Undertake a comprehensive baseline data collection and survey in accordance with EBRD PR standards and regulatory requirements;
- Conduct additional consultation and further refine the scope of the ESIA as necessary;
- Develop all the modelling and specialist studies required for a detailed evaluation of impacts;
- Report the final impacts evaluation for all project phases; and,
- Develop and describe potential mitigation and enhancement measures and outline including an approach for monitoring.

7.3.1 Impact Assessment Methodology

The ESIA will consider the potential negative and positive impacts that the project has on the environment, socioeconomics and cultural heritage, distinguishing the construction, operation and decommissioning phases.

According to Cypriot legislation (EIA law N. 127(I)/2018), impact assessment and evaluation will be performed according to the following properties:

- Likelihood (probability of occurrence), which is defined as the certainty of an impact to occur;
- Extent (area of influence), which is the radius the impact refers to (in relation to the geographic area) and/ or the size of the affected population;
- Intensity, which refers to the magnitude of the change and compares it to statutory limits or sensitivity of the receptor;
- Complexity, which refers to the mechanism of appearance of the impact (i.e. direct or indirect); this criterion is evaluated qualitatively and is taken into account when quantitating other properties;
- Typical times, which refers to the time horizon of occurrence of the impact, its duration and repeatability;

- Potential for prevention, avoidance, minimisation or reversibility of the impact;
- Cumulative action with other impacts from the same project or impacts from other implemented or planned projects; and,
- Transboundary character.

The details of the impact evaluation methodology are being evaluated while preparing this document. However, the following lists the guiding principles that are being considered:

- The final list of impacts will be reviewed and prepared taking into account the specificities of receptors identified as well as the nature and activities of the project;
- The definition of the study area will follow the in-country practice and will also be adapted taking into account the nature of the impact (i.e. different impacts will require considering different areas);
- To the extent possible the impact evaluation will be accompanied with 'impact indicators' which will help the reader to understand the magnitude of the operations/actions as well as the potential pressure exerted on receptors. Common examples of these are surface cleared, distance from receptors and project actions, quality thresholds (based on legislation and international practice), timings for planned actions, etc.; and,
- Where feasible, quantitative evaluations and/or modelling will be used, such as noise, air and sediment transport, etc.

7.4 Specialist Studies

Perform a number of specialised studies to document those aspects for which detailed investigations are needed in order to precisely document baseline data or impact assessment. This can include environmental, social and archaeological investigations as well as modelling. More details on Specialist Studies are included in Appendix D – ESIA Execution Plan.

7.4.1 Desktop and Modelling Studies

The following modelling activities will be carried out as part of the ESIA works.

- Modelling activities:
  - Sediment Dispersion Modelling during Construction (for pipeline trenching operations).
  - Hydrotesting Discharge Dispersion Modelling;
  - Underwater Noise Modelling during Construction;
  - Onshore Noise Modelling (for Compressor Station) for hydrotesting activities, if relevant, depending on pre-commissioning design details;
  - Air Dispersion Modelling (for Compressor Station) for hydrotesting activities, if relevant, depending on pre-commissioning design details.

Desktop studies will also include additional research to identify existing documentation that contains information relevant to key resources present in the project environment. This activity is identified as Specialist Studies, which include desktop data examination, literature research and use of appropriate models, if needed.

- Specialist Desktop Studies:
  - Hydrological Study;
  - Appropriate Ecological Assessment.

7.4.2 Field Studies

Primary data will be collected by field studies carried out by environmental, socioeconomic and cultural heritage specialists.

The field studies will combine results coming from dedicated environmental campaigns (incl. site visits and samplings, both onshore and nearshore) and from the Detailed Marine Survey (DMS), which main purpose is to collect data for a proper safe design of the pipelines.

In further details, collected data/studies include:

- Detailed Marine Survey (DMS):
  - for the deepwater sections (water depth from 20m):
    - Bathymetry, sea bottom morphology and shallow stratigraphy through MBES (Multi-Beam Echo-Sounder), SSS (Side-Scan Sonar), SBP (Sub-Bottom Profiler), plus MAG (Magnetometer) to detect the presence of any metallic object, on a variable corridor width cantered along the entire pipeline(s) route (mainly, corridor width will vary from 500m to 800m, depending on local conditions; also increased in some specific areas) for a 3000-m-wide corridor nearshore and 1000 m wide offshore. MBES (Multi-Beam Echo-Sounder) for a 1000-m-wide corridor offshore reducing to 100 m width from 20 m WD to shore;
    - Further information on stratigraphy, deeper layers than the ones coming from SBP, through multi-channel seismic data acquisition; it is foreseen in some specific areas of the pipeline(s) route, to identify the deep sub-seabed structural geology for input to geohazard analyses;
    - MMO (Marine Mammal Observer) and PAM (Passive Acoustic Monitoring) will be present on board during the multi-channel seismic data acquisition.
- Geotechnical investigation(sampling and in-situ testing) along the pipeline(s) route, at specific locations selected after the analysis of the geophysical data above:

- The results of the Detailed Marine Survey will be reviewed by a marine cultural heritage specialists.

➢ for the nearshore section (area from the shoreline to a nominal water depth of about 20m)[22]:
- Bathymetry, sea bottom morphology and shallow stratigraphy through MBES (Multi-Beam Echo-Sounder), SSS (Side-Scan Sonar) and SBP (Sub-Bottom Profiler) on a variable corridor width centred along the pipeline route (corridor width will vary from 600m at the shoreline to 1000m at the maximum nearshore water depth). To be noted that SSS coverage will be extended to ensure a minimum of 1.5km width is covered either side of the pipeline route (i.e. 3000m corridor), to have a preliminary coverage for the anchor spread of installation vessels;
- ROV (Remotely Operated Vehicle) video to analyse a 100-m-wide corridor with respect to the centre line and specific targets identified by geophysical results. To be noted that ROV video on the central corridor will be extended to a water depth of about 40m;
- Refraction to have a further assessment on stratigraphy and MAG (Magnetometer) to detect any metallic object along the central pipeline(s) route;
- Geotechnical investigation (sampling and in-situ testing) along the pipeline(s) route, at specific locations selected after the analysis of the geophysical data above.

➢ for the onshore section (landfall area only)[21]:
- Topographic survey on the landfall area;
- Geophysical survey, i.e. soil electrical resistivity, refraction and magnetometer profile along the central pipeline(s) route;
- Geotechnical investigation (sampling and in-situ testing) and ground-water level monitoring, at specific locations selected after the analysis of the geophysical data above.

- Environmental, Socioeconomic and Cultural Heritage Analysis

➢ Nearshore Field Samplings and Studies:
- Nearshore soft-bottom communities study (benthic communities);
- Nearshore Sea Water Quality;
- Nearshore Sediment Quality;
- Nearshore and onshore sea turtle study;
- Nearshore marine mammal observations whilst performing nearshore environmental surveys (even if marine mammals are more likely to be present in deep water).

[22]Specifically for Cultural Heritage, further investigations may be performed after the local Expert Survey (ESIA phase) and prior to construction in case of evidences found and required by authorities and international good practice. These studies may include a combination of methods (for instance magnetometry, resistivity and ground penetrating radar)

- Onshore Field Surveys:
  - Soil & Groundwater sampling (Compressor Station and landfall area);
  - Noise Monitoring;
  - Air Quality Monitoring;
  - Vegetation Flora Fauna observation and identification (including avifauna);
  - Onshore Socioeconomic Baseline;
  - Onshore Cultural Heritage field survey.

7.5 Stakeholder Engagement

Having completed initial scoping consultation and disclosure, the following steps will be undertaken:

- Baseline consultation;
- ESIA report disclosure and consultation.

7.5.1 Engagement during the ESIA preparation

A Social and Stakeholder Engagement Area of Influence has been defined for the project and this will be the area of study to collect baseline social data and engage local communities, with focus on those anticipated to be directly affected by the project. This Social and Stakeholder Engagement Area of Influence comprises:

- Primary AoI: 10 km radius around the onshore facilities/landfall encompassing nine settlements (Zygi, Mari, Maroni, Psematismenos, Kalavasos, Choirokitia, Asgata, Pentakomo and Tokhni) and 8 key landing sites (ports) from Akrotiri to Larnaca; and
- Secondary AoI: Coastal communities, landing sites, marinas and ports along the coastal strip between Akrotiri and Kiti and within the radius area where sea users that might be concerned with the offshore activities will reside.

Engagement activities to be carried out during the ESIA Study stage, in the Social and Stakeholder Engagement Area of Influence will include engagement with institutional and non-institutional stakeholders for the purpose of social baseline data collection and consultation activities designed to inform local stakeholders about project design, to understand their key concerns and high level issues, and to feed the development of mitigation for the project. Consultation of the local communities will enable the ESIA team to refine the ESIA analysis by generating additional feedback on the ESIA approach, key issues and analysis of potential impacts (such as assessment of their relative significance).

7.5.2 Draft ESIA Report Disclosure and Consultation

According to Cypriot legislation and the requirements of the PCI Regulation, the draft ESIA will be publicly disclosed, and comments and suggestions will be collected from institutional stakeholders and the public. The disclosure and consultation will be organised at national, regional and local levels under the supervision of the Department of Environment. All administrative levels from the municipalities to the municipal councils will be invited to engage as well as local communities, NGOs and other interested parties.

The draft ESIA disclosure to the national and regional authorities will be led by the Department of Environment, who will be sharing the documents to the relevant authorities. In line with PCI requirements and Cypriot regulations, the Project Owner will organise a public presentation to disclose the draft ESIA to the municipal councils, local communities and other stakeholders (this event will be open to the general public). If the COVID-19 context will allow, the public presentation will consist in at least one meeting, open to the general public, in a venue accessible to the local communities. Date and location of the public presentation will be identified in alignment with Cypriot regulations and announced through media in due time to maximise the participation of the stakeholders.

If a face-to-face meeting shall not be possible at that moment in time because of the COVID-19 pandemic, the Project Owner will comply with the guidelines issued by the Department of Environment and shall publish the draft ESIA and a Non-Technical Summary on the websites of the municipalities, local communities (if available) and Project Owner. The Project Owner will then inform the stakeholders through media about the availability of the draft ESIA on the respective websites and invite them to provide feedback.

There will be a period of 30 days during which the public will have the opportunity to provide comments to the draft ESIA. Following this period of public consultation, the ESIA will be finalised by including a dedicated chapter presenting the results of the public consultation activities and how comments and suggestions received have been integrated in the report.

The Final ESIA Report will then be submitted to the Department of Environment and the Project Owner will inform the public about the submission of this final report through announcements in two daily newspapers. The Department of Environment will then upload the Final ESIA Report on their website and allow another 30 days for public commenting. Any comments received at this stage will be discussed and addressed during the meeting of the Environmental Impact Evaluation Committee and no revisions of the document will be required further.

7.6 Structure of the ESIA Report

An outline of the proposed contents of the ESIA report is provided below in Table 7.1. The content may be altered during the evolution of the project or based on the findings of ongoing consultation, however it is anticipated that the contents of the ESIA report will accord broadly within the suggested framework.

Table 7.1 Outline of the Proposed Contents of the ESIA Report

Section Number	Contents Heading	Explanatory Note
Executive summary in Greek		Summary of the entire ESIA report.
Executive summary in English		Summary of the entire ESIA report.
1	Introduction	Will present the report objective, context and ESIA structure/organization.
2	Legal Framework	This *Chapter* will outline the policy, legal and institutional framework within which the ESIA has been conducted. National regulations will be summarised along with relevant international agreements and conventions to which Cyprus is party, as well as applicable international best practice guidelines and project standards.
3	Project Description	This *Chapter* will provide a concise description of the project and its geographical and temporal context. It will include route alignment and design of the pipeline project (offshore and onshore pipeline and facilities) as well as the associated facilities during construction and operation of the project.
4	Project Alternatives	This *Chapter* will outline project alternatives with respect to location, technology and offshore routing. It will summarise the process followed for alternatives definition and selection.
5	Environmental Baseline Studies (Onshore)	This *Chapter* will summarise available baseline data on environmental and social resources and receptors within the Onshore Project Study Area. It will be based on both desktop and field studies.
6	Environmental Baseline Studies (Offshore)	This *Chapter* will summarise available baseline data on environmental and social resources and receptors within the Offshore Project Study Area. It will be based on both desktop

Section Number	Contents Heading	Explanatory Note
		and field studies.
7	Impact Assessment	This *Chapter* will summarise the impacts of the project (onshore, offshore and transboundary impacts) and proposed mitigation measures.
8	Public Consultations and Project Disclosure	This *Chapter* will document all activities performed in relation to disclosure and consultation with interested parties, including minutes of meetings.
9	Mitigation Plan and Monitoring Plan	The *Mitigation Plan* will draw together the possible mitigation measures to reduce, remove or avoid negative impacts to environmental and social receptors. The *Monitoring Plan* will report the environmental monitoring programme for onshore and offshore systems.
10	Conclusions	This *Chapter* will summarise conclusions that are made based on the assessment as well as outline any further recommendations.
References		All references made in the report and documents drawn upon during the course of the assessment.
Appendices		These will include technical annexes with details of specific technical surveys, specific plan and modelling.

The ESIA Study will be prepared in English. It will be translated and submitted to the competent authorities in Greek. Both English and Greek versions will be made available for public disclosure in line with the requirements of international standards for this type of projects.

7.7 Provisional ESIA Schedule

A provisional schedule for the ESIA is provided below.

Activity	Timing - Start	Timing - Finish
Scoping Document	December 2020	July 2021
Scoping Disclosure to Stakeholders	July 2021	September 2021
Ongoing Stakeholder Engagement	May 2021	September 2021
Specialist Field Surveys	May2021	September 2021
ESIA Report Drafting	April 2021	April2022
Submission of Draft Final ESIA to Authorities	April 2022	April 2022
Public Consultation and Disclosure of Draft ESIA	June 2022	November 2022
Authority Review of Draft ESIA	April 2022	September 2022 (estimated)

8 PUBLIC CONSULTATIONS AND PROJECT DISCLOSURE

8.1 Introduction

IGI considers consultation and engagement with stakeholders an integral part of the Environmental and Social Impact Assessment (ESIA) process. In line with the development of the Cypriot section of the proposed EastMed Pipeline Interconnector, IGI has developed a Stakeholder Engagement Strategy, the overall aim of which is to ensure that a consistent, comprehensive, coordinated and culturally appropriate approach is taken for stakeholder consultation and disclosure. The approach taken by IGI is in full compliance with Cypriot EIA Regulations, EBRD Performance Requirements, EU Directive on Projects of Common Interest (PCI), as well as relevant policies of international best practice standards.

IGI intends to undertake a stakeholder engagement process through project planning, construction, operation and decommissioning phases. The plan for this engagement, including identification of stakeholders (i.e. people and organisations who have a role in the project or could be affected by project activities or who are interested in the project) and information disclosure, consultation, and handling suggestions, comments and concerns, is documented in the Cypriot Stakeholder Engagement Plan. This plan will be updated as required as the project progresses.

In Section 8.2 an overview of stakeholder engagement phases planned throughout the project is presented. The engagement activities planned during the scoping phase are further detailed in Section 8.3.2.

8.2 Stakeholder Engagement Phases for EastMed Project

8.2.1 Overview

To fulfil the objectives of stakeholder engagement, the EastMed Project has developed a plan for engagement with stakeholders throughout project life cycle. The plan lays out a process for consultation and disclosure through five stages, each having slightly different objectives. These stages are described in Table 8.1.

Table 8.1 ESIA Stakeholder Engagement Phases

Phase	Objective	Status
Feasibility Assessment	The overall objective of stakeholder engagement during the feasibility stage was to introduce the project to the national, authorities to identify sensitivities that needed to be taken into	Completed (2015-2016)

Phase	Objective	Status
	account when selecting the preferred route. The feasibility phase of the project was held in 2015-2016. During this phase, the "EastMed Feasibility Study – Preliminary Environmental Study – Scoping Report – Section within the jurisdiction of Cyprus" and its Addendum were sent to Cypriot authorities for both onshore and offshore sections.	
Scoping Consultation	In the Scoping Consultation phase Stakeholders will be contacted (even in case of their preliminary engagement during feasibility stage) at a national level in order to provide further detail on the project, identify/verify key issues, sensitivities and vulnerable groups and gather baseline information for the preparation of the Scoping Report as well as the ESIA report at a later stage.	*Ongoing*
Scoping Disclosure	After submission of the Scoping Report, scoping disclosure will be conducted, in order to inform stakeholders at a national, district and local community level about the route selection and project design, and to understand any issue which may provide input to the ESIA Terms of Reference and the development of mitigation measures for the Project.	*Ongoing*
ESIA Consultation	The main aim of stakeholder engagement during the ESIA Consultation phase is to share information about the project and its environmental and social impacts, consult with affected communities and ensure that all stakeholder issues have been identified and addressed. During this phase, the authorized Project Owner's representatives will gather baseline data and engage national, district, local community and local stakeholders. All stakeholders will be provided with a project update and an opportunity to comment, express any concerns and discuss issues. All feedback relating to potential impacts of the project will be collected and considered in the ESIA report. During this phase, stakeholders will also be familiarised with the grievance mechanism and the ways of raising their complaints with the project. To be considered which Stakeholders will be contacted to avoid fatigue.	*Planned*
Draft ESIA Disclosure	The National Competent Authority (i.e. the Ministry of Commerce, Industry and Energy), when receiving the ESIA Report, directly shares with the Department of Environment of the Ministry of Agriculture, Rural Development and Environment the information of its concerns. Then the Report will be publicly disclosed, and engagement activities will be organised to	*Planned*

Phase	Objective	Status
	present the findings of the ESIA and receive comments and suggestions. The disclosure will be organised at the national, district and local level under the cooperation of the Environmental Department of the Ministry of Agriculture, Rural Development and Environment. All other interested parties also at administrative levels from districts to community representatives will be engaged. The project will hold public events, which will be communicated in a timely and culturally appropriate manner to all interested parties to enable an effective stakeholder engagement (for example organisation of physical and/or virtual exhibitions/open house type of events). Finally, it is noted that the ESPOO procedure will be followed between Greece and Cyprus which have signed the relevant convention.	
Permitting	During this phase of the Project, key national and local Authorities will be engaged on technical and permitting matters, in order to obtain all the permits needed for construction, in particular there will be intercourses with the Competent Authorities for the obtainment of the Town Planning Permit and Building Permit.	*Planned*
Ongoing Engagement	Project will continue to engage with stakeholders throughout the project lifecycle. The methodology for this will be developed and finalised using the information compiled during the ESIA process.	*Planned*

8.3 Scoping Phase Stakeholder Engagement

8.3.1 Objectives

The objective of engagement during the scoping phase is to provide further detail on the project and an opportunity for stakeholders to provide feedback on the scope, approach and key issues that will be addressed during the ESIA study phase as well as plans for future engagement activities.

The main emphasis of the scoping phase engagement is to present the project to government agencies, NGOs and other key groups as well as to local authorities. These organisations are listed in Table 8.2 below. Appendix C contains the list of stakeholders. Information will also be disseminated to local communities and to the general public, and channels will be opened to receive their feedback.

Table 8.2 Key Stakeholder Groups relevant for the Project

Stakeholder Group	Stakeholder
National Government Stakeholders	• Ministry of Energy, Commerce, Industry and Tourism • Hydrocarbons Service (Ministry of Energy, Commerce, Industry and Tourism) • Energy Service (Ministry of Energy, Commerce, Industry and Tourism) • Deputy Ministry of Tourism • Strategic Planning Unit (Ministry of Energy, Commerce, Industry and Tourism) • Ministry of Agriculture, Rural Development and the Environment • Department of Environment (DoE) (Ministry of Agriculture, Rural Development and Environment) • Department of Fisheries and Marine Research (DFMR) (Ministry of Agriculture, Rural Development and Environment) • Department of Forests (Ministry of Agriculture, Rural Development and Environment) • Water Development Department (WDD) (Ministry of Agriculture, Rural Development and Environment) • Geological Survey Department (Ministry of Agriculture, Rural Development and Environment) • Department of Agriculture (Ministry of Agriculture, Rural Development and Environment) • Ministry of Transport, Communications and Works • Department of Antiquities (Ministry of Transport, Communications and Works) • Department of Civil Aviation (Ministry of Transport, Communications and Works) • Department of Public Works (Ministry of Transport, Communications and Works) • Ministry of Health • Ministry of Interior • Department of Town Planning and Housing (Ministry of Interior) • Department of Lands and Surveys (Ministry of Interior) • Game and Fauna Service / (Ministry of Interior) • Ministry of Foreign Affairs • Ministry of Defence • Department of Labour Inspection (Ministry of Labour, Welfare and Social Insurance) • Shipping Deputy Ministry • Cyprus Port Authority (CPA) • Cyprus Scientific and Technical Chamber (ETEK)
NGOs and Other Interested Parties	• NGOs (including regional/local) • Community Groups • Community Based Organizations (CBOs) • Academic and Research Organisations • International Development Agencies • Media

Stakeholder Group	Stakeholder
Regional and Local Government Stakeholder	• Larnaca Municipality • Limassol Municipality • Union of Cyprus Communities • Union of Cyprus Municipalities • Heads of Community Councils of Mari, Zygi, Tochni, Kalavasos, Psematismenos, Maroni, Choitokitia, Asgata, Pentakomo
Local stakeholders	• Residents of the Community of Mari • Resident of the Community of Zygi • Resident of the Community of Tochni • Resident of the Community of Kalavasos • Resident of the Community of Psematismenos • Resident of the Community of Maroni • Resident of the Community of Choiroloitia • Resident of the Community of Asgata • Resident of the Community of Pentakomo • General Public

8.3.2 Stakeholder Engagement Activities

8.3.2.1 Overview

Stakeholder meetings with government stakeholders, NGOs and other stakeholder groups are planned virtually after the scoping report submission to the authorities (likely during June – September 2021) to facilitate the safe participation of all stakeholders in light of the current COVID-19 pandemic. Specific activities to disclose information and seek comments from different stakeholder groups are summarised in subsequent sections including local communities.

8.3.2.2 Engagement with National Government Stakeholders

National government agencies will be invited to virtual scoping meetings to discuss the project and the scoping report. Consequently, the plan is to send this document (ESIA Scoping Document ESD) in Greek to national government stakeholders with a cover letter inviting them to participate in the virtual meetings. Both the letter and the ESD will be sent 15 days before the date of each of the proposed one-to-one meeting.

8.3.2.3 Engagement with NGOs and Other Organisations

The ESD will be sent to NGOs, including regional NGOs, and other interested parties accompanied by a letter inviting them to participate in a virtual scoping meeting. Both the ESD and the letter will

be sent 15 days in advance of the scoping meeting to allow an in-depth review of the document during the meeting. At the scoping meeting, it is planned to provide a presentation of the project and of the scoping report prior to opening the meeting to questions and comments. Participants will be able to pose the questions or raise the issues as well as to submit follow-up questions and comments during the meeting through comments sheets or subsequently send them by post or through the project web site.

8.3.2.4 Engagement with District and Community Councils in the Area of Influence

District and local level government stakeholders will be invited together to participate in one of the virtual scoping meetings to be organised by IGI. In preparation for the meetings, IGI will send the ESD in Greek to all of them, with a covering letter inviting them to the scoping meeting. The letter will also advise them of the project and the ESIA study. Both the letter and the ESD will be sent 15 days before the date of the relevant scoping meeting.

8.3.2.5 Engagement with Local Communities

IGI is committed to continue engaging and consulting with local communities in the Social and Stakeholder Engagement Area of Influence of the project to ensure that the project is presented to local communities and that their concerns and views on the project are listened to and taken into account. The main channel of communication will be the Heads of Community Councils (HCC) representing settlements in the area of influence of the project. They will participate to the virtual scoping meetings representing their constituencies and as such will have a role to play in further disseminating information on the project and in making accessible the copies of the ESD for the individual stakeholders. For this purpose, a shorter leaflet and accompanying poster with information about the ESIA Scoping Process and the feedback mechanism will be distributed to all HCCs for onwards distribution to communities (see above).

HCCs will officially be asked to put up the poster and the leaflets in an accessible place in each village or town (i.e. communal premises, school building). In addition, a daily notice will be broadcasted in local radio stations the week before and after the meetings to make sure all community members and other interested parties locally are informed about the project and the ESIA Scoping process as well as the mechanism to provide comments on the project. Further

consultation[23] will be carried out with local community members including vulnerable populations and gender groups during the ESIA study phase[24]. Moreover, all communities will be invited to participate in open public hearings during disclosure of the draft ESIA report when information on the project impacts will be presented along with the mitigation measures designed to avoid or minimise them.

8.3.2.6 General Public

A notice will be written for national newspapers and posted on the project website to ensure that interested parties and the general public outside the direct area are informed about the project and the overall ESIA process and the Scoping stage as an integral part of it.

The ESD will also be placed on the project website with an email address for submitting comments.

8.4 Grievance Mechanism

In accordance with international best practices, a process has been set up through which any person or organisation can contact the project to ask a question or raise a concern. This process will be detailed in the project Stakeholder Engagement Plan and will accord with EBRD standards. It will be open and accessible to all, designed to suit the varying cultural needs of all potential stakeholders, and will deal with grievances in a fair and transparent manner. All grievances will be recorded and responded to promptly before being closed. The grievance mechanism is part of IGI's broader process of stakeholder engagement and quality and compliance assurance. While IGI is committed to avoid grievances through its dedication to a good overall stakeholder engagement process, the project is aware that grievances and complains will occur and need to be addressed in good faith and through a transparent and impartial process. Details on the grievance process, including grievance forms, will be available on the project website. They will also be conveyed to Village Heads during the scoping engagement.

[23]The format of this consultation will be define on the basis of COVID-19 restrictions as defined by Cypriot authorities. If public meetings are not allowed IGI will consider the organisation of Open House type events where community members will be invited to visit an exhibition and provide feedback in written form.

[24]Direct engagement with local community members is expected to be implemented in July-September 2021 coinciding with the ESIA Study preparation.

8.5 Resources and Responsibilities

Stakeholder engagement is an integrated element of IGI's core business activities and is managed with the same principles as all other business functions: with clearly defined objectives and targets, professional, dedicated staff, established timelines and budgets, responsibility, accountability and oversight. IGI recognise the importance of dedicating appropriate resources to the engagement process and establishing clear lines of responsibility.

8.6 Public Comments and Suggestions

An important objective of the ESIA Scoping disclosure process is to allow stakeholders to provide feedback on the project. In this regard, IGI has envisaged a process that allows stakeholders to address their comments and suggestions in writing to IGI after the scoping meetings have taken place.

For each meeting held for disclosure a Minute of Meeting (MoM) listing public comments and suggestions will be prepared. A log of Stakeholder engagement will be kept alive during all the Project duration in order to list and consider suggestions and comments.

Furthermore, IGI would like to invite all stakeholders involved in the scoping process, including local communities and the general public, to submit in writing their comments and suggestion concerning the Cypriot section of the EastMed Pipeline Project. Appendix B presents a standard form to facilitate the submission of comments and suggestions in both English and Greek. Participants to the scoping submit comment forms either via mail or email to the addresses reported in the Table 8.3.

Table 8.3 IGI Poseidon contacts

Project Contact Details	
Name	IGI POSEIDON S.A.
Postal address	207, Mesogeion Ave., 115 25Athens, Greece
Telephone	+30 212 80 81 400
Internet Address	http://www.igi-poseidon.com/
Contact Person 1	
Name	Miriam Biscotti (English speaking)
Position	Environmental Licensing Manager
Telephone	+39 331 628 37 02
Email	miriam.biscotti@edison.it

Contact Person 2

Full name	Kostas Tyroyiannis (Greek and English speaking)
Position	Assistant Environmental Licensing Manager
Telephone	+30 212 808 14 20
Email	k.tyroyiannis@depa-int.gr

9 REFERENCES[25]

Chapter 1

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- E780_00225-Ev32A-TEN-00052_System Description Note;
- EM-520-30-PL-RPT-001 - East Med Feasibility Study - Preliminary Design Report – Onshore
- EM-620-20-PL-RPT-001 - East Med Feasibility Study - Preliminary Design Report - Offshore

Chapter 2

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Chapter 3

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- EM-610-20-PL-RPT-001 - Route Feasibility Report – Offshore;
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- EM-1900-20-PL-RPT-001 - Route Optimization Report;
- 00225-Ev32A-BOD-00053 - Project Design Basis;
- 00225-Ev41A-TDR-00074 - Initial Offshore Pipeline Routing Report;
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Chapter 4

- 00225-Ev31A-TDR-00051 - EastMed Pipeline Project - FEED Offshore - System Consolidation Report (416010-00225);
- E780_00225-Ev32A-BOD-00053 - Project design basis (416010-00225);
- EM-620-20-PL-RPT-001 - East Med Feasibility Study - Preliminary Design Report – Offshore;
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- EM-520-30-PL-RPT-001 - East Med Feasibility Study - Preliminary Design Report – Onshore;

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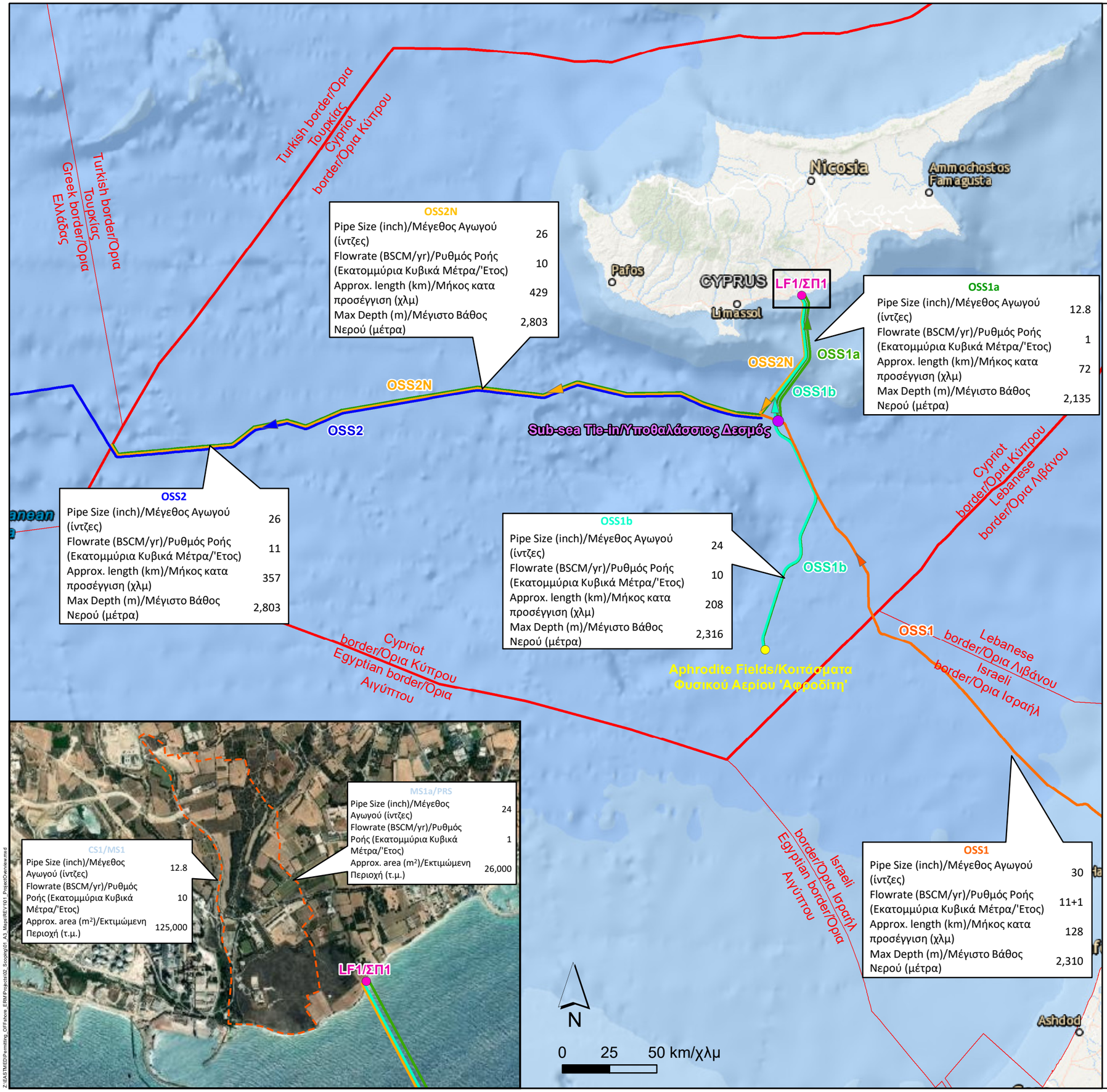
Chapter 6

- EM-630-20-HS-RPT-001 - East Med Feasibility Study - Preliminary Environmental Report – Offshore; and
- EM-530-30-HS-RPT-001 - East Med Feasibility Study - Preliminary Environmental Report – Onshore.

APPENDIX A MAPS



OSS2N

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	26
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	10
Approx. length (km)/Μήκος κατα προσέγγιση (χλμ)	429
Max Depth (m)/Μέγιστο Βάθος Νερού (μέτρα)	2,803

OSS1a

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	12.8
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	1
Approx. length (km)/Μήκος κατα προσέγγιση (χλμ)	72
Max Depth (m)/Μέγιστο Βάθος Νερού (μέτρα)	2,135

OSS2

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	26
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	11
Approx. length (km)/Μήκος κατα προσέγγιση (χλμ)	357
Max Depth (m)/Μέγιστο Βάθος Νερού (μέτρα)	2,803

OSS1b

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	24
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	10
Approx. length (km)/Μήκος κατα προσέγγιση (χλμ)	208
Max Depth (m)/Μέγιστο Βάθος Νερού (μέτρα)	2,316

CS1/MS1

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	12.8
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	10
Approx. area (m²)/Εκτιμώμενη Περιοχή (τ.μ.)	125,000

MS1a/PRS

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	24
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	1
Approx. area (m²)/Εκτιμώμενη Περιοχή (τ.μ.)	26,000

OSS1

Pipe Size (inch)/Μέγεθος Αγωγού (ίντζες)	30
Flowrate (BSCM/yr)/Ρυθμός Ροής (Εκατομμύρια Κυβικά Μέτρα/'Ετος)	11+1
Approx. length (km)/Μήκος κατα προσέγγιση (χλμ)	128
Max Depth (m)/Μέγιστο Βάθος Νερού (μέτρα)	2,310

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
APPENDIX A	SCOPING DOCUMENT

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/Στοιχεία Έργου

- Landfall Location/Περιοχή
- Aphrodite Fields/Κοιτάσματα Φυσικού Αερίου "Αφροδίτη"
- Sub-sea Tie-in/Υποθαλάσσιος Δεσμός

Offshore Routing EastMed Pipeline/Υπεράκτια Διαδρομή Αγωγού EastMed

- OSS1
- OSS1a
- OSS1b
- OSS2
- OSS2N

Onshore Routing/Χερσαία Διαδρομή

- Area of Installation of Facilities/Περιοχή Εγκαταστάσεων

Study Area/Περιοχή Μελέτης

- Offshore border/Υπεράκτια σύνορα

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

The technical details provided in the map are based on the details available at the moment of preparing this map. Some of these details may be subject to minor changes as project design is refined during the FEED and detailed engineering phases.
Οι τεχνικές λεπτομέρειες που παρέχονται στον χάρτη βασίζονται στις λεπτομέρειες που είναι διαθέσιμες τη στιγμή της προετοιμασίας αυτού του χάρτη. Ορισμένες από αυτές τις λεπτομέρειες ενδέχεται να υπόκεινται σε μικρές αλλαγές καθώς ο σχεδιασμός του έργου τελειοποιείται κατά τη διάρκεια της εκπόνησης Μελετών Βασικού Σχεδιασμού και Μελετών Εφαρμογής.

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
1A	19/06/2021	FINAL EMISSION	SVP	GTT	Client
0A	10/06/2021	ISSUED FOR REVIEW	SVP	GTT	Client

Contract No: C.121/20 - ESIA & Permitting Support - Offshore
Αρ. Συμβολαίου: C.121/20 - ΜΕΠΚΕ & Υποστήριξη Αδειοδότησης - Υπεράκτια

Coordinate System/Σύστημα Συντεταγμένων: WGS 1984 Web Mercator Auxiliary Sphere
Projection/Προβολή: Mercator Auxiliary Sphere
Datum: WGS 1984
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ
EASTMED PIPELINE PROJECT - CYPRUS SECTION
ΥΠΟΘΑΛΑΣΣΙΟΣ ΑΓΩΓΟΣ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ "EASTMED" - ΤΜΗΜΑ ΚΥΠΡΟΥ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
SCOPING DOCUMENT - APPENDIX A
ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ - ΠΑΡΑΤΗΜΑ Α

Map n°: 1
PROJECT OVERVIEW
ΕΠΙΣΚΟΠΗΣΗ ΕΡΓΟΥ

Scale/ Κλίμακα: 1:2.000.000
Project DWG No./ Αρ. Σχ. Έργου: POFF-CYPR-SCOP-DWG-0001_0_ProjectOverview / POFF-CYPR-SCOP-DWG-0001_0_ΕπισκόπησηΈργου
Rev/ Αναθ: 0A
Size/ Μέγεθος: A3
Company's DWG No/Αρ. Σχ. Εταιρείας: -
Engineer's DWG No/Αρ. Σχ. Μελετητή: -
Sheet/ Φύλλο

Document Name: 01_ProjectOverview/Αριθμός Εγγράφου: 01_Επισκόπηση Έργου

Z:\EASTMED\Permitting_OFFshore_ERM\Projects\02_Scoping\01_A3_Maps\REV101_ProjectOverview.mxd

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
APPENDIX A / ΠΑΡΑΤΗΜΑ Α	SCOPING DOCUMENT / ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/Στοιχεία Έργου

- Landfall Location/Περιοχή

Offshore Routing EastMed Pipeline/Υπεράκτια Διαδρομή Αγωγού EastMed

- OSS1a
- OSS1b
- OSS2N
- Area of Installation of Facilities/Περιοχή Εγκαταστάσεων
- Industrial Area/Βιομηχανική Ζώνη

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
1A	18/06/2021	FINAL EMISSION	SVP	GTT	Client
0A	28/05/2021	ISSUED FOR REVIEW	SVP	GTT	Client

Contract No: Αρ. Συμβολαίου: C.121/20 - ESIA & Permitting Support - Offshore / C.121/20 - ΜΕΠΚΕ & Υποστήριξη Αδειοδότησης - Υπεράκτια

Coordinate System/Σύστημα Συντεταγμένων: WGS 1984 Web Mercator Auxiliary Sphere
Projection/Προβολή: Mercator Auxiliary Sphere
Datum: WGS 1984
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT - CYPRUS SECTION
ΥΠΟΘΑΛΑΣΣΙΟΣ ΑΓΩΓΟΣ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ "EASTMED" - ΤΜΗΜΑ ΚΥΠΡΟΥ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

SCOPING DOCUMENT - APPENDIX A
ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ - ΠΑΡΑΤΗΜΑ Α

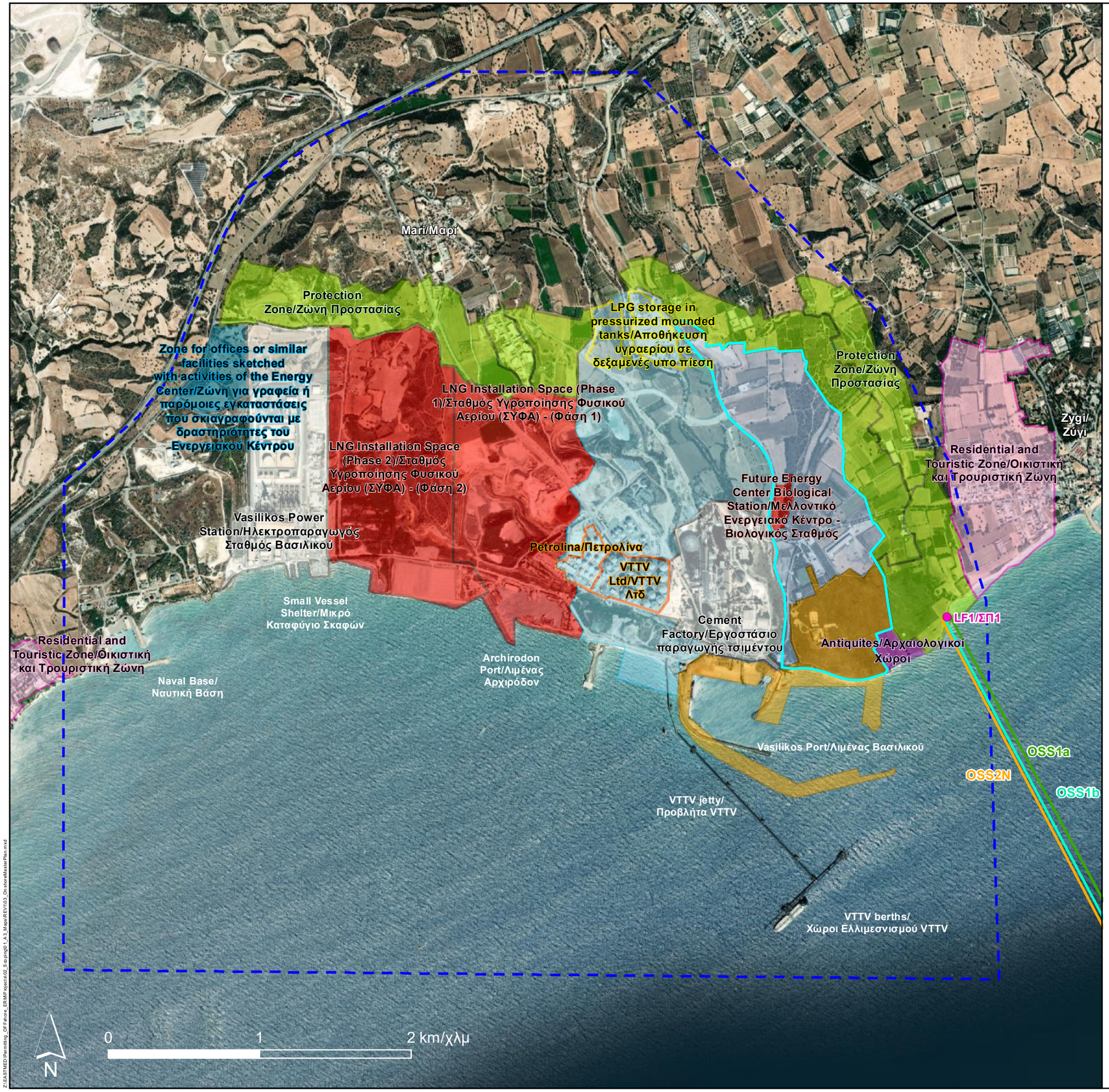
Map n°:	
2	*NEARSHORE OVERVIEW* *ΕΠΙΣΚΟΠΗΣΗ ΚΟΝΤΑ ΣΤΗΝ ΑΚΤΟΓΡΑΜΜΗ*

Scale/ Κλίμακα	Project DWG No./ Αρ. Σχ. Έργου:	Rev/ Αναθ
1:25.000	POFF-CYPR-SCOP-DWG-0002_0_NearshoreOverview POFF-CYPR-SCOP-DWG-0002_0_ΕπισκόπησηΚονταΣτην	0A

Size/ Μέγεθος	Company's DWG No/ Αρ. Σχ. Εταιρείας	Engineer's DWG No/ Αρ. Σχ. Μελετητή:	Sheet/ Φύλλο
A3	-	-	

Document Name: 02_NearshoreOverview/Όνομα Εγγράφου:02_ΕπισκόπησηΚονταΣτηνΑκτογραμμή

Z:\EASTMED\Permitting_OFFshore_ERMProjects\02_Scoping\01_A3_Mapx\REV102_NearshoreOverview.mxd



REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
APPENDIX A / ΠΑΡΑΤΗΜΑ Α	SCOPING DOCUMENT / ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/Στοιχεία Έργου

- Landfall Location/Περιοχή

Offshore Routing EastMed Pipeline/Υπεράκτια Διαδρομή Αγωγού EastMed

- OSS1a
- OSS1b
- OSS2N
- Area of Installation of Facilities/Περιοχή Εγκαταστάσεων
- Study Area/Περιοχή Μελέτης

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
1A	18/06/2021	FINAL EMISSION	SVP	GTT	Client
0A	28/05/2021	ISSUED FOR REVIEW	SVP	GTT	Client

Contract No: C.121/20 - ESIA & Permitting Support - Offshore
Αρ. Συμβολαίου: C.121/20 - ΜΕΠΚΕ & Υποστήριξη Αδειοδότησης - Υπεράκτια

Coordinate System/Σύστημα Συντεταγμένων: WGS 1984 Web Mercator Auxiliary Sphere
Projection/Προβολή: Mercator Auxiliary Sphere
Datum: WGS 1984
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ
EASTMED PIPELINE PROJECT - CYPRUS SECTION
ΥΠΟΘΑΛΑΣΣΙΟΣ ΑΓΩΓΟΣ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ "EASTMED" - ΤΜΗΜΑ ΚΥΠΡΟΥ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
SCOPING DOCUMENT - APPENDIX A
ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ - ΠΑΡΑΤΗΜΑ Α

Map n°:	
3	*VASILIKOS ONSHORE MASTER PLAN* *ΧΕΡΣΑΊΟ ΧΩΡΟΤΑΞΙΚΌ ΣΧΈΔΙΟ ΑΝΑΠΤΥΞΗς ΒΑΣΙΛΙΚΟΎ*

Scale/ Κλίμακα	Project DWG No./ Αρ. Σχ. Έργου:	Rev/ Αναθ
1:25.000	POFF-CYPR-SCOP-DWG-0003_0_OnshoreMasterPlan POFF-CYPR-SCOP-DWG-0003_0_ΧερσαίοΧωροταξικόΣχέδιο	0A

Size/ Μέγεθος	Company's DWG No/ Αρ. Σχ. Εταιρείας	Engineer's DWG No/ Αρ. Σχ. Μελετητή:	Sheet/ Φύλλο
A3	-	-	

Document Name: 03_OnshoreMasterPlan/Όνομα Εγγράφου:03_ΧερσαίοΧωροταξικόΣχέδιοΑνάπτυξης

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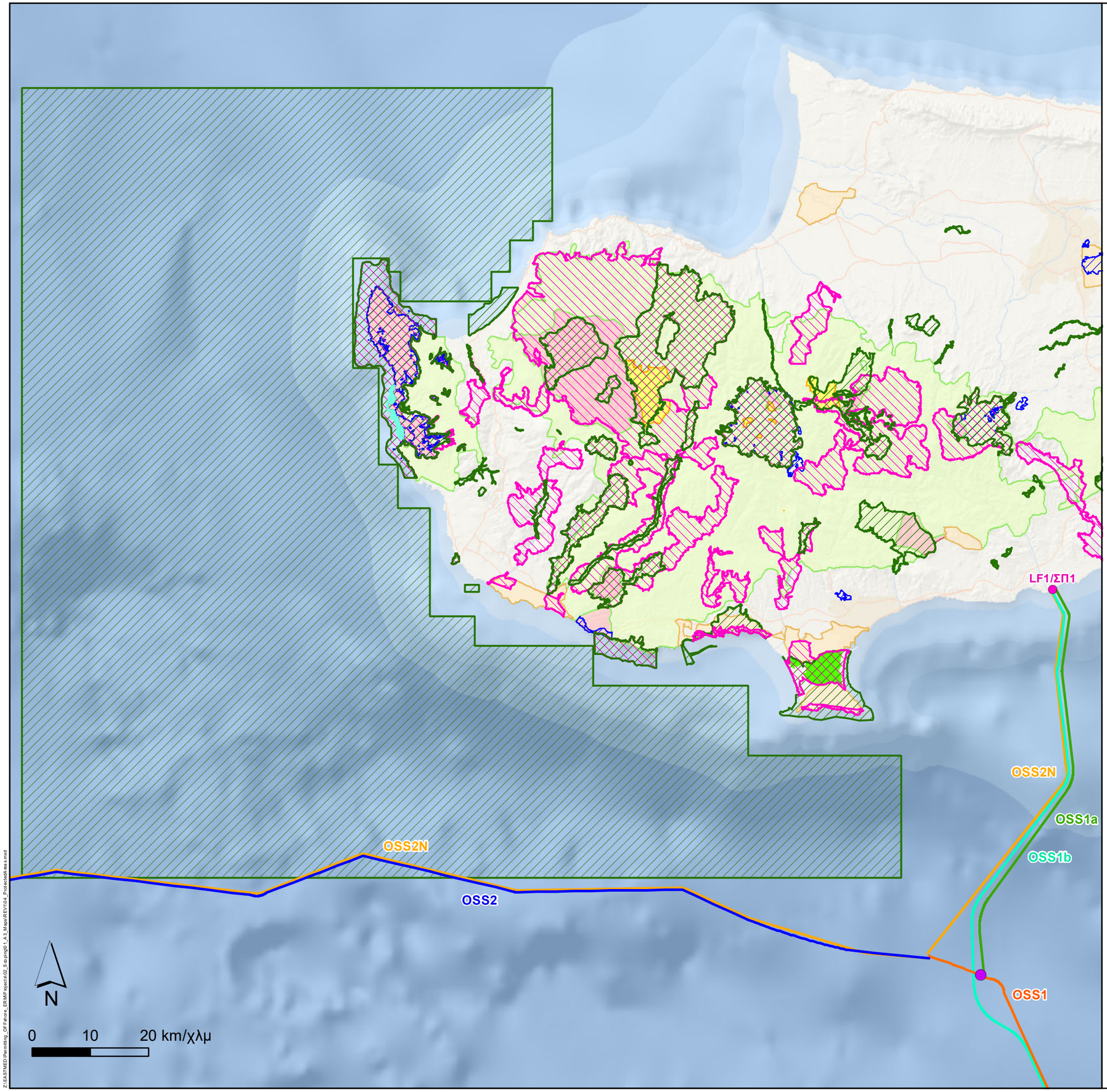

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITTLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
APPENDIX A / ΠΑΡΑΤΗΜΑ Α	SCOPING DOCUMENT / ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/Στοιχεία Έργου

- Landfall Location/Περιοχή
- Sub-sea Tie-in/Υποθαλάσσιος Δεσμός

Offshore Routing EastMed Pipeline/Υπεράκτια Διαδρομή Αγωγού EastMed

- OSS1
- OSS1b
- OSS2N
- OSS1a
- OSS2

Protected Areas/Προστατευόμενες Περιοχές

- National Forest Park/Εθνικό Δασικό
- Nature Reserve/Φυσικό
- Area Of Special Aesthetic Value/Περιοχή Υψηλής Αισθητικής Αξίας
- Coast/Area For Nature Protection/Ακτή/Περιοχή για Προστασία της Φύσης
- Permanent Game Reserve Area/Μόνιμα Απαγορευμένες Περιοχές Κυνηγίου
- Site of Community Importance - Special Area of Conservation (Habitats Directive)/Περιοχή Κοινοτικής Σημασίας - Ειδική Περιοχή Διατήρησης (Οδηγία για τη Διατήρηση των Φυσικών Οικοτόπων και της Αγριας Χλωρίδας και Πανίδας)
- Special Protection Area (Birds Directive)/Περιοχή Ζώνης Ειδικής Προστασίας (Οδηγία για Διατήρηση των Άγριων Πτηνών)
- Ramsar Wetland of International Importance/Υγρότοποι Διεθνούς Σημασίας "Ραμσάρ"
- Specially Protected Area of Mediterranean Importance/Ειδικά Προστατευόμενες Περιοχές της Μεσογείου

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
1A	18/06/2021	FINAL EMISSION	SVP	GTT	Client
0A	28/05/2021	ISSUED FOR REVIEW	SVP	GTT	Client

Contract No: C.121/20 - ESIA & Permitting Support - Offshore
Αρ. Συμβολαίου: C.121/20 - ΜΕΠΚΕ & Υποστήριξη Αδειοδότησης - Υπεράκπια

Coordinate System/Σύστημα Συντεταγμένων: WGS 1984 Web Mercator Auxiliary Sphere
Projection/Προβολή: Mercator Auxiliary Sphere
Datum: WGS 1984
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ
IGI Poseidon

ENGINEER/CONSULTANT
ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ
ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ
EASTMED PIPELINE PROJECT - CYPRUS SECTION
ΥΠΟΘΑΛΑΣΣΙΟΣ ΑΓΩΓΟΣ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ "EASTMED" - ΤΜΗΜΑ ΚΥΠΡΟΥ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
SCOPING DOCUMENT - APPENDIX A
ΜΕΛΕΤΗ ΣΚΟΠΙΜΟΤΗΤΑΣ - ΠΑΡΑΤΗΜΑ Α

Map n°:	
4	*PROTECTED AREAS* *ΠΡΟΣΤΑΤΕΥΟΜΕΝΕΣ ΠΕΡΙΟΧΕΣ*

Scale/ Κλίμακα	Project DWG No./ Αρ. Σχ. Έργου:	Rev/ Αναθ
1:650.000	POFF-CYPR-SCOP-DWG-0004_0_ProtectedAreas POFF-CYPR-SCOP-DWG-0004_0_Προστατευόμενες Περιοχές	0A

Size/ Μέγεθος	Company's DWG No/ Αρ. Σχ. Εταιρείας	Engineer's DWG No/ Αρ. Σχ. Μελετητή:	Sheet/ Φύλλο
A3	-	-	

Document Name: 04_ProtectedAreas/Όνομα Εγγράφου: 04_ΠροστατευόμενεςΠεριοχές

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APPENDIX B STAKEHOLDERS COMMENTS

COMMUNICATION FORM

Grievance data

Please do not use my name when talking about this comments in public		☐
Name:		
Organization: (if applicable)		
Community (if applicable)		
Date:		
Time:		
Preferred Contact Method (Please provide contact details):	**Telephone**	☐
	Email	☐
	Address	☐
Supporting Documents Attached? If yes mention the documents	**Yes**	☐
	No	☐

Description of Comments / Suggestions/Grievance

What outcome are you seeking?

Signature (optional): Date: ..... / ..... / .....

THE COMMUNICATION CAN BE ADDRESSED IN ANY OF THE FOLLOWING WAYS:

1. Filling-in this form
2. Phone:
3. E-Mail:

Mr XXX (Tel: xxx)

Mr XXX (Tel: xxx)

Person receiving the communication (to be filled-in by IGI/Contractor)	
Name	
Position	
Channel used	

APPENDIX C STAKEHOLDER LIST

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities - Central Government	Ministry of Energy, Commerce and Industry	Υπουργείο Ενέργειας, Εμπορίου και Βιομηχανίας
Authorities - Central Government	Hydrocarbons Service (Ministry of Energy, Commerce, Industry and Tourism)	Υπηρεσία Υδρογονανθράκων (Υπουργείο Ενέργειας, Εμπορίου, Βιομηχανίας και Τουρισμού)
Authorities - Central Government	Energy Service (Ministry of Energy, Commerce, Industry and Tourism)	Υπηρεσία Ενέργειας (Υπουργείο Ενέργειας, Εμπορίου, Βιομηχανίας και Τουρισμού)
Authorities - Central Government	Industry and Technology Service (Ministry of Energy, Commerce, Industry and Tourism)	Υπηρεσία Βιομηχανίας και Τεχνολογίας (Υπουργείο Ενέργειας, Εμπορίου, Βιομηχανίας και Τουρισμού)
Authorities - Central Government	Deputy Ministry of Tourism	Υφυπουργείο Τουρισμού -
Authorities - Central Government	Strategic Planning Unit (Ministry of Energy, Commerce, Industry and Tourism)	Μονάδα Στρατηγικού Προγραμματισμού (Υπουργείο Ενέργειας, Εμπορίου, Βιομηχανίας και Τουρισμού)
Authorities - Central Government	Ministry of Agriculture, Rural Development and the Environment	Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities - Central Government	Department of Environment (DoE) (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Περιβάλλοντος (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Department of Fisheries and Marine Research (DFMR) (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Αλιείας και Θαλάσσιων Ερευνών (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Department of Forests (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Δασών (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Water Development Department (WDD) (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Αναπτύξεως Υδάτων (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Geological Survey Department (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Γεωλογικής Επισκόπησης (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Department of Agriculture (Ministry of Agriculture, Rural Development and the Environment)	Τμήμα Γεωργίας (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Agricultural Research Institute (Ministry of Agriculture, Rural Development and the Environment)	Ινστιτούτο Γεωργικών Ερευνών (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities - Central Government	Mines Service (Ministry of Agriculture, Rural Development and the Environment)	Υπηρεσία Μεταλλείων (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Veterinary Services (Ministry of Agriculture, Rural Development and the Environment)	Κτηνιατρικές Υπηρεσίες (Υπουργείο Γεωργίας, Αγροτικής Ανάπτυξης και Περιβάλλοντος)
Authorities - Central Government	Ministry of Transport, Communications and Works	Υπουργείο Μεταφορών, Επικοινωνιών και Έργων
Authorities - Central Government	Department of Antiquities (Ministry of Transport Communications and Works)	Τμήμα Αρχαιοτήτων
Authorities - Central Government	Department of Civil Aviation (Ministry of Transport Communications and Works)	Τμήμα Πολιτικής Αεροπορίας (Υπουργείου Μεταφορών, Επικοινωνιών και Έργων)
Authorities - Central Government	Department of Public Works (Ministry of Transport, Communications and Works)	Τμήμα Δημοσίων Έργων (Υπουργείου Μεταφορών, Επικοινωνιών και Έργων)
Authorities - Central Government	Ministry of Interior	Υπουργείο Εσωτερικών

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities - Central Government	Department of Town Planning and Housing (Ministry of Interior)	Τμήμα Πολεοδομίας και Οικήσεως (Υπουργείο Εσωτερικών)
Authorities - Central Government	Department of Lands and Surveys (Ministry of Interior)	Τμήμα Κτηματολογίου και Χωρομετρίας (Υπουργείο Εσωτερικών)
Authorities - Central Government	Hunting and Fauna Service (Ministry of Interior)	Υπηρεσία Θήρας και Πανίδας (ΥπουργείοΕσωτερικών)
Authorities - Central Government	Ministry of Foreign Affairs	Υπουργείο Εξωτερικών
Authorities - Central Government	Ministry of Defence	Υπουργείο Άμυνας
Authorities - Central Government	Ministry of Labour, Welfare and Social Insurance	Υπουργείο Εργασίας, Πρόνοιας και Κοινωνικών Ασφαλίσεων
Authorities - Central Government	Department of Labour Inspection (Ministry of Labour, Welfare and Social Insurance)	Τμήμα Επιθεώρησης Εργασίας (Υπουργείο Εργασίας, Πρόνοιας και Κοινωνικών Ασφαλίσεων)

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities - Central Government	Department of Labour (Ministry of Labour, Welfare and Social Insurance)	Τμήμα Εργασίας (Υπουργείο Εργασίας, Πρόνοιας και Κοινωνικών Ασφαλίσεων)
Authorities - Central Government	Ministry of Finance	Υπουργείο Οικονομικών
Authorities - Central Government	Ministry of Justice and Public Order	Υπουργείο Δικαιοσύνης και Δημόσιας Τάξης
Authorities - Central Government	Shipping Deputy Ministry	Υφυπουργείο Ναυτιλίας
Authorities- National Agencies	Cyprus Port Authority (CPA)	Αρχή Λιμένων Κύπρου
Authorities- National Agencies	Electricity Authority of Cyprus (EAC)	Αρχή Ηλεκτρισμού Κύπρου
Authorities- National Agencies	Cyprus Energy Regulatory Authority (CERA)	Ρυθμιστική Αρχή Ενέργειας Κύπρου

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities		
Authorities- National Agencies	Cyprus Scientific and Technical Chamber (ETEK)	Επιστημονικό Τεχνικό Επιμελητήριο Κύπρου - ΕΤΕΚ
Authorities - Central Government	Ministry of Health	Υπουργείο Υγείας

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities - Local Government		
Authorities - Regional Government	District Office Administration Larnaca	Επαρχιακή Διοίκηση Λάρνακας
Authorities - Regional Government	District Office Administration Limassol	Επαρχιακή Διοίκηση Λεμεσού
Authorities - Local Government	Larnaca Municipality - District Office	Δημαρχείο Λάρνακας
Authorities - Local Government	Limassol Municipality	Δημαρχείο Λεμεσού
Authorities - Local Government	Union of Cyprus Communities	Ένωση Κοινοτήτων Κύπρου
Authorities - Local Government	Union of Cyprus Municipalities	Ένωση Δήμων Κύπρου
Authorities - Local Government	Community Council Mari	Κοινοτικό Συμβούλιο Μαρί
Authorities - Local Government	Community Council Zygi	Κοινοτικό Συμβούλιο Ζύγι

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Authorities - Local Government		
Authorities - Local Government	Community Council Tochni	Κοινοτικό Συμβούλιο Τόχνη
Authorities - Local Government	Community Council Kalavasos	Κοινοτικό Συμβούλιο Κλαβασού
Authorities - Local Government	Community Council Psematismenos	Κοινοτικό Συμβούλιο Ψεματισμένου
Authorities - Local Government	Community Council Maroni	Κοινοτικό Συμβούλιο Μαρώνι
Authorities - Local Government	Community Council Choitokitia	Κοινοτικό Συμβούλιο Χοιροκιτίας
Authorities - Local Government	Community Council Asgata	Κοινοτικό Συμβούλιο Ασγάτας
Authorities - Local Government	Community Council Pentakomo	Κοινοτικό Συμβούλιο Πεντάκωμο

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Private sector and businesses		
Private Sector and Businesses - Association	Larnaca Chamber of Commerce and Industry (business organisation)	ΕπορικόκαιΒιομηχανικόΕπιμελητήριοΛάρνακας
Private Sector and Businesses - Association	Limassol Chamber of Commerce and Industry	ΕπορικόκαιΒιομηχανικόΕπιμελητήριοΛεμεσού
Private Sector and Businesses - Association	Cyprus Shipping Chamber (CSC)	Κυπριακό Ναυτιλιακό Επιμελητήριο
Private Sector and Businesses - Association	Cyprus Hotels Association (CHA)	N/A
Private Sector and Businesses - Association	CCCI (KEBE): Cyprus Chamber of Commerce and Industry	ΕπορικόκαιΒιομηχανικόΕπιμελητήριοΚύπρου
Private Sector and Businesses - Association	Cyprus Employers and Industrialists Federation (OEB)	ΟμοσπονδίαΕργοδοτώνκαιΒιομηχάνωνΚύπρου

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Private sector and businesses		
Private Sector and Businesses - Association	Pancyprian Association of Polyvalent Fleets	Παγκύπριος Σύνδεσμος Πολυδύναμων Σκαφών
Private Sector and Businesses - Association	Association of small scale professional coastal fisheries	Σύνδεσμος επαγγελματιών αλιέων παράκτιας αλιείας
Private Sector and Businesses - Association	Cyprus Mariculture Association (CMA)	N/A
Private Sector and Businesses - Association	Zygi Fishermen Association	Επαγγελματίες Αλιείς Ζυγίου
Private Sector and Businesses - Energy	Cyprus Oil & Gas Association (COGA)	Σύνδεσμος Πετρελαιοειδών και Φυσικού Αερίου Κύπρου
Private Sector and Businesses - Energy	Cyprus Hydrocarbons Company (CHC)	Εταιρεία Υδρογονανθράκων Κύπρου

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Private sector and businesses		
Private Sector and Businesses - Energy	Cyprus Public Natural Gas Company (DEFA)	Δημόσια Επιχείριση Φυσικού Αερίου (ΔΕΦΑ)
Private Sector and Businesses - Energy	Natural Gas Infrastructure Company of Cyprus (ETYFA)	Εταιρεία Φυσικού Αερίου και Υποδομών Κύπρου
Private Sector and Businesses - Energy	Natural Gas Public Company (DEFA)	Δημόσια Επιχείριση Φυσικού Αερίου (ΔΕΦΑ)
Private Sector and Businesses - Ports	Vasilikos Port	Λιμένας Βασιλικού
Private Sector and Businesses - Ports	Zygi Fishing Shelter	Αλιευτικό Καταφύγιο Ζυγίου
Private Sector and Businesses - Businesses	Vasiliko Cement Works PLC (VCW)	Τσιμεντοποιία Βασιλικού

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Private sector and businesses		
Private Sector and Businesses - Businesses	Vasiliko Cement Limestone Quarry (Kalavasos Village)	Λατομεία Βασιλικού
Private Sector and Businesses - Energy	Vasilikos Energy Centre (VEC)	Ενεργειακό Κέντρο Βασιλικού
Private Sector and Businesses - Energy	EAC Vasilikos Power Plant	Ηλεκτροπαραγωγός Σταθμός ΑΗΚ- Βασιλικού
Private Sector and Businesses - Energy	VVTV and Petrolina Oil Storage Terminals	Τερματικό αποθήκευσης υγρών καυσίμων VTTV και Πετρολίνα
Private Sector and Businesses - Maritime	Seawave Fisheries Ltd	Seawave Fisheries Ltd Ιχθυοκαλλιέργειες
Private Sector and Businesses - Maritime	TELIA Acqua Marine Public Ltd	TELIA Acqua Marine Public Ltd Ιχθυοκαλλιέργειες

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Private sector and businesses		
Private Sector and Businesses - Maritime	Blue Island Ltd	Blue Island Ltd Ιχθυοκαλλιέργειες
Private Sector and Businesses - Maritime	TELIA Tuna Ltd	TELIA Tuna Ltd Ιχθυοκαλλιέργειες
Private Sector and Businesses - Maritime	Kitiana Fisheries Ltd	Kitiana Fisheries Ltd Ιχθυοκαλλιέργειες
Private Sector and Businesses - Maritime	Emat Ltd	Emat Ltd Ιχθυοκαλλιέργειες
Private Sector and Businesses - Maritime	Ichthys Eco-Farm	Ichthys Eco-Farm Ιχθυοκαλλιέργειες
Private Sector and Businesses - Businesses	Governors beach tourist attraction (e.g. Owners of tourist business)	Τουριστικές Επιχειρήσεις στην περιοχή Governor's Beach

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Public Institutions & Services		
Public Institutions and Services - Police	Cyprus Fire Service	Πυροσβεστική Υπηρεσία Κύπρου
Public Institutions and Services - Police	Cyprus Police	Αστυνομία Κύπρου
Public Institutions and Services - Police	Port & Marine Police	Λιμενική Αστυνομία Κύπρου
Public Institutions and Services - Police	Joint Rescue Coordination Centre (JRCC)	Κέντρο Συντονισμού, Έρευνας και Διάσωσης Κύπρου
Public Institutions and Services - Police	Cyprus Civil Defence - (Ministry of Interior)	Πολιτική Άμυνα
Public Institutions and Services - Police	Naval Base "Evangelos Florakis"	Ναυτική Βάση Ευάγγελος Φλωράκης

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Media		
Newspapers		
Media – Local newspaper	Efimerida Lemesos	Εφημερίδα Λεμεσός
Media – National newspaper	Cyprus Mail	N/A
Media – National newspaper	Philelefthe̲ros	Φιλελεύθερος
Media – National newspaper	Politis	Πολίτης
Media – National newspaper	Simerini	Σημερινή
Media – National newspaper	Haravgi	Χαραυγή

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Media		
Media – National newspaper	Alithia	Αλήθεια
Media – National newspaper	Kathimerini- Cyprus	Καθημερινή-Κύπρου
Television stations		
Media – National TV station	Sigmalive	Σιγμα live
Media – National TV station	RIK	ΡΙΚ
Media – National TV station	ANT1	Αντέννα Κύπρου
Media – National TV station	Alpha Cyprus	Αλφα Κύπρου

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Media		
Media – National TV station	Omega	Ωμέγα
News agencies / Online media		
Media – National	Cyprus News Agency	Κυπριακό Πρακτορείο Ειδήσεων
Media – National	In-Cyprus	N/A
Media – National	In Business News	N/A

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Academia and Education institutions		
Academia and Education institutions - Universities	University of Cyprus	Πανεπιστήμιο Κύπρου
Academia and Education institutions - Universities	Cyprus University of Technology	Τεχνολογικό Πανεπιστήμιο Κύπρου
Academia and Education institutions - Research centres	Maritime Institute of Eastern Mediterranean (MarineEM)	Ινστιτούτο Θαλάσσιων Υποθέσεων Ανατολικής Μεσογείου
Academia and Education institutions - Research centres	University of Cyprus - Oceanography Centre	Ωκεανογραφικό Κέντρο Πανεπιστημίου Κύπρου

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Civil Society		
Civil Society - Representative/ union associations	Pancyprian Federation of Labour (PEO)	Παγκύπρια Εργατική Ομοσπονδία
Civil Society - Representative/ union associations	Cyprus Workers' Confederation (SEK)	Συνομοσπονδία Εργαζομένων Κύπρου
Civil Society - NGOs International	WWF Mediterranean	N/A
Civil Society - NGOs International	Greenpeace Mediterranean	N/A
Civil Society - NGOs National	Federation of Environmental and Ecological Organizations of Cyprus	Ομοσπονδία Περιβαλλοντικών και Οικολογικών Οργανώσεων
Civil Society - NGOs National	Cyprus Marine Environment Protection Association (CYMEPA)	Κυπριακή Ένωση Προστασίας Θαλάσσιου Περιβάλλοντος
Civil Society - NGOs National	Terra Cypria (Cyprus Conservation Foundation)	Terra Cypria (Κυπριακό Ίδρυμα Προστασίας)

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Civil Society		
Civil Society - NGOs National	Friends of the Earth Cyprus	Φίλοι της Κύπρου
Civil Society - NGOs National	BirdLife Cyprus	N/A

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Communities in the AoI		
Local Communities - Coastal community	Residents of the Community of Mari	Κοινότητα Μαρί
Local Communities - Coastal community	Resident of the Community of Zygi	Κοινότητα Ζύγι
Local Communities - Coastal community	Resident of the Community of Tochni	Κοινότητα Τόχνης
Local Communities - Coastal community	Resident of the Community of Kalavasos	Κοινότητα Καλαβασού
Local Communities - Coastal community	Resident of the Community of Psematismenos	Κοινότητα Ψεματισμένου
Local Communities - Coastal community	Resident of the Community of Maroni	Κοινότητα Μαρωνίου
Local Communities - Coastal community	Resident of the Community of Choiroloitia	Κοινότητα Χοιροκιτίας

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Communities in the AoI		
Local Communities - Coastal community	Resident of the Community of Asgata	Κοινότητα Ασγάτας
Local Communities - Coastal community	Resident of the Community of Pentakomo	Κοινότητα Πεντακώμου
Local Communities - Livelihood	Governors beach tourist attraction (e.g. Owners of tourist business)	Τουριστικές Επιχειρήσεις στηνπεριοχή Governor's Beach
Local Communities - Livelihood	Communities related businesses (e.g. Owners of local business)	Επιχειρήσεις στις γειτνιάζουσες Κοινότητες
Local Communities - Livelihood	Local Fishermen in the AoI	Αλιείς της γύρω περιοχής

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
Vulnerable groups		
Vulnerable groups	Vulnerable groups living in the AoI	Ευάλωτες ομάδες της γύρω περιοχής

Stakeholder group	Stakeholder (English)	Stakeholder (Cypriot)
International Agencies		
International Agencies	EastMed Gas Forum (EMGF)	N/A

APPENDIX D ESIA EXECUTION PLAN

MODELLING STUDIES

Table D - 1 Modelling Activities – Onshore and Nearshore

Resource	Approach
Sediment Dispersion Modelling (for pipeline trenching operations)	Computational modelling will be performed to estimate the potential environmental impacts related to pipeline trenching operations that could influence sediment and water quality throughout the pipeline corridor. The approach requires a two-pronged analysis: assessment of sediment impacts and assessment of water quality impacts. Sediment will be disturbed during pipe laying activities and could re-suspend and eventually re-settle resulting in smothering effects on the benthic community. Similarly, the re-suspended sediment would increase total suspended solid concentrations in the vicinity of the pipeline. The Generalized Integrated Fate and Transport model (GIFT) or similar models must be used. The model will rely on global hydrodynamic currents (Copernicus model). The sediment and water quality impacts due to pipe laying operations will have different impacts based on the sea depth and current strength. Two current conditions (minimum and maximum) will be evaluated through a statistical analysis of the current speeds provided by the Copernicus hydrodynamic model to bind the range of impacts. A total of six scenarios (three locations under two current speed conditions) will be modelled. Results of the modelling will be provided as a stand-alone report to be included as an appendix of the Environmental and Social Impact Assessment report. This report will describe the model inputs, methodology, scenarios, simulation results and conclusions.
Hydrotesting Discharge Dispersion Modelling (if discharge will occur in Cypriot waters)	The USEPA's CORMIX modelling tool, or similar, should be used for assessment of the dilution and concentrations to simulate discharges into bodies of water. Data required to use this model include properties of the release (rate of discharge, temperature) are i) dimensions of the discharge structure (opening size, orientation, and depth); ii) characteristics of the adjacent body of water (current speed and direction, salinity and temperature profiles, and depth). The information for the ambient water receiving the hydrotest discharge should be obtained from the Copernicus Mediterranean Sea circulation model, whilst the properties of the release and the dimensions of the discharge structures and their locations will be provided according to project-specific data. At the location identified where the modelling will be performed, the model will be run twice for the minimum and maximum current speeds in the area. Modelling will describe the dilution of the various hydrotest constituents (biocides, etc.) with distance.

Translation of the official version submitted on 29/07/2021, issued for the benefit of Cyprus Authorities

Resource	Approach
Underwater Noise Modelling	The activity will be performed using an Underwater Noise Model that takes into account site-specific factors for underwater noise propagation and assessment of pipeline construction activities. Using site-specific modelling will help to ensure that potential noise impacts are quantified realistically rather than on a worst case basis using simpler generic modelling techniques. Noise transmission loss will be calculated along one transect line which radiates from the assumed pipeline construction activities up to a maximum of 60 km. In this way the environmental characteristics around each study area are taken into account. The results of the calculated transmission loss will then be combined with the relevant noise source characteristics to predict a received noise level at ranges out from the source. This process will be repeated for all frequencies of interest and the total noise level will be calculated. Algorithms will then be used to predict total noise exposure levels based on swim-away patterns for up to six underwater mammal hearing groups in the study area. Finally exclusion zones will be calculated based on the processes described above. Noise levels will be predicted only for one transect with starting point within two locations, one nearshore and one at greater depths. The assessment will be limited to the noise from a group of vessels, in the vicinity of each other, undertaking activities associated with pipe laying and/or dredging and will be held based on predicted RMS levels referenced to 1µPa and sound exposure levels referenced to 1 μPa^2s per pulse. The noise from the pipeline construction activities will be assessed using current international guidance for the assessment of the effect of noise on marine mammals. The potential effect for injury to fish and marine reptiles will also be assessed.
Onshore Noise Modelling	Predictive noise modelling will be conducted using SoundPlan noise modelling software package, or similar models, which is an internationally recognized noise prediction and presentation tool used extensively throughout the world in order to provide the values of sound pressure level in specific areas. The noise model can adopt different international standards for noise propagation, like ISO 9613. Results will be presented in tabular and 'noise contour' formats. Model outputs will be used to predict the impacts at nearby sensitive receptors with due consideration of the existing baseline. Consideration will be given to local regulation assessment guidelines and procedures; where such are not applicable or non-existent, suitable international assessment protocols such as IFC

Resource	Approach
Air Pollutant Dispersion Modelling (for Compressor Stations and Hydrotesting activities)	guidance will be consulted to determine suitable noise criteria. Two scenarios will be modelled: (1) normal operation for Cyprus facilities simulation study and (2) hydrotesting compression activities during pre-commissioning (this second scenario will be modelled if compression activities will be performed in Cyprus). The air pollutant dispersion modelling study proposed for the operation phase will be performed using the USEPA regulatory modelling system, CALMET-CALPUFF, or similar models. The model will be run for a time frame of one full meteorological year, using data from prognostic models (such as WRF[26] or MM5[27]); data from local weather stations, if any and if representative, will also be included in the model. Model (30x30 km domain) outputs will be used to predict the impacts at nearby sensitive receptors with due consideration of the existing baseline. The significance of these impacts is determined by comparison to air quality standards, these principally being the National Air Quality Standards, EU and IFC air quality standards. One modelling run will be performed; representative of normal operation for onshore facilities. The studies will take into account key macropollutants released into the atmosphere by the project. One air modelling run will also be performed for the hydrotesting compression activities during pre-commissioning (this second scenario will be modelled if compression activities will be performed in Cyprus).

[26]The Weather Research and Forecasting model (WRF) is a numerical weather prediction system designed to serve both atmospheric research and operational forecasting needs.
[27]Fifth-Generation Penn State/NCAR Mesoscale Model (MM5) is a regional mesoscale model used for creating weather forecasts and climate projections

SPECIALIST DESKTOP STUDIES

Table D - 2 Specialist Desktop Studies

Resource	Approach
Hydrological Study	The hydrological study aims to define the most practicable solutions for all hydraulic related issues in floodplains, drainage ways, rivers and streams. The study will be developed in accordance with the guideline "Water Development Department Policy for developments that affect official streams/rivers" issued in October 2019. The following desktop data will be collected for the preparation of the study (no field activities are included): • Hydrological data for the area of interest • Meteorological data • River/stream flow data • Topographical data • Present and future land use data • Geological data • Other miscellaneous data Further to the data collection and using appropriate hydrological models (e.g. rational method), the required storm water flow calculations will be carried out in order to establish the risk of flooding for a return period of 50 years and a return period of 100 years. The study will identify the required measures that should be implemented to avoid flooding at the onshore facilities. A report indicating calculations, assumptions, maps and measures required to avoid flooding will be prepared.

OFFSHORE, NEARSHORE AND ONSHORE LANDFALL AREA FIELD STUDIES[28]

Table D - 3 Environmental Desktop and Field Activities – Offshore, Nearshore and Onshore Landfall Area

Resource	Approach	Parameters	Period
Detailed Marine Survey	Field survey (offshore, nearshore & onshore landfall area): Offshore (water depth from about 20m to deepwater): • 2HDR seismic study: multi-channel digital acquisition to obtain geological record to 1 second (TWT) below seabed (approximately 800 m sub-seabed equivalent) • Variable corridor (500 to 1000 m) width for M-BES, SBP and SSS (for section of continental shelf 1000 m width corridor) • High resolution profiling, with a penetration	• Geophysical and Seismic ○ Achieving accurate bathymetry, locate all seabed obstructions and identify other seabed factors ○ Develop a DTM, contour plan and seabed charts with particular emphasis on any rock outcrops, and seabed slopes ○ Identify sub-seabed structural geology for geohazard analysis and pipeline design, incl. deeper geological data to gain understanding of the underlying structural control (fault definition) at key areas. ○ Identification of all existing pipelines and	Offshore: • Offshore Geophysical/Seismic : January 2021, April-July 2021 • Offshore Geotechnical: Q1 2022 Nearshore: • Nearshore Geophysical/ROV: May-June 2021 • Nearshore Geotechnical: June-July 2021 Onshore:

[28] The scope for the site investigations, as well as the specific modelling, has taken into account the general requirements established in the NCA Notification Letter (including but not limited to the identification and evaluation of geohazards, biological communities, etc.).

Resource	Approach	Parameters	Period
	to at least 10 m below the seabed using high-resolution equipment appropriate to soil conditions • Geotechnical, advanced geohazard and geochemical investigations (sampling and in-situ testing) Nearshore (area from the shoreline to a nominal water depth of about 20m): • SSS (Side-Scan-Sonar): 3000-m corridor width • M-BES (Multi-Beam Echo-Sounder): 100-m corridor width • SBP (Sub-Bottom Profiler) 100-m corridor width • MAG (Magnetometer) from 100-m width corridor at shoreline to 1000-m width at 20 m WD • ROV (Remotely Operated Vehicle) 100-m corridor width Onshore (landfall area only): • Topographic survey on the landfall area. • Geophysical survey, i.e. soil electrical resistivity, refraction and magnetometer profile along the central pipeline(s) route.	cables within the survey corridors • Geotechnical sampling and in-situ testing: evaluation of the nature and definition of the mechanical properties (including geochemical parameters) of the superficial seabed soils and substrate, as input to the mechanical design of the pipelines(s) and to the proper material selection.	• Onshore topography: March 2021 • Onshore Geophysical: June 2021 • Onshore Geotechnical: June 2021

Resource	Approach	Parameters	Period
	• Geotechnical investigation (sampling and in-situ testing) and ground-water level monitoring, at specific locations selected after the analysis of the geophysical data above. *Note: For Cultural Heritage, the results of the Detailed Marine Survey will be reviewed by a marine cultural heritage specialist*		
Soft bottom communities (benthic communities)	Field survey (nearshore & landfall) Sediment samples from soft bottom will be obtained at 5 m, 15 m and 35 m depth along the route of the pipelines. Samples will also be obtained at each depth at 200 m on each side of the pipelines corridor. One (1) control station will be defined in an undisturbed area far away from the pipeline corridor. A total of 10 sampling stations. From each station three replicate samples will be obtained using a Van Veen grab (KC Denmark 0.1 m^2). Analysis of macro-benthic fauna will be done according to JAMP Agreement 1997-06, Technical Annex 2 (Soft bottom macrozoobenthos). Taxonomic name as well as number of individuals will be determined for all species. The nomenclature will be in accordance with the latest international revisions, e.g. the	Infaunal abundance and density, densities of individual key taxa (e.g., numerical dominants), species richness (e.g., number of taxa, Margalef's D), taxa diversity (Shannon's Index H´), evenness (Pielou's Index J), nMDS and community statistics	Timing of field survey: approx. June 2021

Resource	Approach	Parameters	Period
	European Register of Marine Species or WoRMS nomenclature.		
Sea Water Quality	Field survey (nearshore & landfall): For seawater sampling a total of 3 stations will be set along the pipeline route: at shallow 5 m depth, 15 m and 35 m depth.. One (1) control station will be defined in an undisturbed area far away from the pipelines corridor, taking into consideration local environmental conditions. Water will be sampled only from the surface at the 5 m stations, from surface and near-bottom at the 15 m stations and from surface, mid and near-bottom at the 35 m station. Total number of samples will be 9 (including the control station). Physicochemical parameters will be measured in situ along a vertical profile up to the immediate vicinity of the seabed.	The following parameters will be analysed (water column): • Depth • Conductivity • Temperature • pH • Redox potential (Eh) • Dissolved Oxygen • Turbidity Conductivity, temperature and pressure will be used to calculate salinity. Additionally, the following seawater laboratory parameters will be measured in the water samples: • Total Organic Carbon (TOC) • Chemical Oxygen Demand (COD) • Biochemical Oxygen Demand (BOD5) • Total Suspended Solids (TSS) • Nutrients: K, totN, totP, NO_3, NO_2, NH4, P,o-PO_4. • Microbiology (E. coli and enterococci), • Fe, Cu, Zn, V. Pb, As, Cd, Hg, Cr, Ni • Hydrocarbons: TPH;BTEX • Fats Oil and Grease (FOG) • PAHs: US EPA list of 16 PAH	Timing of field survey: approx. June 2021

Resource	Approach	Parameters	Period
		• PCBs (28, 52, 101, 118, 153, 138, 180) • Chlorophyll-a concentrations & phaeopigments	
Sediment Quality	Field Survey (nearshore & landfall): Sediment samples will be collected at the same stations surveyed for macrofauna analysis: 9 stations are considered at 5 m, 15 m, and 35 m depth, along the pipelines corridor centreline and at 200 m on each side from the centreline of the pipelines corridor. One (1) control station will be defined in an undisturbed area far away from the pipeline corridor. 3 additional samples will be collected along the corridor centreline at 2.5-10-25 water depth. A total of 13 sediment stations will be sampled for chemical analysis.	The following physico-chemical parameters will be measured in situ: • Sediment type (sand, mud,..) • Sediment texture (fine, coarse,..) • Presence debris, alive or dead fauna such as empty shells, etc. • Sediment colour (recorded using Munsell Soil Colour Charts, Smell) • Smell (e.g. H_2S, Oil,..) • Sediment parameters for laboratory analysis will include: • Grain size distribution • Moisture content • pH • Redox potential (Eh) • Total Organic Carbon (TOC) • Total Organic Matter (TOM) • Nutrients: totN, totP, NO_3, NO_2, NH_4, P, o-PO_4 • Metals: Al, As, Cd, Co, Cr, Cu, Fe, Hg, Mg, Mn, Mo, Ni, Pb, Sn, V, Zn	Timing of field survey: approx. June 2021

Resource	Approach	Parameters	Period
		• Hydrocarbons: THC, TPH, NPD, BTEX • Hexachlorobenzene, Hexachlorobutadiene • Tri-Butyl Tin (TBT) compounds and their degradation products • PAHs: US EPA list of 16 PAH • Polychlorinated biphenyl (PCB) congeners - IUPAC nos. 28, 52, 101, 118, 138, 153 and 180 • 4,4 DDT • Acid volatile sulphide (AVS)	
Sea Turtles Studies	Field survey (coastal and nearshore): The activity will be organized with the aim to: • Carry out an analysis of data available from previous studies or investigation from the Department of Fisheries and scientific literature • Carry out an analysis of data collected by other consultants for projects in the Vasilikos area • Collect data on-site (i.e. survey) along the coast of interest and nearshore The Department of Fisheries and Research and the Department of Environment will be contacted and all available data with regards to sea turtles in	• Identify possible areas offshore and up to the water depth of 40 meters where sea turtles feed • Identify possible areas onshore in the vicinity of the landfall where sea turtles use a nesting ground.	Timing of field survey: approx. June – July 2021

Resource	Approach	Parameters	Period
	the Vasilikos area will be collected and analysed. In addition, onshore visits will be carried out to establish if turtles potentially use the shore area as nesting grounds.		
Marine Mammals Observation	Marine mammals observations will be performed as part of DMS offshore activities (Seismic Survey only). Whilst performing the nearshore environmental field surveys, notes will be taken about marine mammals and sea turtles observations, including Monk Seal.		

ONSHORE FIELD STUDIES

Table D - 4 Environmental Desktop and Field Activities – Onshore

Resource	Approach	Parameters	Period
Soil& Groundwater	<u>*Soil*</u>: Desk Study: • Bibliographical/desk based literature review, including project information • Remote sensing interpretation using soil maps (1:50,000 or similar) and aerial photographs or satellite imagery Field Study:	As specified in the Environmental Opinion Strategic Environmental Assessment for the Vasilikos Master Plan, the concentration of the following parameters have to be measured and assessed. <u>Soil</u>: • Potentially harmful elements (Cd, Pb, Ni, Cr, Cu, Zn, V, Hg, Fe, As, Co, Mn, Sn, Sb, P)	Timing of field survey: approx. May2021

Resource	Approach	Parameters	Period
	• Facilities Area ➢ 3 (three) sampling points will be collected reaching a maximum depth of 2.5 m ➢ Sampling will take place at two different depths (0.5 and 2.5 m below ground level). A maximum of 6 soil samples are foreseen for the facilities area ➢ Soil samples will be collected excavating soil borings with the use of drilling equipped mechanical hollow-stem augers. ➢ All samples taken will be kept in plastic containers and will be sent to an accredited laboratory where the analyses will be completed. • Landfall Area: ➢ Soil samples will be collected from boreholes already excavated by the DMS (Detail Marine Survey) ➢ A maximum of 6 soil samples are foreseen *Groundwater Quality*: Desk Study: • Bibliographical / desk based literature review; • Remote sensing interpretation using aerial photographs or satellite imagery Field Study: • Facilities Area ➢ The potential presence of a groundwater layer below the facilities will be investigated, according to local hydrogeological studies and evidence during boring activities.	• Total Petroleum Hydrocarbons (TPH) • Polycyclic Aromatic Hydrocarbons (PAHs), US EPA list of 16 PAH • Benzene, Toluene, Ethylbenzene and Xylene (BTEX) • Polychlorinated Biphenyl (PCBs) • Radioisotopes • Physicochemical soil parameters: pH, Organic matter, Grain Size Analysis Groundwater: • Potentially harmful elements (Cd, Pb, Ni, Cr, Cu, Zn, V, Hg, Fe, As) • Total Petroleum Hydrocarbons (TPH) • Fats Oil and Grease (FOG) • Chemical Oxygen Demand (COD) • Biochemical Oxygen Demand (BOD) • Polychlorinated Biphenyl (PCBs) • Conductivity • TP • TN • NO_3 • NO_2	

Resource	Approach	Parameters	Period
	➢ If the presence of a groundwater layer not related to salt wedge is confirmed, 3 of the borings located in the proximity of the facilities area can be extended to the water layer depth and piezometers can be installed. 1 piezometer will be located upstream of the groundwater direction and the other 2 downstream. Piezometer will allow monitoring of the depth of the water table as well as the presence of chemical pollutants and physico-chemical parameters of groundwater. ➢ A maximum of 3 water samples are foreseen for the facilities area (one in every 3 borings).		
Noise Monitoring	Desk Study: • Bibliographical and desk based literature review. Field Survey: The objectives of the preliminary noise surveys will be: • To assess the baseline noise conditions of the areas in the vicinity of the facilities areas and of the Landfall Station. From a preliminary evaluation, based on receptor identification, a total of n.8 sampling points will be installed where the following will be performed: • N.3: 24h measurements N.7: spot measurements of 30 min. (5 during day and 2 during night)	Measurements will include hourly analysis of L_{den}, L_{day}, $L_{evening}$, L_{night}, noise indicators, on the basis of the requirements of the Assessment and Management of Environmental Noise Laws of 2004 to 2007. Moreover, Lmax and Lmin will be recorded.	Timing of field survey: approx. June 2021
Air Quality	In the facilities area, a passive sampling with Radiello (or similar)	As specified in the Environmental Opinion Strategic	Timing of

Resource	Approach	Parameters	Period
Monitoring	will be carried out together with high volume air sampling pump in order to characterise the compound's concentration in the area of interest. In addition, a real-time portable instrument will be used where the Radiello samplers will be installed to monitor carbon monoxide concentrations in the ambient air. A ten minute measurement will take place at each of the 8 Radiello stations. In order to best characterize air quality in the vicinity of the foreseen construction sites, the presence of sensitive receptors that could be impacted by future polluting activities were considered in the selection of the number of sampling points and their location. Monitoring activities will be carried out in the following locations: • Facilities areas: 4 radiello and 2 air pumps • Mari village, north of the compressor station: 2 radiello and 1 air pump • Zygi village, east of the landfall or in proximity of the landfall area: 2 radiello and 1 air pump Radiello diffusive samplers will be employed for one week, in order to allow the absorption of the contaminants, while high volume air sampling pumps will be utilized for about 48 hours for each monitoring point.	Environmental Assessment for the Vasilikos Master Plan, the following parameters' concentrations will be measured and assessed: • Nitrogen Oxides (NO, NO_2 and NO_x) • Carbon Monoxide (CO) • Sulphur Dioxide (SO_2) • Benzene (C_6H_6) • Particulate Matter (PM2,5 e PM10) • Polycyclic Aromatic Compounds (PAHs, in particular matter) • Metals (Ni, Cd, Pb, As, Hg, in particulate matter) • Ozone (O_3)	field survey: approx. June 2021
Vegetation, Flora and Fauna	Desk Study:	The objectives of the survey are to:	Timing of field survey:

Resource	Approach	Parameters	Period
	• Literature search • Remote sensing analysis Field survey: The appropriate agencies will be contacted early to identify potentially sensitive ecological resources that may be present in the project area including species and habitat distribution. The area will be visited by an experienced biologist, and the presence of various species of flora and fauna will be noted/recorded within the entire prospective project area. Tables with the numbers and types of flora and fauna identified will be produced and will be included in the ESIA (names, numbers, density, status, etc.). An inventory of reptiles, birds and mammals will be completed, collecting data about sightings, traces, sounds, faeces and other signs such as underground holes (dens) that could indicate the presence of animals that may inhabit and feed in the area. Location of monitoring points will depend on accessibility of the areas	• Identify and count the number of vegetation species • Identify and count the most significant natural individuals • Verify the presence of protected and threatened species according to IUCN criteria, specifically: ➢ Identify and map the population (in number) of rare species of flora included in the Red Book of Cyprus Flora ➢ Verify and map the presence of *Erodium crassifolium*; Review and revise existing information on species and habitats in the project area	approx. May and August 2021

SOCIOECONOMIC BASELINE STUDY

Table D - 5 Socioeconomic Baseline Study – Onshore and Coastal

Resource	Approach	Period
Social	Qualitative baseline data collection activities to be implemented in the Study Area. • Key Informant Interviews (KII): Interviews will be held with regional and local stakeholders who have knowledge of a specific subject or are informed members of the community, such as provincial/ municipal/local government representatives, healthcare professionals, fishing or tourism associations and civil society organizations/NGOs where available. Perceptions of the project will also be gathered during these meetings. • Focus Group Discussions (FGD): with fishermen, sea users, farmers and women. Semi-structured meetings will be held with representatives of these groups to gather specific information pertaining to fishing and recreation practices and perceptions of the project. • Settlement/Landing Site Profiling: Meetings will be held with local community/fishing representatives in each settlement/landing site (within the Project Area of Influence) to gather up to date specific quantitative and qualitative information on demographics, livelihoods, health issues and cultural heritage and, in the case of landing sites, on fishing gear, grounds and species fished. This will help confirm desk top information. • Field Verification: Field team will visit key locations within the primary study area where key social sensitivities have been identified (i.e. fishing activities, resort and tourist beach, etc.). These locations would have been identified prior to field mobilization through desktop review of satellite images. All information will be georeferenced. • Field Observations: The field team will record relevant information regarding general area characteristics.	Timing of field survey: approx. June-July2021

CULTURAL HERITAGE STUDY

Table D - 6 Cultural Heritage – Onshore and Nearshore

Resource	Approach	Parameters	Period
Cultural Heritage	Desk Study: • Engagement of Department of Antiquities and review of archival data in order to identify the known areas of archaeological interest of the wider area of the onshore facilities in Cyprus and the nearshore zone. This includes: ➢ Research of archival data (e.g. archives of the Department of Antiquities of Cyprus [DoA], historical maps and aerial photos from Department of Lands and Surveys of Cyprus); ➢ Literature research (publically available grey literature and other resources i.e. Vasilikos Valley Project, Studies in Mediterranean Archaeology, Part 1-12/ Report of the Department of Antiquities Cyprus / Annual report of the Department of Antiquities, Cyprus/ etc.). • Local Stakeholder engagement to identify any intangible cultural heritage traditions that might be practiced by the local population; • Marine Desk Based Assessment to include the results of the Detailed Marine Survey (DMS), a detailed intertidal/foreshore and coastal archaeological assessment, a review of available data to identify location of submerged landscapes, shipwrecks, plane wrecks and debris fields, etc., and to assess the potential for discoveries to be made along the project route. Field survey: Field walking survey Identification of cultural resources in the area of impact by a walkover field survey.	• Monuments, buildings and above ground structures of cultural interest • Intangible Cultural Heritage (ICH) • Archaeological sites • Cultural heritage found offshore	Timing of field survey: approx. June - July 2021

Resource	Approach	Parameters	Period
	Two walkers (archaeologists) walk in parallel (direction north – south / distance in between 5 m) covering the whole area. The survey aims to document and record any visible cultural features, e.g. flakes, pottery, artefacts, or other indicators of past human activity (without collecting any material). Regarding the surface material, collection of specific geographical coordinates will be done using handheld computer with Global Positioning Systems (GPS) receiver. The data that will be gathered during the survey will be processed and recorded in a Geographic Information System (GIS: mapping software) to create various structural and/or artefact distribution maps.		