PROJECT:

EastMed Pipeline Project

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2 NON TECHNICAL SUMMARY

This chapter presents the Non–Technical Summary of the ESIA of the EastMed Pipeline Project. The purpose of this chapter is to describe in a non-technical language the key features and findings of the Environmental and Social Impact Assessment (ESIA) in order to facilitate communication and public involvement.

In particular, according to MD 170225/2014, the following are described in a concise and non-technical terms:

- The project, including geographical position and administrative affiliation, as well as a brief description of key its elements, as summarized in section 3.
- The distances of the project from the boundaries of settlements and approved urban plans, boundaries of areas of the national system of protected areas of Law 3937/2011 (HGG A'6O), forests and forestry areas, main social infrastructure facilities (eg facilities care, education, care for the elderly) and public welfare, etc.
- The significant environmental impacts that the project, which are also presented in the form of tables, as described in section 9.14.
- The measures, actions and initiatives proposed for integration of the environmental dimension in project's design and in general for the protection of the environment.
- The benefits from the implementation of the project, including impacts on the local and national economy.
- The viable alternatives considered and an indication of the main reasons in favor of the chosen solution, taking into account the environmental impacts.

Additionally, a summary of the Appropriate Assessments performed for the Natura 2000 sites onshore/offshore crossed by the pipeline is also provided, highlighting the main predicted impact and related mitigation measures.

Appendix 1 provides Project's overview map with indications of the most prominent features of the area.

2.1 Project Overview

2.1.1 Project Title and Background

This study concerns the Environmental and Social Impact Assessment (ESIA) for the construction, operation and decommissioning of the *Greek Section* of the *EastMed Pipeline Project* (EastMed or the Project) according to Art. 2 of L. 4014/2011 (HGG A'209/2011). The ESIA covers the provisions of Articles 5(1) and 5(2) of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU). Apart from the national standards, as defined by relevant applicable legislation, the ESIA has been performed in compliance with applicable international standards, as embodied in the European Bank for Reconstruction and Development (EBRD) Performance Requirements (PR1-10).

The Project, being developed by IGI Poseidon S.A., has followed the voluntary procedure of the Preliminary Identification of Environmental Requirements (PIER) according o Art. 2 of L. 4014/2011 (HGG A'209/2011) which corresponds to the Scoping phase of Articles 5(1) and 5(2) of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU). The PIER was uploaded on the Electronic Environmental Register on 29/07/2021 and its hardcopy was submitted on 30/07/2021 (Ref. 72913/4764) whilst the Scoping Opinion was issued on 09/05/2022 with Ref. No 72923/4764.

EastMed has been catalogued since 2013 as an EU *Project of Common Interest* (PCI) and, according to L. 4685/2020, in May 2020, EastMed Pipeline Project along with the Poseidon Pipeline Project, was characterized also as a Project of National Importance and Public Interest for Greece.

Overall, it is an efficient interconnection between eastern Mediterranean sources and European energy markets, through Cyprus, Greece and Italy as well as with other markets in south-eastern (SE) Europe.

With a length of about 2,000 km, including an offshore section of more than 1,400 km (approximately 840 km in Greek waters), EastMed Pipeline Project links Israel, Cyprus and Greece via Crete, before traversing approximately 540 km through the Greek mainland to its final 210 km stretch along the Ionian coast to reach Italy via the offshore section of the Poseidon Pipeline.

The EastMed-Poseidon Pipeline Project provides Europe with a new energy corridor, through a dedicated connection via a completely new route, integrating markets along the way and enhancing diversification of energy supply. It will contribute to European energy security of supply by enhancing diversification of sources and routes and supporting European (domestic) production in face of the decline of the continent's traditional indigenous sources through new gas sources currently not reaching any part of the European markets.

In recognition of their notable significance and contribution towards achieving EU energy targets and in compliance with the criteria of Regulation 347/2013, the EastMed Pipeline Project and Poseidon

Pipeline Project have been catalogued as EU *Projects of Common Interest* (PCI) since 2013 particularly to ensure security and diversification of energy supply and pursue market integration and competition to Europe.

As a PCI, the EastMed Pipeline Project benefits from fast-track procedures provided by EU Regulation 347/2013.

The Project's development activities are also supported with co-funding from the EU's Connecting Europe Facility (CEF) program.

Apart from the EU, the development of the EastMed Pipeline Project is also supported by the countries concerned. On January 2nd, 2020, the governments of Greece, Cyprus and Israel signed an Intergovernmental Agreement (IGA) confirming the recognition by the Parties of the strategic importance of the EastMed Pipeline Project. To ensure the pipeline's timely realisation and its viable operation, the IGA provides for cooperation via an intergovernmental joint committee to facilitate its development in accordance with the highest environmental standards. In May 2020, the Project was also declared a Project of National Importance for Greece.

Ongoing development of the Project comprises studies, performed with the contribution of leading firms specialised in the sector, to include provisions to allow the safe and optimised transportation of hydrogen as well, promoting transition of south-east Europe and East Mediterranean region towards a sustainable and efficient energy transmission network, and supporting hydrogen production plants and development of energy intensive users.

2.1.2 Type and Size of the Project

2.1.2.1 *EastMed Pipeline Project*

The EastMed Pipeline Project aims to transport gas directly from the eastern Mediterranean fields to the European Natural Gas System via Greece. **The object of this report is the development of the ESIA for the section of EastMed within Greek jurisdiction.**

EastMed consists of a Southern Line and a Northern Line to deliver gas from Israeli and Cypriot sources, respectively, through Peloponnese and Western Greece, to the Poseidon Pipeline Project in north-west Greece. Upstream of Crete these two lines are designed to work complementarily as well as independently, foreseeing infrastructure in Cyprus dedicated to each line. Thanks to this, the system is highly flexible, contributing to security of supply. The EastMed Pipeline Project comprises the following main components:

A. Southern Line of EastMed (Israel → Cyprus/Crete → SE Peloponnese):

- Transports gas from Israeli sources directly from the EastMed Compression Platform (ECP) in Israeli waters to a compression and metering station in Crete (CS2/MS2) and from there to the mainland Greece and the Poseidon Pipeline Project,
- Delivers gas to Cyprus for domestic consumption through a subsea Inline Tee Assembly (ITA) and a branch pipeline from the subsea ITA to Cyprus (OSS1 comes from Israeli platform to ITA, OSS1a from ITA to a Metering and Pressure Reduction Station (MS1a/PRS) in Cyprus and OSS2 from ITA to Crete);

B. Northern Line of EastMed (Cyprus → Crete → SE Peloponnese):

- Delivers dry gas originating from one or more of the Cypriot offshore gas discoveries to the compression and metering stations in Cyprus (CS1/MS1) first, through OSS1b and then in Crete (CS2/MS2N), through OSS2N and from there to the mainland Greece and Poseidon Pipeline Project, as referred in the next paragraph;

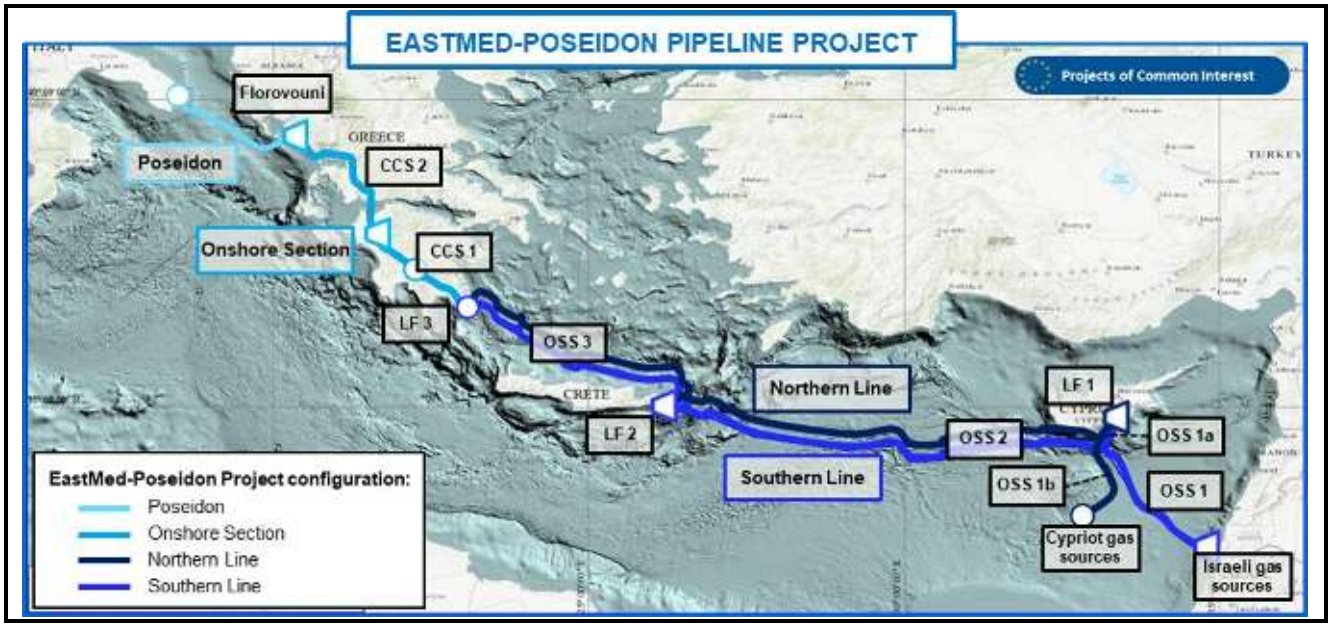
C. Combined System of EastMed (Crete & mainland Greece → Poseidon Pipeline Project):

- At LF3 the gas flow streams from two pipelines will be combined into a single large-diameter pipeline (CCS1-OSS4-CCS2) for transportation to the Poseidon Pipeline Project Compressor Station at Florovouni[1] in north-west Greece,
- Combination of the Southern and Northern flow streams will require additional compression along the CCS1 section in Peloponnese (CS3).

The 'Northern and Southern Lines' are shown in Figure 2-1 where the 'Southern Line' and 'Northern Line' are indicated in blue and dark blue, respectively. The onshore single large diameter pipeline of the 'Combined System' (i.e. CCS1 and CCS2) is shown in light blue[2].

[1]Compressor Station of the Poseidon Pipeline Project system at Florovouni in north-west Greece belongs to another project with the same owner and has received environmental permitting through a separate procedure (ETA: ΥΠΕΝ/ΔΙΠΑ/35872/2373/07-06-2019, ΑΔΑ: ΩΠΝ34653Π8-4Ι9)

[2] Light blue line also includes the small offshore section of the Combined System that crosses Patraikos Gulf, i.e. OSS4.



Source: EastMed, 2020.

Figure 2-1 EastMed Pipeline Northern and Southern Lines and Combined Line

2.1.3 EastMed Pipeline Project in Greece

The EastMed Pipeline Project includes onshore and offshore pipeline features and onshore support facilities and extends into national territory orjurisdiction. In order to facilitate comprehension of project configuration, sectioning is often performed.

EastMed in Greece can be distinguished in two main sections:

- The *Onshore Section,* which essentially consists of the Project's components in continental Greece (and the Patraikos Gulf crossing offshore section) and the onshore facilities in Crete and in Peloponnese. In relation to the entire EastMed configuration, the onshore section in Greece includes the onshore pipeline of the Combined System and the Onshore facilities in Crete supporting the Southern Line and the Northern Line and the Onshore facilities in Peloponnese; and
- The *Offshore Section*, which essentially consists of the Project's components in the south Cretan Sea and the South Aegean Sea. In relation to the entire EastMed configuration, the offshore section in Greece includes the Greek part of the Southern Line and the Northern Line.

2.1.3.1 *Onshore Section of the EastMed Pipeline Project in Greece*

The **EastMed Onshore Section in Greece** includes the following:

- The Compressor and Metering Stations in Crete (CS2/MS2 and CS2/MS2N) together with the relevant small onshore sections to and from landfall site LF2;
- The onshore section of the 48" pipeline that crosses Peloponnese (CCS1) from landfall site LF3 (SE of R.U. Laconia) to landfall site LF4 (NW of R.U. Achaia on the south coast of the Patraikos Gulf);
- The Megalopoli's Branch line that is foreseen to connect CCS1 with the National Natural Gas System at Megalopoli's area (Perivolia area). The pipeline will have a diameter of 16";
- LF4 (Landfall site in the NW of R.U. of Achaia, close to Lakopetra beach, NW Peloponnese area)
- The offshore section of the 46'' pipeline that crosses the Patraikos Gulf (OSS4) from landfall site LF4 to landfall site LF5 (SW of R.U. Etoloakarnania);
- LF5 (Landfall site in the SW of R.U. of Elotoakarnania, close to Evinochori settlement, SW Sterea Ellada)
- The onshore section of the 48" pipeline that crosses Western Greece (CCS2) from landfall site LF5 (south-west of R.U. Etoloakarnania) to the installation site of the Poseidon Pipeline Project compressor station at Florovouni , in R.U. Thesprotia;
- The Metering and Pressure Reduction Station (MS4/PRS4) in Megalopoli (start of Megalopoli's Branch);
- The Heating Station in Megalopoli in the same plot as MS4/PRS4;
- The compressor station CS3 at R.U. Achaia in Peloponnese; and
- The Dispatching and Operation and Maintenance Centre (O&M) in the R.U. of Achaia.

Along the onshore section, Scraper Stations – SS (in total seven[3]) and Block Valve Stations - BVS (fifteen in total) will be installed as per the current Project design. BVSs will be placed at distances of approximately 30 km. A Landfall Station (LS) (four in total) will be installed near each landfall site.

For the section starting at landfall site LF3 in south-east Peloponnese to the Poseidon Pipeline Project's compressor station at Florovouni (sections CCS1, OSS4 and CCS2), the design pressure of

[3] It is clarified that 1 Scraper station will be located within the MS4/PRS4 and Heating Station at Megalopoli area, 1 Scraper station will be located within the future CS3, in the R.U. of Achaia, and 4 Scraper Stations will be located within the same plot as the Landfall Stations, bundling permanent facilities of the project as much as possible. The seventh SS concerns the Megalopoli's Branch.

the Project is 100 barg while the maximum operating pressure (MOP) is considered equal to 95 barg. For the Megalopoli's Branch line, the design pressure is 80 barg while the MOP is equal to 75 barg.

2.1.3.2 *Offshore Section of the EastMed Pipeline in Greece*

The **EastMed Offshore Section in Greece**, includes the following:

- OSS2 and OSS2N (the part of the Offshore Section from Cyprus to Crete under Greek jurisdiction): Subsea trunk lines from the start of the Greek Offshore Section to Crete;
- LF2 (Landfall site in Crete): the nearshore and coastal crossing section in the area of Crete;
- OSS3 and OSS3N (Crete to Peloponnese): Subsea trunk lines from Crete to Peloponnese; and
- LF3 (Landfall site in Peloponnese): the nearshore and coastal crossing section in the area of Peloponnese.

The Greek Offshore Section of the Project includes two (i.e. twin) pipelines at an average distance of approximately 100 m. Near the landfall site, the two pipelines approach each other to enter the same shore crossing cofferdam. Up to the landfall site, pipelines will be simply laid on the seabed with the pipelines gradually buried only near the coast.

In more detail:

- OSS2 (in Greece) will have an approximate length of 390 km, a diameter of 26''and a transfer capacity of 11 BSCM/yr;
- OSS2N (in Greece) will have an approximate length of 390 km, a diameter of 26'' and a transfer capacity of 10 BSCM/yr; and
- OSS3 and OSS3N will have a diameter of 28'' and transfer capacity of 10.5 BSCM/yr each, along an approximate length of 430 km.

Once both lines become operational, the EastMed project will transport a combined total flow rate of 21 BSCM/yr to the EastMed Onshore Section.

The design pressure of the OSS2 and OSS2N sections is 363 barg, while the MOP is considered equal to 345 barg. The design pressure of the OSS3 and OSS3N sections is 231 barg, while the MOP is equal to 220 barg. From a technical point of view, the two pipelines (Southern and Northern) are independent but also parts of a unique project system, and from an environmental point of view, they should be considered as one for most environmental and social parameters. Therefore, unless a clear distinction is necessary, the term "**Line OSS2/OSS2N**" is introduced to describe pipelines OSS2 and OSS2N as one integrated pipeline system across the south Cretan Sea (from the middle of the sea straits between Greece and Cyprus to the designated landfall in Crete); similarly, the term "**Line**

OSS3/OSS3N" is used for the OSS3 and OSS3N pipelines across the South Aegean Sea from the landfall in Crete (LF2) to the designated landfall in SE Peloponnese (LF3).

2.1.4 Geographical Project Location and Administrative Jurisdiction

2.1.4.1 *Location*

EastMed in Greece is located in southern (offshore and onshore) and western (onshore) parts of the country; the following sections can be identified:

- Line OSS2/OSS2N (South Cretan Sea): The Greek section route of Line OSS2/OSS2N stretches approximately 390 km across the eastern Mediterranean Sea, from the middle of the sea straits between Greece and Cyprus to the designated landfall in Crete (LF2), reaching a maximum depth of approximately 3,000 m (for only about 10 km). The OSS2/OSS2N will have an outer diameter of 26'';
- Crete: The suggested LF2 landfall site of the pipeline is located in south-eastern Crete in the area of Atherinolakkos, in the Municipality of Sitia, R.U. of Lassithi. At a short distance (~800 m north-west) lies the proposed site for construction of the compressor and metering stations (CS2/MS2 and CS2/MS2N) on plot adjacent to the existing Power Public Corporation (PPC) power station. From the LF2 landfall site to the installation site of the compressor and metering stations, two twin pipelines (two entering and two exiting the Facilities) will be constructed in parallel configuration with indicative length of 1 km each. The pipelines entering the station (which will connect LF2 to the facilities in Crete) will have a 26" outside diameter and the ones exiting it (which will connect the facilities in Crete to LF2) have a 28" outside diameter;
- Line OSS3/OSS3N (South Aegean Sea): The route of Line OSS3/OSS3N starts from the selected LF2 landfall in south-eastern Crete, and by crossing the Cretan Fore-Arc Basin and the Hellenic (Cretan) Margin ends at landfall LF3 in south-eastern Peloponnese. Its total length is approximately 430 km and the maximum water depth is approximately 1,600 m. The OSS3/OSS3N will have an outside diameter of 28'';
- CCS1 (Peloponnese): The section of the pipeline located in Peloponnese starts from the LF3 landfall site located about 300 m north of the settlement of Agios Fokas in the Municipality of Monemvasia of the R.U. of Laconia and following a north-north-western direction terminates at LF4 the landfall site which is 2.8 km north-east of the settlement of Lakkopetra on the southern shoreline of the Patraikos Gulf in the Municipality of Western Achaia of the R.U. of Achaia. More specifically, the routing runs ~6.5 km west of Monemvasia, continues with a north-north-west course running ~1.5 km north-north-east of the settlement of Molai, and continues in the same direction between the settlements of Geraki and Grammousa. Then it continues on the semi-

mountainous part located between the settlements of Kalloni and Goritsa on the slopes of Mount Parnon. Following the same north-west direction, it runs for ~4 km initially west, and then north of the city of Sparta and from there, following a route parallel to the National Road of Megalopoli-Sparta, runs for ~6 km initially west and then north of the city of Megalopoli and continues in the direction of the settlement of Karytaina, passing in a distance of ~2 km west of it. After that, it continues within the R.U. of Ilia, crosses at a distance of ~10 km east of Ancient Olympia and 3 km east of the artificial lake of Pinios. Then the routing enters the R.U. of Achaia and runs along the ridge of Mount Movri ending at the beach of Kalamaki in the Patraikos Gulf. CCS1 will have an outside diameter of 48'' and a total length of approximately 300 km;

- The **Megalopoli's Branch** bears off CCS1 near Soulari settlement and by following a northern direction extends approximately 10 km to Megalopoli town. The Megalopoli's Branch will have an outside diameter of 16'';
- **OSS4 (Patraikos Gulf).** From Peloponnese to Western Greece, the pipeline crosses Patraikos Gulf in a north-east direction. The length of this offshore section (OSS4) is approximately 17 km and the maximum depth is approximately 110 m. OSS4 will have an outside diameter of 46''; and
- **CCS2 (Western Greece)**. The section of the pipeline located in western Central Greece starts from the LF5 landfall site located approximately 3 km south of the settlement of Galatas in the Municipality of Nafpaktia of the R.U. of Etoloakarnania, and in a north-north-western direction ends in the mountainous area of Florovouni which is located ~3.5 km south-east of the settlement of Perdika, in the Municipality of Igoumenitsa of the R.U. of Thesprotia, where the already licensed compressor station of Poseidon Pipeline Project is scheduled to be constructed. Initially, the route intersects with the Evinos River and the Ionian Road and continues through the mountain range of Mount Arakynthos with a north-western course towards Lake Trichonida. It runs south of the lake on a western course and at a distance of ~1 km north of the settlements of Gavalos, Mataraga and Papadates and then passes ~3.5 km south-west of the city of Agrinio. It continues north, crosses the river Acheloos, runs ~500 m west of the settlement of Lepenos, and runs to the north through the mountain range and passes ~700 m west of the settlement of Varetadas, and ~500 m from the settlement of Valmada. Then the routing crosses the plain area north of the Amvrakikos Gulf, between the settlements of Peranthi and Loutrotopos and Polydroso and Rachi. Continuing initially west and then north-north-west, the routing runs ~2 km south of the settlement of Kamarina, ~1 km east of the settlement of Heimadio and ~1.5 km west of the settlement of Kanalaki. For the next 15 km, the routing runs through a plain area on a north-west course passing ~1 km west of the settlement of Spatharaioi, ~1 km west of the settlement of Margariti, ~500 m north of the settlement of Karteri and ends in Florovouni. CCS2 will have an outside diameter of 48'' and a total length of approximately 250 km.

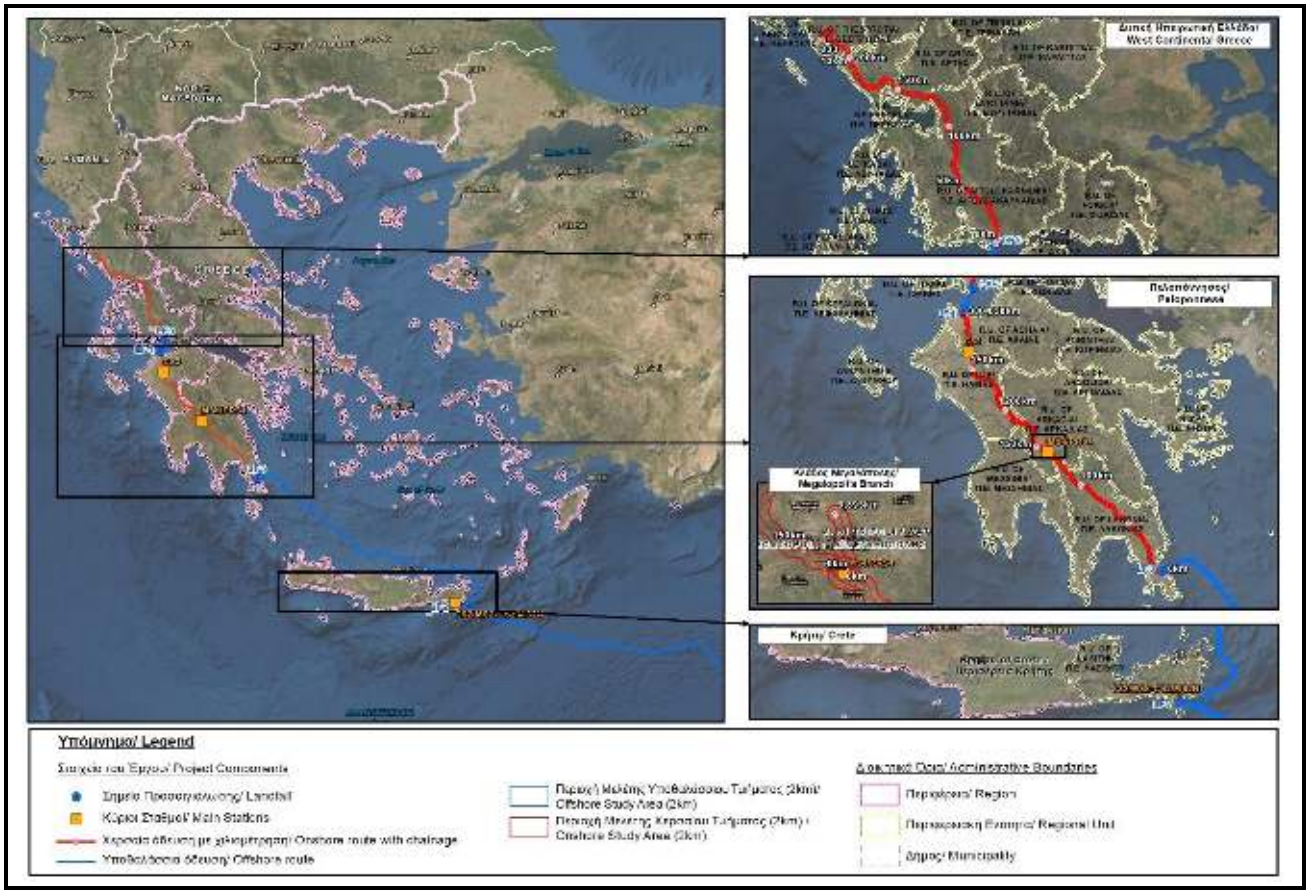
2.1.4.2 *Administrative Jurisdiction*

The starting point of the Greek Section of EastMed is located in the middle of the sea straits between Greece and Cyprus. The EastMed Pipeline Project in Greece (onshore section) runs through the Administrative Units presented in Table 2-1. Figure 2-2 presents an overview of the Project location.

Table 2-1 Administrative Jurisdiction of the Project.

Region	Regional Unit	Municipality
Crete	Lassithi	Sitia
Peloponnese	Laconia	Monemvasia, Evrota, Sparti
	Arcadia	Megalopoli, Gortynia
Western Greece	Ilia	Andritsaina-Krestena, Ancient Olympia, Pyrgos, Ilida
	Achaia	Western Achaia
	Etoloakarnania	Nafpaktia, Iera Polis of Messolonghi, Agrinio, Amfilochia
Epirus	Arta	Nikolaos Skoufas, Artaion
	Preveza	Ziros, Preveza, Parga
	Thesprotia	Igoumenitsa

Prepared by: ASPROFOS, 2022.



Prepared by: ASPROFOS, 2021.

Figure 2-2 Project Location in Greece.

2.1.5 Project basic technical data

This section provides an overview of available information regarding project's technical description. More details are presented in Chapters 3 and 6 of the ESIA.

2.1.5.1 *Pipeline*

2.1.5.1.1 Offshore Section

The Offshore Section includes deep-water sections of the pipelines up to the 40 m water depth contour line at the landfalls. The part of the Project under consideration (EastMed-Offshore Section – Greek Section, i.e. OSS2 and OSS3 sections) has a total length of approximately 838 km in the offshore area.

2.1.5.1.2 Nearshore Section

The nearshore zone extends from the shoreline at each landfall location to a 40 m water depth contour. The nearshore pipeline sections are approximately 5 km in length, and the diameters vary as follows:

- LF2:
  - 2 pipelines (OSS2/OSS2N) incoming to landfall (26”),
  - 2 pipelines (OSS3/OSS3N) out-going from landfall (28”);
- LF3: 2 pipelines (OSS3/OSS3N) incoming to landfall (28”);
- LF4: 1 pipeline (OSS4) out-going from landfall (46”); and
- LF5: 1 pipeline (OSS5) incoming to landfall (46”).

The nearshore pipelines will be buried in the shore approach areas for protection against external factors and for pipeline stability. A minimum burial depth of 1.5 m cover on top of the pipeline is adopted.

2.1.5.1.3 Onshore Section

The onshore pipeline section is approximately 540 km in length with a diameter of 48” (for approx. 140 km, up to Megalopoli)/46" (for the rest of approx. 395 km). The design pressure of the main pipeline is 100 barg. The Megalopoli Branch is approximately 10 km in length and has a diameter of 16”. Its design pressure is 80 barg.

The pipeline shall be installed in accordance with ELOT EN1594. Typically, the onshore pipeline will be buried. The standard soil covers of the buried onshore pipeline (measured from top of pipe) shall be at least 1 m to comply with the Greek Technical Regulation of Natural Gas Transmission System with pressure greater than 16 bars - Ministerial Decision. Δ3/Α/ΟΙΚ.4303 ΠΕ 26510, as amended by Ministerial Decision Δ3/Α/8857 (GOV. GAZ. 2026/B/20.06.2012) and by Ministerial Decision ΥΠΕΝ/ΔΥΔΡ/89630/650/6-12-2018 (GOV.GAZ 5908/Β’/31-12-2018).

In most cases at crossings there are also requirements for increased cover due to applicable codes and standards to be followed. The depth of cover will be increased as required at road and service crossings to ensure the minimum clearances are maintained and highway authority/utility requirements are met.

Technical characteristics of the Greek EastMed pipeline segments are summarised in the following table.

Table 2-2 Summary of Investigated Pipeline Sections

Section	Pipe Size (inch)	Flow Rate (BSCM/y)	Length (km) (approx.)	Maximum Depth (m)
OSS2/OSS2N	2 x 26	11/10	392	approx. 3,000
OSS3/OSS3N	2 x 28	10.5/10.5	429	approx. 1,590
CCS1a-1 (to Megalopoli)	48	21	138	-
Megalopoli Branch	16	1	10	-
CCS1a-2 (up to CS3 in Achaia)	48	20	127	-
CCS1b	46	20	35	-
OSS4	46	20	17	approx. 140
CCS2	48	20	233	-

Source: IGI, 2021

The pipeline is complemented by some permanent associated facilities. These include the following:

- Line Valve Stations (Landfall Valve Stations and Block Valve Stations)
- Scraper Stations
- Main Stations (Compressor Stations, Metering Stations and Heating Station)
- Operations & Maintenance Base (O&M) – Dispatching Centre

A description of each component as introduced above is reported in the following paragraph.

2.1.5.2 *Line Valve Stations*

2.1.5.2.1 Landfall Block Valve Stations (LSs)

The landfall block valve stations (BVS) are located in the following areas:

- In the area of Atherinolakkos, in Crete (inside the compressor plot, LS02);
- In the southern Peloponnese (500 m north of the settlement of Agios Fokas in the municipality of Monemvasia, LS03);
- In the area south of the Gulf of Patras (2.5 km northwest of the settlement of Kalamaki in the municipality of Western Achaia LS04); and
- In the area north of the Gulf of Patras (3.1 km southeast of the settlement of Galatas in the municipality of Nafpaktia, LS05).

The purpose of the landfall stations is to allow the connection of the offshore pipeline on the one hand and the pipeline onshore on the other.

2.1.5.2.2 Block Valve Stations (BVS)

The block valve stations are installed along the pipeline so that the pipeline can be isolated for maintenance or emergency reasons during operation phase. At this stage of design, there is provision for 15 BVS stations along sections CCS1 and CCS2. Along Section CCS1, the maximum actually selected distance between two successive BVS (BVS-2 and BVS-3) is about 30 km, whilst the distance between the other BVSs varies in general from 20 to 29 km, except in few cases, where it is less than 20 km. Along section CCS2, the maximum selected distance between two successive proposed BVS's (BVS-15 and BVS-16) is approximately 31 km, while the distance between the other BVS's varies in general from 27 to 29 Km.

2.1.5.2.3 Scraper Stations (SS)

The SS have been designed for the use of permanent scraper launcher and receiver traps and to permit isolation, venting, de-pressurization and scraper operations. Hereinafter a detail of the location of each scraper station along CCS1 and CCS2 is depicted.

CCS1

- At inlet and outlet of the landfall station at Agios Fokas LF3 area (KP 0.30 of CCS1) at south-east Peloponnese;
- At the inlet and outlet of Heating/Metering/Regulating Station, at the beginning of Megalopoli Branch pipeline (KP 138.43 of CCS1);
- At the inlet and outlet of CS3 (KP 265.17 of CCS1) ; and
- At Perivolia, at the end of the Megalopoli Branch pipeline (KP 9.89 of branch).

CCS2

- At LF5 – North of Patraikos Gulf at the inlet and outlet of the landfall station at Galatas (KP 0.59 of CCS2); and
- At Eleochori, an intermediate point in the section of pipeline in Western Greece (KP 118.13 of CCS2).

2.1.5.3 *Main Stations*

2.1.5.3.1 Compressor Stations

Compressor stations are installed on pipelines of great length in order to provide the required pressure allowing gas transmission. Considering that there are limitations on the maximum allowable operating pressure for the pipes, more than one compressor station is required along the pipe.

The new compressor stations (CS) that will be installed in the Greek onshore area are the following:

- 2 Compressor stations in Crete for the different lines (single plot where CS2 and CS2N are included); and
- Compressor station in Achaia (CS3).

Table 2-3 Basic Technical Data for Compressor Stations

Parameter	CS2	CS2N	CS3
Total flow (BSCM/yr)	11[4]	10	20
No. of compressors operating	3	3	3
No. of spare compressors	1		1
Gas flow per compressor (Sm3/hr)	465,083	422,723	776,569
Required power (MW) per compressor	17.6	14.7	10.0
ISO power (MW) per compressor at site conditions	25.2	25.2	17.5
Minimum Total installed ISO power (MW)	4* x 25.2 = 100.8	3 x 25.2 = 75,6	4* x 17.5 = 70
Annual Fuel gas Consumption (MMSm3/yr)	115	96	70
No. of stages	1	1	1
* this results from the 3 operating compressor units and the 1 spare.			

Source: P617-000-BD-DBS-01_3, Design Basis Memorandum – Facilities and E780_00225-Ev31A-TDR-00051_2_System Consolidation Report

2.1.5.3.2 Metering Station

The purpose of the metering unit is to measure the quantity/quality of gas being transferred downstream EastMed pipeline sections .

The following metering stations have been foreseen for the Greek section of the EastMed Pipeline Project:

- Two metering stations in Crete, at the same location as the compressor station (MS2 and MS2N for CS2 and CS2N respectively), and
- A metering station in the broader area of Megalopoli (MS4).

[4] CS2 referred to Southern Line (11 BSCM/Y) and CS2 N referred to Northern Line (10 BSCM/Y), whilst the Combine Line has 10.5 BSCSM/Y for each one.

Table 2-4 Basic Technical Data for Metering Stations

Parameter	MS2	MS2 N	MS4
Flow capacity	11[5] BSCM/yr	10 BSCM/yr	1 BSCM/yr

Source: P616-000-BD-DBS-01_3, Design Basis Memorandum – Pipeline and Facilities E780_00225-Ev31A-TDR-00051_2_System Consolidation Report

2.1.5.3.3 Heating Station

Gas will be heated for the combined operation of the Southern and Northern Lines when the 48-inch cross-country pipeline allows transportation of 21 BSCM/yr up to the Megalopoli area and 20 BSCM/yr from there onwards in order to avoid condensation inside the pipeline.

The heating station location is planned to be installed in the same plot as the MS4/PRS4 at Megalopoli.

The heating station will include gas /water heat exchangers.

Table 2-5 Heating Station Results – Combined Southern and Northern Line

Parameter	Value
Required Total Station Heating Duty (MW)	25.4
Annual Fuel gas Consumption (MMSm3/yr)	21.2

Source: E780_00225-Ev31A-TDR-00051_2_System Consolidation Report

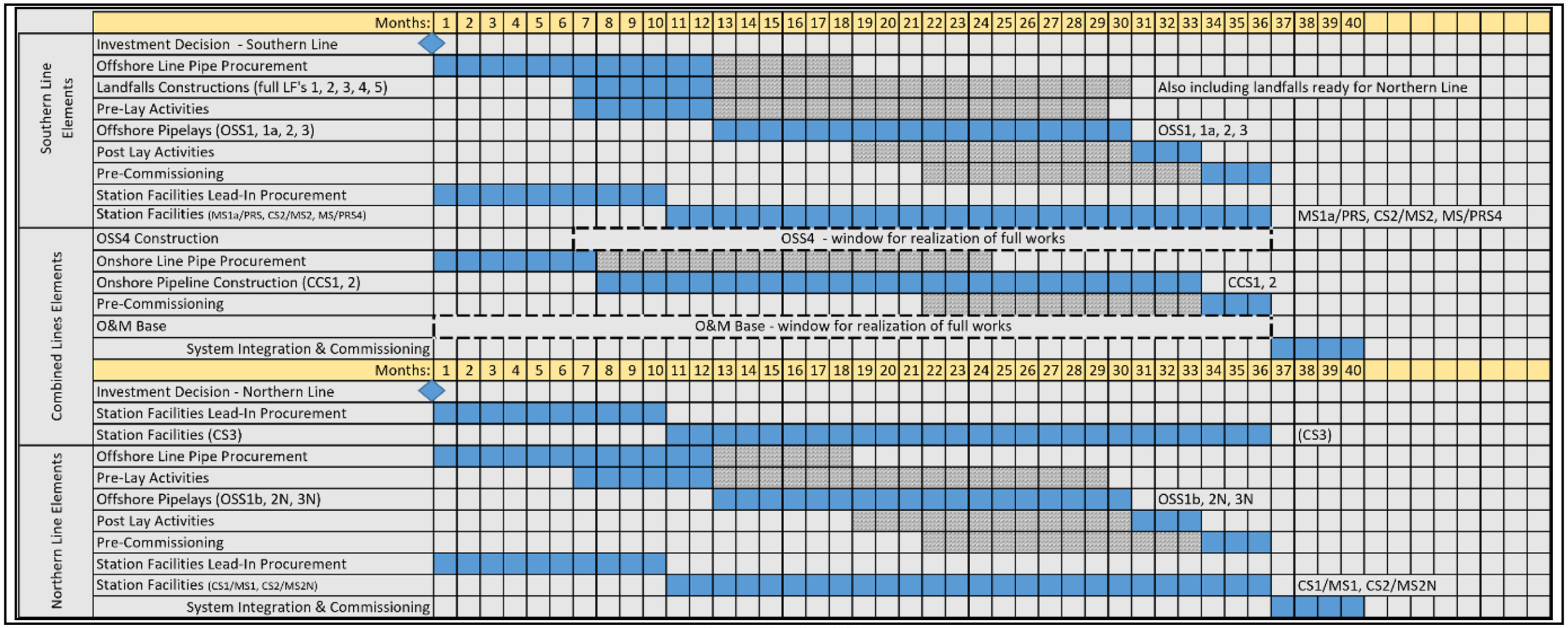
2.1.5.4 *Operations & Maintenance Base (O&M) – Dispatching Centre*

The EastMed Pipeline Project will be monitored, operated and controlled from dedicated Main Dispatching Centre (MDC), located at the O&M Base, which will be staffed 24 hours per day, 365 days per year. For the specific Project, one O&M Base is foreseen to be located in the wider area of the municipality of West Achaia.

2.1.5.5 *Project Schedule*

Overall construction of the EastMed Pipeline Project (including both Cyprus and Greece sections) is foreseen to last approximately 3 years for construction of related infrastructures (Figure 2-3). Project execution is envisaged to commence in January 2024 and commissioning is expected to start after December 2026.

[5] CS2 referred to Southern Line (11 BSCM/Y) and CS2 N referred to Northern Line (10 BSCM/Y), whilst the Combined Line has 10.5 BSCSM/Y for each one.



Source: IG Poseidon , 2021

The figure represents an estimate of each Project activity duration, from construction authorization to commissioning. The schedule doesn't provide a precise timeline as the Northern and Southern Lines are independent pipelines.

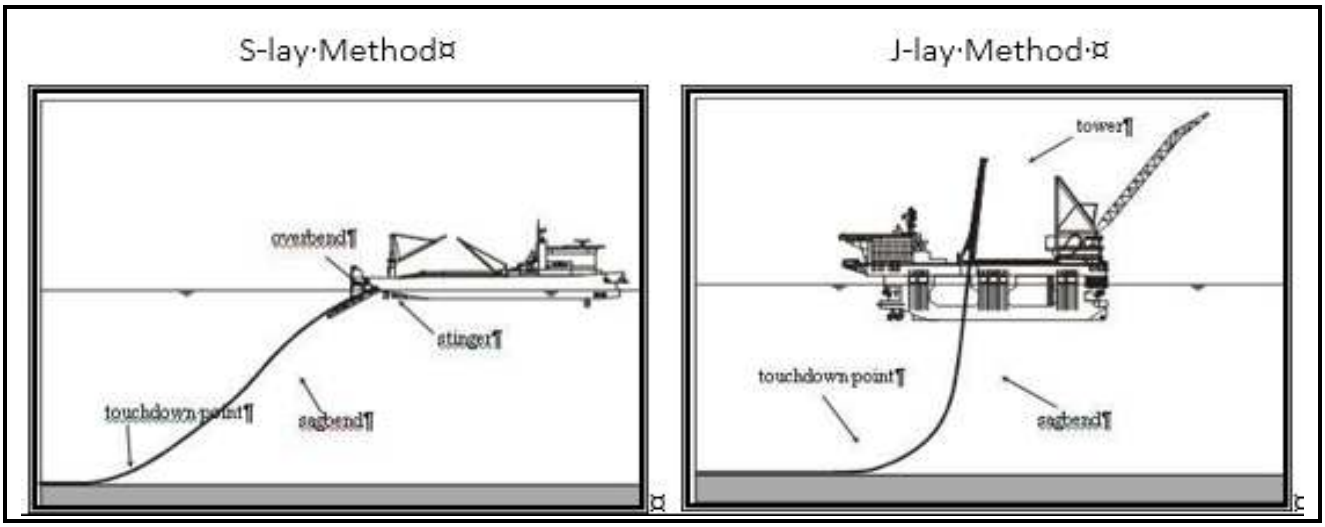
Figure 2-3 Indicative Duration of Project Activities (Greece and Cyprus)

2.1.5.6 *Construction Philosophy*

2.1.5.6.1 Offshore Section

The preferred offshore pipeline installation method for Eastmed Pipeline Project is the "S-lay", where the pipe is spanning from the vessel to the seabed in an S-like shape (Figure 2-4). To guide the pipe in this configuration, it is supported on rollers by a stinger structure extending from the vessel into the water. The stinger is generally constructed as an open truss framework and may be rigid or articulated. The welding stations on an S-lay vessel are placed along the vessel axis and are orientated horizontally, which allows for relatively efficient offshore pipe string fabrication.

The "J-lay" installation method is recognized by the absence of the stinger and the high departure angle (Figure 2-4). The pipe is closer to the vertical on board the vessel than to the horizontal axis. Pipe joints, usually pre-fabricated multiple-joint strings, are lined up in a tower construction that is called the J-lay tower. J-lay is only applicable for deep water, where a long section of the pipe is suspended below the vessel in a catenary shape. The capacities of these vessels are set to suit this functionality. Compared to other installation methods, the tension capacity of the vessel is very high, but is specialised for holding the weight of the pipe string in deep water rather than for maintaining an acceptable pipe shape through the water column.



Source: 00225-Ev80A-TDR-00325_1 – Pipeline Installation Methodology Report – Northern System

Figure 2-4 Offshore pipeline installation methods

In principle, the pipeline is simply placed on the bottom of the sea; however according to the current design level, few areas along the pipeline may require pre-lay or post-lay intervention to allow pipe installation and safe operation; that is ensuring pipeline stability and integrity or protection against external threats.

The S-Lay method is the chosen installation technique for all offshore pipelines of the EastMed Pipeline Project. Nonetheless, J-Lay cannot be excluded as an option in developing the detail design for installation scope.

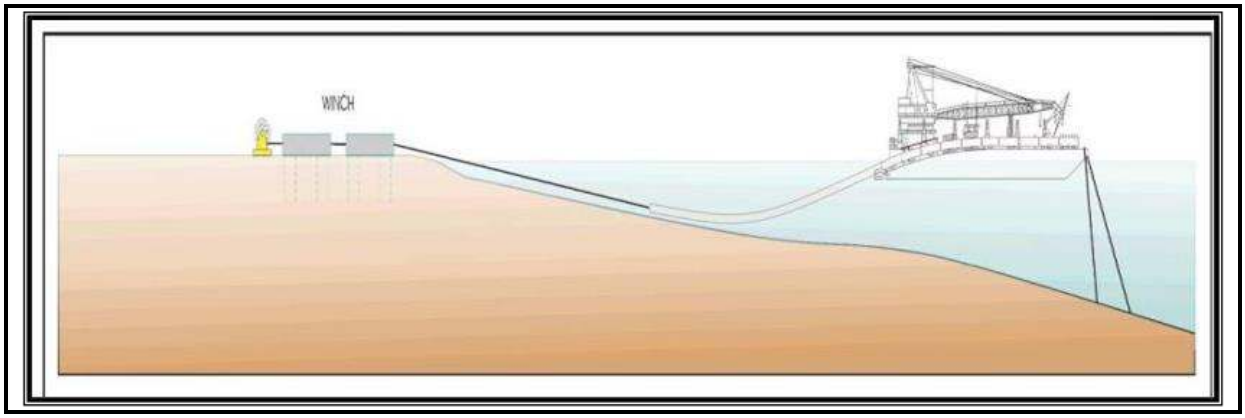
Intervention works can vary, depending on the nature of the area to intervene, as well as other factors such as water depth, burial depth or sediment conditions. Seabed features or specific pipe sections that may require seabed intervention include: (i) Shallow water sections or landfalls, in order to burry the pipeline and eliminate any interaction with the environment, (ii) in special crossing areas e.g. existing cables or sections at risk of interaction with bottom trawling fishing gear or other marine activities, (iii) along irregular seabed or geohazards areas causing unacceptable pipeline free spans or other concerns (construction methods are developed within the scope of the detail desing of the project).

2.1.5.6.2 Nearshore Section

For the pipeline installation in the nearshore section, within a trench one of the following methods can be used:

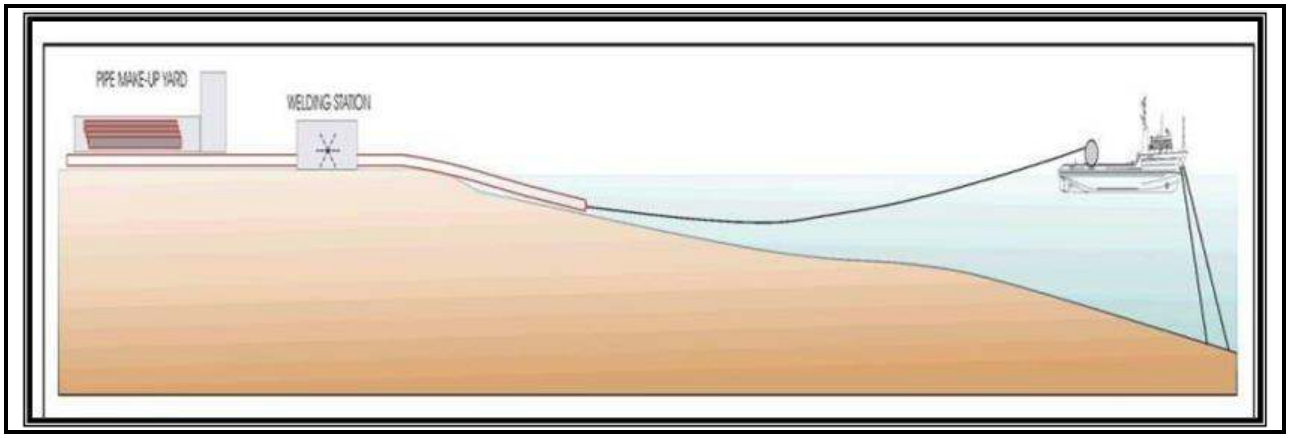
- Shore Pulling Method. Pipeline is assembled on a barge stationed offshore and the pipeline section is pulled through a pre-dredged trench using land based cable winches. Typically, this method includes offshore mooring of the barge and stringing the pipeline that has been assembled on the barge, pulling towards the shore using land based winches. The site needed onshore for winches, cable drums, power generators, support equipment and construction installations is approximately 2,000 m². Also, an additional area will be required for temporary storage of the trenched material;
- Barge Pulling Method. Pipeline sections are assembled and fully prepared onshore, and then the pipeline string is pulled offshore by a barge equipped with the required winches. The construction site needed for pipeline storage, welding, etc. is larger than the one required in the previously described method, and it is estimated around 10,000 m². A land strip approximately 300 – 500 m long is estimated for placement of the pipeline strings. This land strip could be located along the onshore construction working strip; and
- Barge Pulling via Sheave Block. This third method consists of the combination of the two previously mentioned methods, as it involves both pipeline construction and winching being performed onboard the barge. Like the shore pulling method, the pipeline is constructed on the barge

moored offshore and then pulled to shore through a pre-dredged trench. The pulling cable winch goes through an onshore sheave block and back to the barge. The method is technically more demanding than the two methods described above and is used only where there are serious restrictions regarding the available workspace at landfall locations.



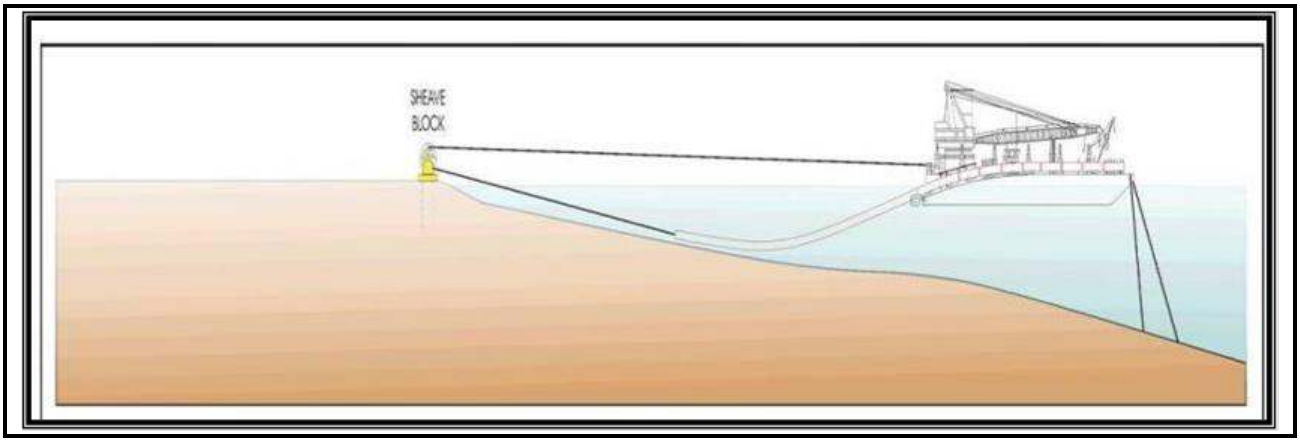
Source: EastMed Feasibility Study -Preliminary Design Report –Offshore, 2020

Figure 2-5 Shore Pulling Method.



Source: EastMed Feasibility Study -Preliminary Design Report –Offshore (EM-620-20-PL-RPT-001, REV 2), 2020

Figure 2-6 Barge Pulling Method



Source: EastMed Feasibility Study -Preliminary Design Report –Offshore (EM-620-20-PL-RPT-001, REV 2), 2020

Figure 2-7 Barge Pulling via Sheave Block

Regarding accessibility, the following are noted: it is envisaged that no new access roads will be required. Existing roads might be improved and the working strip will be used as the main access roads for the shore crossing construction site. Especially for the shore construction site, some heavy equipment could be transported by shallow vessels. However, given the specific works at the landfall sites, the EPC contractor may deem necessary to construct a temporary access to the landfall site for personnel, materials, equipment, etc. In such a case (as well as in other places with special characteristics where the EPC contractor may deem temporary construction access necessary), all necessary permits will be acquired by the EPC contractor.

2.1.5.6.3 Shore crossing (Landfall sites)

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 20 meters to the onshore end of the beach. Note that in general the same methodology applies for all landfalls.

Open cut is the proposed construction methodology for shore crossings at EastMed landfall locations. In addition, while the 2 lines may have different realization time, all the lines' section inside the shore crossing will be installed simoultaneously to reduce impacts.

The open cut construction methodology is a common technique where, generally, the nearshore section is trenched by a combination of dredging equipment and the onshore section by common excavators to enable the pipeline to be pulled ashore at a required depth of burial. To enable the use of heavy equipment, the landfall requires a sufficiently sized beach (preferably minimum 50 metres from dune to shoreline and minimum 100 metres wide) and good access. 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.

Construction of the pipelines shore crossing 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.

Assuming access to shore and availability of general utilities is granted, shore crossings are usually executed in sequence like:

- installation of the linear winch and pipeline rollers, construction of the relevant causeways, excavation of the open trench: 3-4 months;
- pipeline pulling from the shallow water lay barge: 1 month;
- backfilling of the trench and reinstatement of the shore: 2-3 months;

Each landfall shore crossing can be executed independently, while pipeline pulling depends on the availability and schedule of the shallow water lay barge. AWTI is usually executed by a shallow water lay barge according to relevant construction schedule with no intervention from shore.

Trenching and backfilling of the pipeline as laid, if required, can be executed by specialised naval assets with no intervention from shore.

Table 2-6 presents a summary of the trench dimensions at the landfalls:

Table 2-6 Summary of Cofferdam/Trench Dimensions

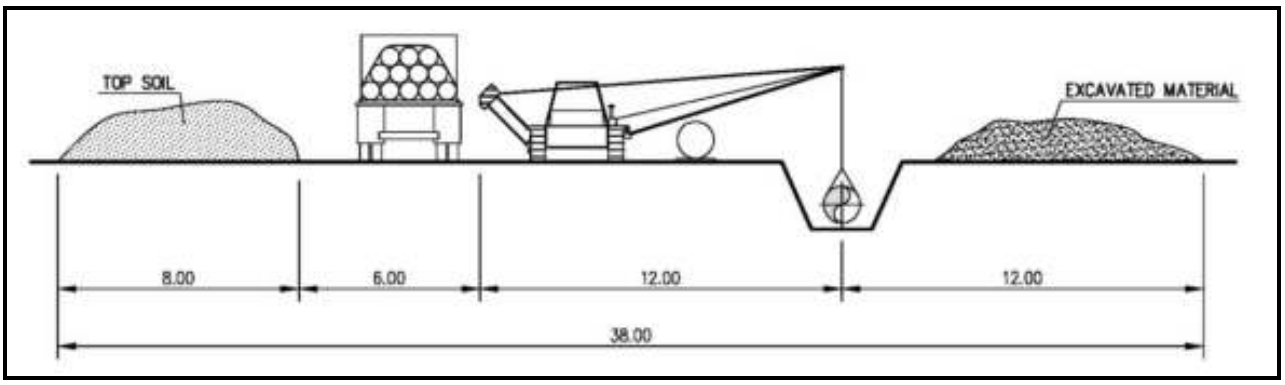
Landfall	Location	Pipeline Characteristics	Cofferdam Size			Nearshore Trenching		
		(number & diameter)	Length (m)	Width (m)	Depth (m)	Length of Trench (m)	Width (m)	Depth (m)
LF2	Crete	4 (2x26”/2x28”)	n.a.	n.a.	n.a.	300	50	2.5
LF3	Peloponnese	2 (2x28”)	n.a.	n.a.	n.a.	600	30	2.5

Landfall	Location	Pipeline Characteristics	Cofferdam Size			Nearshore Trenching		
LF4	South Patras	1 (1x46”)	200	21	5	1000	15	3
LF5	North Patras	1 (1x46”)	200	21	5	1000	15	3

Source: IGI Poseidon, 2021.

2.1.5.6.4 Onshore Section

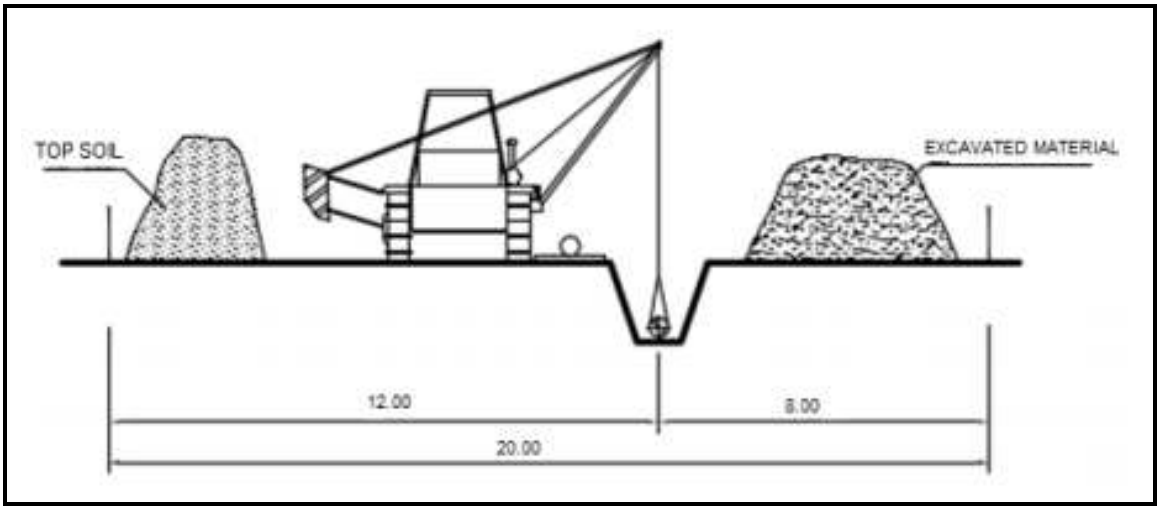
Pipeline will be placed in a trench of approximately 2m deep with a minimum cover on top of the pipeline of 1.0 m. The working strip is the temporary corridor along the pipeline where construction takes place. It must be wide enough to allow all activities to be carried out safely whilst providing sufficient room to store topsoil and trench material separately and keeping crop loss to the farmer to a minimum. The width of the working strip is proportional to the diameter of the pipeline to be installed. It follows that the greater the pipe diameter, the greater the extracted trench material that has to be stored. The width of the working strip is also determined by the size of the heavy machinery needed to safely lift and lower pipe into the trench and dig the trench. The width of the working strip in open country for pipelines with nominal diameter (ND) 48’’ and 46’’ will be 38 m.



Source: P616-000-DB-BDS-01_3, Design Basis Memorandum – Pipeline and Facilities, IGI Poseidon, 2021

Figure 2-8 Regular Working Strip in Open Country for Pipeline ND 48” and 46”

The width of the working strip in open country for pipeline of ND 16’’ will be 20 m.



Source: P616-000-DB-BDS-01_3, Design Basis Memorandum – Pipeline and Facilities, IGI Poseidon, 2021

Figure 2-9 Regular Working Strip in Open Country for Pipeline ND 16”

In sensitive areas, such as organized tree crops, the width of the construction strip will be 28 m, whilst in forested areas, with dense vegetation, even less. However, the construction strip shall not be less than 22 m for pipelines with ND 48” and 46” and 14 m for pipelines with ND 16”. The widths of the construction areas have been determined by international practice so that the necessary construction activities can be safely carried out. In special locations, such as crossings and other special locations, the work zone may be a bit longer.

Table 2-7 Summary of Working Strip width

Diameter of the pipelines (inches)	Regular Working Strip (m)	Reduced Working Strip (m)	Reduced Working Strip without Topsoil Stripping (m)	Boring methods (Area Required) (m^2)	HDD (Area Required) (m^2)
48 and 46	38	28	22	45 x 50 and 45 x 30 (each side)	100 x 100
16	20	14	14	40 x 40 and 40 x 20 (each side)	100 x 100

Source: IGI Poseidon, 2021

Onshore facilities include Compression, Metering & Regulatoring facilities (i.e. the CSs and MS/PRSs) and Valve Stations which are supportive pipeline installations and are indispensable for the operation of the entire project.

Pipeline’s construction strip as well as Onshore Facilities plots will be used as the main construction sites. However, few storage yards and main construction sites will be temporarily created to

accommodate necessary storage of equipment, machinery, pipes and personnel offices. These will be located in areas close to transportation infrastructure and in proximity to project's footprint.

Existing roads shall be used for project's construction. In some cases, upgrading of the existing network shall be performed in order to allow transportation of heavy machinery and equipment. Currently, no need for construction of new roads is foreseen.

After construction, most sites will be restored to their original condition where possible. Along the route a permanent pipeline protection strip (PPS) with a width of 8 m (4 m either side of the centreline right of way) will be established. It is highlighted that all typical agricultural activities are allowed ontop the PPS; only deep-rooted species cultivation is restricted (see Section 2.3 for more details).

A typical sequence for onshore pipeline construction is illustrated in Figure 2-10.

Source: ASPROFOS,2021

Figure 2-10 Typical Pipeline Construction Sequence

2.1.5.7 *Operating Philosophy*

The EastMed Pipeline Project will be controlled from a dedicated main dispatching centre (MDC), located at the O&M Base.

The main functions of the control room will be monitoring, control and operation of the EastMed Pipeline Project via SCADA. All stations will be designed on the basis that they are unstaffed and controlled remotely.

The design will allow data acquisition and equipment needs. The full design will allow modular expansion such that the dispatching centre is easily reconfigured to add processing capacity.

A backup dispatching centre (BDC), located geographically separate from the MDC, will duplicate basic functions of the control centre.

Compressor stations have been designed for remote operation from the MDC and the BDCs via SCADA (e.g. settings for compressor duty, speed, etc.). At each station, a station control system (SCS) will be provided for local control of all compressors and equipment associated with the station.

The flow control and pressure control operating principles are applicable to long-distance gas transportation pipelines and therefore applicable to EastMed. Both methods may be employed depending on the specific section

Regarding the interactions of the project with the environment, the only essential ones are:

- Emissions to air from the operation of Compression Stations.
- Noise emissions from the operation of the Compression Stations.

2.1.5.8 *Decommissioning philosophy*

Design life for the EastMed Pipeline Project is 50 years and at least 25 years for its facilities. These are common values for onshore/offshore pipelines. It may well be the case that that life expectancy of the Project is increased as technology further develops during operation for the Project. Indeed, this could be subject to a technical evaluation and the standards applicable at that time.

Independently from decommissioning date, a detailed plan would be developed and submitted to competent authorities for approval in advance with respect to a projected date to end operation activities; the plan will detail every required activity in compliance with relevant legislation, good industrial practice, and dismantling technologies available at the time of plan execution. The plan will also include assessment for environmental, social and cultural heritage impacts related to proposed decommissioning technique and proper mitigation measures.

A decommissioning process for the onshore facilities will involve removing structures and rehabilitating areas, in order to create conditions enabling a return to previous conditions of the area

(within a reasonable period of time) or reuse for other land purposes (industrial, residential and/or agricultural).

Related actions and therefore their potential effects are expected to be similar to those evaluated for the construction phase (in reverse chronological order).

Decommissioning activities for pipelines will take place through consecutive phases. With regard to onshore pipelines, in agreement with local authorities, the termination process will likely consist of pipeline removal, unless specific segments where removal operations would be technically impossible are present, or it would have a detrimental effect on natural or social environment compared to underground abandonment. In this case, the section will be disabled by filling the pipe with a suitable concrete mix or bentonite mixture (to prevent the empty pipe from collapsing) after sealing its ends.

Based on current practice, the offshore pipeline would typically stay in place as the risks and challenges of recovering deep pipelines would produce relevant environmental and social impacts (to some extent similar to those caused by construction). Only those sections located near shores or shallow areas (not in sensitive environmental areas, e.g. areas recolonised by biodiversity) could be considered for recovery should their abandonment cause environmental, social or safety risks.

2.2 Overview of Project's Compliance to Statutory Spatial or Town Planning Commitments

This section provides an overview of available information regarding project's compliance to statutory spatial or town planning commitments. More details are presented in Chapter 5 of the ESIA.

Based on the provisions of MD 170225/2014, the minimum Study Area for projects such as the investigated one is defined as follows:

- For linear projects, 1 km buffer zone (on each side of the axis); and
- For areal projects, 2 km buffer zone (2 km radius from the boundaries of the plot).

Given that the Project includes both linear (the pipeline itself) and areal features (Onshore Facilities), a combination of the above-mentioned Study Areas has been adopted. For most of the parameters, the above-mentioned typical Study Areas were selected. However, for some parameters, a larger Study Area was selected, depending on the type and nature of the parameter. An increase of the Study Area in important locations of the Project was selected especially for the socioeconomic environment; specifically, at the landfall sites and in the areas of the main Project stations (i.e. Compressor and Metering Stations), the Study Area was increased to a total 5 km radius around the specific features.

2.2.1 Project Location regarding Natural and Socio-economic Environment

Regarding settlements and spatial planning provisions of areas that are potentially interacting with the project:

- 13 settlements boundaries lay in a distance smaller than 200 m from the project footprint
- 51 settlements boundaries lay in a distance between 200 m and 500 m from the project footprint
- 67 settlements boundaries lay in a distance between 500 m and 1000 m from the project footprint, and
- 31 settlements boundaries lay in a distance greater than 1000 m from the project footprint.

Regarding protected areas of L. 3937/2011, Table 2-8 is indicative. In short, the pipeline crosses:

- 2 National Parks for approx. 80 km (mostly through the peripheral zones), in total
- 13 Natura2000 sites for approx. 20 km, in total and
- 5 Wildlife Refuge Areas for approx. 25 km, in total

Table 2-8 Protected Areas within the Project Study Area.

EastMed Pipeline Project Component	Name	Zone	Site Code	Approximate Distance to Project Footprint * (m)	Approximate Crossing Length (km)
Strict Nature Reserves					
–	–	–	–	–	–
Nature Reserves					
CCS2	Stenon kai Ekvolon Acheronta kai Kalama kai Elous Kalodikiou kai Perifereiaki Zoni (R. Acherontas and R. Kalama Straits and Estuaries and Marshland Kalodiki and Regional Zone)	Nature Reserve Area	392914	0	2.65
Natural Parks					
National Parks					
CCS2	Messolonghi-Aetoliko Lagoon National Park, downstream and estuaries of Acheloos and Evinos rivers and Echinades islands (JMD 22306/2006, HGG D' 477/31-05-2006)	Nature Reserve Zone (ΠΦ2)	328993	1	–
CCS2		Nature Reserve Zone (ΠΦ3)	328993	1	–
CCS2		Peripheral Zone (ΠΠ1)	328999	0	1.66
CCS2		Peripheral Zone (ΠΠ2)	328999	0	1.10
CCS2	Amvrakikos Wetlands National Park (JMD 11989/2008, HGG D'123/21-03-2008)	Zone C: Zone of Environmental Control	349977	0	72.20
CCS2		Zone B: Special Regulations Area	349979	0	5.35

EastMed Pipeline Project Component	Name	Zone	Site Code	Approximate Distance to Project Footprint * (m)	Approximate Crossing Length (km)
CCS2		Zone A: Nature Reserve Zone in National Park	349976	0	0.45
CCS2		Zone A-1: Special Water Management Area	349975	1	–
Regional Parks					
–	–	–	–	–	–
National Forests					
–	–	–	–	–	–
Habitat/ Species Management Areas					
Special Areas of Conservation					
OSS3/OSS3N	Voreioanatoliko Akro Kritis: Dionysades, Elasa kai Chersonisos Sidero (Akra Mavro Mouri – Vai – Akra Plakas) Kai Thalassia Zoni	n/a	GR4320006	1	–
OSS3/OSS3N	Ori Gidovouni, CHIONOVOUNI, Gaidourovouni, Korakia, Kalogerovouni, Koulochera kai Periochi Monemvasias Spilaio Solomou Trypa kai Pyrgos Ag. Stefanou kai Thalassia Zoni eos Akrotirio Kamili	n/a	GR2540001	0	1.90
CCS2	Delta Acheloou, Limnothalassa Mesolongiou - Aitolikou, Ekvoles Evinou, Nisoi Echinades, Nisos Petalas	n/a	GR2310001	0	–

EastMed Pipeline Project Component	Name	Zone	Site Code	Approximate Distance to Project Footprint * (m)	Approximate Crossing Length (km)
CCS2	Oros Varasova	n/a	GR2310005	1	–
CCS2	Oros Arakynthos kai Stena Kleisouras	n/a	GR2310010	0	–
CCS2	Limnes Trichonida kai Lysimacheia	n/a	GR2310009	0	1.23
CCS2	Amvrakikos Kolpos, Delta Lourou kai Arachthou (Petra, Mytikas, Evryteri Periochi, Kato Rous Arachthou, Kampi Filippiadas)	n/a	GR2110001	0	0.57
CCS2	Elos Kalodiki	n/a	GR2120002	0	0.14
Special Areas of Conservation – Special Protection Areas					
CCS1	Oropedio Folois	n/a	GR2330002	0	10.25
Special Protection Areas					
CCS1	Ori Anatolikis Lakonias	n/a	GR2540007	0	1.95
CCS2	Delta Acheloou, Limnothalassa Mesolongiou - Aitolikou kai Ekvoles Evinou, Nisoi Echinades, Nisos Petalas, Dytikos Arakynthos kai Stena Kleisouras	n/a	GR2310015	0	–
CCS2	Limni Lysimacheia	n/a	GR2310013	0	–
CCS2	Amvrakikos Kolpos, Limnothalassa Katafourko kai Korakonisia	n/a	GR2110004	0	0.39
CCS2	Eli Kalodiki, Margariti, Karteri kai Limni Prontani	n/a	GR2120006	0	–
Wildlife Refuges					
CCS1	Pratagos – Aetofolia (Elikas -Agios Nikolaos)	n/a	K524	0	1.02

EastMed Pipeline Project Component	Name	Zone	Site Code	Approximate Distance to Project Footprint * (m)	Approximate Crossing Length (km)
CCS2	Oros Arakynthos-Mataragkas-Gavalou	n/a	K361	0	5.62
CCS2	Petalas (Amfilochias-Kechrinias-Papadatou-Stanou)	n/a	K316	0	12.44
CCS2	Iera Moni Retha kai Iera Moni Longos Dimon Amfilogias, Menidiou, Inachou	n/a	K728	0	3.27
CCS2	Lekatsa Dimou Zalongou	n/a	K838	0	1.42
CCS2	Valtos Kalodikiou		K599	1	–
Protected Natural Formations and Landscapes					
Protected landscapes					
–	–	–	–	–	–
Protected Natural Formations					
–	–	–	–	–	–

* it is noted that this column refers to the closest project component. Permanent facilities (i.e. Main Stations) are carefully sited in distances greater than 2 km from any area subject to L 3937/2011; as such, the closest project element is the route itself.

Prepared by: ASPROFOS, 2022.

Regarding forests and forested areas, Table 2-9 was created based on official data, dated 26/03/2021, summarising the working strip[6] intersection with the official forest map data. Table 2-10 is relevant to the locations (plots) of the Main Stations[7]. In short, the pipeline crosses forest or forested areas for 51% of its total length in the R.U. of Achaia, 49% in R.U. of Aetoloakarnania, 39% in R.U. of Arcadia, 0% in R.U. of Arta, 39% in R.U. of Ilia, 45% in R.U. of Laconia, 17% in R.U. of Preveza and 40% in R.U. of Thesprotia.

Table 2-9 Forest Land Cover (official data from forest maps) within the Pipeline's Working Strip per Regional Unit (in 1000 m²).

Forest Map Class	Forest Map Category*	R.U. of Achaia	R.U. of Aetoloakarnania	R.U. of Arcadia	R.U. of Arta	R.U. of Ilia	R.U. of Laconia	R.U. of Preveza	R.U. of Thesprotia
Non Forest Areas	ΑΑ	525.95	1862.44	923.45	986.93	1255.62	1900.22	813.31	358.48
	ΠΑ	17.63	41.30	12.75	0.00	44.98	102.48	624.65	237.84
	Subtotal	*543.58*	*1903.75*	*936.20*	*986.93*	*1300.60*	*2002.70*	*1437.96*	*596.32*
Forest Areas	ΔΔ	483.51	1629.85	254.79	0.00	460.98	1125.15	213.03	342.75
	ΔΑ	86.37	168.63	40.07	1.40	341.60	216.99	49.40	2.25
	ΑΔ	5.01	15.89	309.25	0.95	115.80	270.24	31.30	46.42
	ΠΔ	0.00	0.82	0.08	0.00	0.00	12.54	0.05	10.60
	Subtotal	*574.89*	*1815.19*	*604.20*	*2.35*	*918.38*	*1624.92*	*293.78*	*402.02*
Grasslands	ΧΑ	0.00	0.00	0.00	0.00	60.50	0.00	0.00	0.00
	Subtotal	*0.00*	*0.00*	*0.00*	*0.00*	*60.50*	*0.00*	*0.00*	*0.00*
Total		**1118,47**	**3718.94**	**1540.40**	**989.28**	**2279.49**	**3627.62**	**1731.73**	**998.34**

*Legend:

- *Non Forest Areas.* **ΑΑ**: Other land cover in aerial imagery of 1945 and 2007-2009 (always non-forest areas) | **ΠΑ**: Non-forest areas with Forest Characterization Act
- *Forest Areas*: **ΔΔ**: Forests and Forested Areas in aerial imagery of 1945 and 2007-2009 (always forested areas) | **ΔΑ**: Forests and Forested Areas in aerial imagery of 1945; other land cover in aerial imagery of 2007-2009 (forest clearings) | **ΑΔ**: Other land cover in aerial imagery of 1945; forests and forested areas in aerial imagery of 2007-2009 (forested fields) | **ΠΔ**: Forested areas with Forest Characterisation Act
- *Grasslands*: **ΧΧ**: Grasslands in aerial imagery of 1945 and 2007-2009 (always grasslands) | **ΧΑ**: Grasslands in aerial imagery of 1945; other land cover in aerial imagery of 2007-2009 | **ΑΧ**: Other land cover in aerial imagery of 1945; grasslands in aerial imagery of 2007-2009| **ΠΧ**: Grasslands with Forest Characterisation Act

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[6]Based on current available geodata by FEED on route revisions of 18/5/2021 and 22/6/2021. Working strip is typically defined as a 38 m wide corridor, but is reduced in sensitive areas. Details are provided in Chapter 6.

[7]Main Stations of the Project are the ones subject to Industrial Emissions Directive (IED 2010/75/EE), namely CS2/MS2-CS2/MS2N and CS3 stations at Crete and Achaia, respectively, and the MS4/PRS4 and Heating Station at Megalopoli.

Table 2-10 Forest Land Cover (official data from forest maps) within the Project's Main Stations (plots) (in 1000 m²).

Forest Map Class	Forest Map Category*	MS4/PRS4 & Heating Station	CS2/MS2-CS2/MS2N	CS3
Non Forest Areas	ΑΑ	22476.50	1954.23	55016.88
	ΠΑ	23326.65	161841.55	
	Subtotal	*45803.15*	*163795.79*	*55016.88*
Forest Areas	ΔΑ	0.0	0.0	53084.38
	ΔΔ	0.0	4477.95	272.82
	Subtotal	*0.00*	*4477.95*	*53357.20*
Total		**45803.15**	**168273.73**	**108374.08**

*Legend:

- *Non Forest Areas*: **ΑΑ**: Other land cover in aerial imagery of 1945 and 2007-2009 (always non-forest areas) | **ΠΑ**: Non-forest areas with Forest Characterization Act
- *Forest Areas*:**ΔΔ**: Forests and Forested Areas in aerial imagery of 1945 and 2007-2009 (always forested areas) | **ΔΑ**: Forests and Forested Areas in aerial imagery of 1945; other land cover in aerial imagery of 2007-2009 (forest clearings)
- *Reforestation Areas*: AN: Areas that have been designated for reforestation either due to vegetation clearing or wildfires

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Regarding social infrastructure and public utilities, the following have been identified: 27 Educational units (at great distance from the Project), 22 Energy Transmission infrastructure, 6 facilities related to water supply, 3 facilities related to health care (at great distance from the Project), 13 related to Telecommunication, 14 related to Transportation and 11 facilities related to Waste Treatment and Management.

Regarding cultural heritage, the design of the route was precisely aimed at avoiding as much as technically possible any cultural heritage resources according to the available spatial data; in fact, only nine cultural heritage resources lie within 100 m of the Project footprint (one of which is crossed, i.e. CH-PRE-012 - Acheron River) and an additional eight within 200 m of the Project footprint (e.g. pipeline axis, temporary and/ or permanent facilities boundaries).

Table 2-11 Number of Declared Cultural Heritage Resources per Regional Unit.

Regional Unit	Number of Declared Cultural Heritage Resources identified within		
	the study area	200 m from project footprint	100 m from project footprint
Achaia	2	0	0
Aetoloakarnania	7	1	0
Arcadia	5	3	0
Ilia	4	0	0
Laconia	85	10	6
Lasithi	2	0	0
Preveza	10	3	3
Thesprotia	9	0	0
Total	124	17	9

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Regarding the marine antiquities the following is noted: apart from the surveys performed by the project promoter (RMS[8] and DMS[9]) during ESIA consultation, an underwater research up to 30 m WD was conducted (March 2022) in collaboration with the competent authority (Ephorate of Marine Antiquities) at the four landfalls (LF) of the project **with no relevant findings**. In addition, it was agreed to enhance collaboration for the deep water section between the Project and the competent authority. Specifically, it was decided to provide all visual (pictures and video) material acquired by the project promoter (through RMS/ DMS, site survey for ESIA purposes with the use of ROV, etc) to the experts of the Ephorate of Marine Antiquities for control and evaluation. It was agreed that if the results of the above material identify findings, further discussion would be held to mitigate possible impacts (e.g. through route adjustment), if and as required. Based on the RMS, 21 possible "targets" of cultural heritage interest were preliminary identified.[10]

2.2.2 Spatial and Town Planning Framework

The pipeline route crosses three (3) Decentralized Administrations, four (4) Regions, nine (9) Regional Units, twenty-one (21) Municipalities and forty-six (46) Municipal Units.

[8] Lighthouse S.p.A., 2018 - EASTMED PIPELINE RMS VOL. 1- 5 (filename: IGI001_FINAL_INTEGRATED_REPORT, VOL.1-VOL.5).
[9] At the time of writing, the DMS for OSS4, part of OSS3, had been completed.
[10] More details are provided in Section 8.6.3.2.6 of the ESIA and Annex 8J.3.

Spatial Planning Legislation has been analyzed in order to check the compliance of the Project with all National, Regional and Local Plans from which rules on allowed land uses or restrictions of activities may derive. This analysis has included:

1. Strategic spatial plans, applicable on broader areas at national or regional level, and
2. Regulatory spatial plans, setting specific regulations on areas and defining the allowed land uses and planning restrictions, which are:
   a) Local spatial plans;
   b) Special spatial plans; or
   c) Urban planning application plans.

The Project is compliant with all the provisions of National and Regional Development Plans relatively to the project area. 7 local spatial plans are in force to all of which EastMed Pipeline Project is compatible. It has to be underlined that EastMed Pipeline Project is classified as of national importance. This means that its objectives support significant national goals. Such goals are incorporated in the Regional planning or they are even over and above any local planning.

Furthermore, the Project is in line with the provisions of the Special Management Plans of the project study area, including SFSPSDs for Industry, Tourism, RES, Aquaculture, and the Regional Management Plans for Waste, River Basin and Flood Risk. EastMed is in full alignment with the provisions of the National Just Transition Development Plan (SDAM) for decarbonisation of Megalopoli. Although, offshore pipeline route passes through military areas, this poses no incompatibility, as documented during consultation with the Ministry of Defence. Project is also compatible with other Organized Development Receptors, including industrial areas, mining and quarries (among the others, the Megalopoli Lignite Mine).

2.3 Summary of Impacts Assessment

This section provides an overview of the potential impacts that the Project may induce in the natural and socioeconomic environment. Details and analysis on impacts assessment are presented in Chapter 9 of the ESIA.

2.3.1 Methodology

According to the provisions of MD 170225/2014 (HGG B' 135/2014), the ESIA describes and assesses potential important impacts that may be induced by the Project to the physical, biological and social environments.

A distinction is made in relation to the Project phase, i.e. construction, operation and decommissioning phases. It is noted that due to the long life span of the Project the impacts for the decommissioning phase cannot be assessed accurately at this stage. Nevertheless, it is expected that impacts during the decommissioning phase will be similar to those of the construction phase.

In addition, both positive and negative impacts that the Project may cause to the environment are assessed. For assessed impacts, the following properties are recorded, based on the provisions of relevant national legislation (MD 170225/2014):

- *Likelihood*: provides an indication on the possibility of the impact to occur;
- *Extent*: impact area is defined (in relation to the geographical area) and/or the size of the affected population;
- *Intensity*: indicates the change in the value of the affected environmental variables and compares the new values with the statutory limits or sensitivity of the receptor;
- *Complexity*: impact is to be divided into direct or indirect (to describe the sequence of events) and making reference its components;
- *Typical periods*: frequency, duration and repetitiousness;
- Potential for prevention, avoidance, minimisation and reversibility;
- *Cumulative action*: with other impacts from the same project or impacts from other implemented or planned projects; and
- *Transboundary character*.

The following terms are used widely in this chapter, and it is deemed useful to clarify them here:

- Project Footprint, i.e. the area within which all necessary activities for the construction and operation of the Project take place. Specifically:

- during construction, the Project footprint includes the pipeline working strip (in the various widths described in Chapter 6) and all temporary facilities necessary for the system's construction, i.e. pipe yards and construction sites; and
- during operation, the Project footprint includes: the pipeline protection strip of 8 m width (4 m on each side of the pipeline axis) and all permanent facilities necessary for the system's operation, i.e. CS2/MS2-CS2/MS2 N, MS4/PRS4 and Heating Station, CS3 and the Line Valve Stations.

- Main Stations, i.e. all stations with potentially significant interactions with the environment (natural and socioeconomic), namely:
  - Crete Facilities (CS2/MS2-CS2/MCS2 N), i.e. the Compressor and Metering Stations of Southern Line (CS2/MS2) and Northern Line (CS2/MS2 N) located within the same plot, in the broader area of Atherinolakkos;
  - Megalopoli Facilities (MS4/PRS4 and Heating Station), i.e. the Metering (MS4) and Pressure Reduction (PRS4) Station and the Heating Station, located within the same plot, in the broader area of Megalopoli; and
  - Achaia Facilities (CS3), i.e. the Compressor Station located in the broader area of Achaia.

When evaluating the potential impacts, an objective quantification of the impact is provided based on the criteria defined by legislation (see Table 2-12). However, given the nature of the resources, receptors and mechanisms, a degree of subjectivity that is related to the judgment of the study team is expected.

Initially, sensitive receptors are identified and an overview of the impact mechanisms resulting from the construction and operation of the Project is presented. It is noted that for some parameters (e.g. Landscape or Geology) the environmental resource, itself, can be considered a sensitive receptor. Then the potential impact is assessed and the impact statement provided.

Table 2-12 Impact Assessment Criteria

	Score				
	0 (low score)	0.25	0.5	0.75	1 (high score)
Likelihood (L)	Impossible	Rare	Likely	Probable	Certain
Extent (Ex)	Small (Limited to Project or	Medium (500 m from Project or	Large (1,000 m from Project or	Perimetric (3,000 m from Project or	Peripheral (>3,000 m from Project

	Score				
	0 (low score)	0.25	0.5	0.75	1 (high score)
	resource footprint)	resource footprint)	resource footprint)	resource footprint)	or resource footprint)
Intensity (I)	Zero	Low	Medium	High	Very High
Typical Times (D)	Instant	Short-term (0 - 1 year)	Mid-term (1 – 5 years)	Long-term (throughout the entire Project's life)	Permanent (even after Project's termination)
Reversibility (Potential of Impact Mitigation) (R)	Preventable	Avoidable	Reversible	Minimisable	Irreversible
Cumulative Action (C)	Impossible	Rare	Likely	Probable	Certain
Transboundary Character (T)	Impossible	Rare	Likely	Probable	Certain

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The overall assessment and evaluation of a potential impact is determined by the degree of Environmental Impact Significance (SEI) as presented in Table 2-13.

If the effect is positive, it is coloured with shades of green, and if it is negative with shades of red, depending on its importance. Zero effect is not coloured.

Table 2-13 Impact Significance Classification.

Score (*)	Significance	Description
9.1 - 10	Extreme	The factors under consideration suggest that there will be a serious impact on the environmental resource, but it will be reversible in a long-term or not reversible at all.
7.6 – 9	Major	The factors under consideration suggest that there will be a significant impact on the environmental resource, but it will be reversible in a medium or long term.
5.1 – 7.5	Moderate	The factors under consideration suggest that there will be some impact on the environmental resource, but it will be reversible in a

Score (*)	Significance	Description
		medium term or will have overall limited implications for the processes, mechanisms and other features of the resource.
2.6 – 5	Minor	The factors under consideration suggest that there will be little impact on the environmental resource, but it will be reversible in a short term or will not have overall significant effects on the processes, mechanisms and other features of the resource.
0 – 2.5	Negligible	All the factors examined suggest that the project has no effect on the environmental resource.
(*) The final score is computed by summing the scores resulting from each criteria and normalising to 10 (Score = Σ criteria * 10/7).		

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Herein after impacts of each parameter are described. For each one of the assessed impacts a summary of project related activities, during its phases (Construction and/ or Operation) that may cause the main impacts, are presented, as well as the results of the Impact Assessment (Significance of Environmental Impacts) split by key potential impact. Mitigation, management and monitoring measures defined as outcome of the Impact Assessment are presented in the the following sections.

Impacts are summarized hereby per parameter for the Construction and Operation phases, whilst it is noted that Impacts during Decommissioning Phase have been assessed in the Impact Assessment Section (Section 9) only at general level. Construction & Operation philosophy foresees the implementation of the best available techniques and technologies. Applying a conservative approach, the occurrence of possible non routine events (such as spillages, leakages of material during construction activities) has been assessed in the ESIA with the aim to determine proper mitigation, management and/or monitoring measures. For the purpose of this Non-Technical Summary, a summary of the impacts related to the project normal conditions is reported.

2.3.2 Climate and Bioclimatic Characteristics

The following tables present the Key Issues for Assessment as well as an overview of the impacts regarding Climate and Bioclimatic Characteristics.

Table 2-14 Key Issues for Assessment - Climate and Bioclimatic Characteristics.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Temporary increase of greenhouse gas emissions (CO2) from the use of internal combustion engines (IC) for earthworks, excavation works, vehicle, ship traffic.	• Reduction in greenhouse gas emissions (CO2) thanks to Replacement of polluting conventional fossil fuels with natural gas.
Potentially Impacted Resources and Receptors	• Atmospheric environment (increase in global warming potential)	
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• The PPC plant in Atherinolakkos which is close to the CS2/MS2-CS2/MS2N Compressor Stations.	
Project Factors that Potential Influence Impacts/ Risks	• Type and quantity of mechanical equipment (e.g. generator, floating cranes, excavators, compressors for hydraulic testing, etc.) vehicles and vessels.	• Project Compressor Stations (CS2/MS2-CS2/MS2N, CS3)

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Table 2-15 Impacts overview regarding Climate and Bioclimatic Characteristics.

Impacts	Mechanism	Locations	SEI
Construction Phase			

Impacts	Mechanism	Locations	SEI
Temporary increase in greenhouse gas emissions	Use of IC engines (internal combustion engines) • Earthworks • Excavation works • Vehicle and ship traffic • Hydrotest/Pre-commissioning	• All project area	Minor
Operation Phase			
Change in Greenhouse Gas Emissions	• Replacement of polluting conventional fossil fuels with natural gas	• Regionals and users	Major

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2.3.3 Landscape and Morphological Characteristics

2.3.3.1 *Landscape Characteristics*

The following tables present the Key Issues for Assessment as well as an overview of the impacts regarding landscape characteristics.

Table 2-16 Key Issues for Assessment – Landscape Characteristics.

	Construction Phase	Operation Phase
Impact/ Risk Sources	• Vegetation (and land) clearance and formation of working strip/ cofferdam and construction sites; Topsoil and subsoil stockpiling, pipeline installation, Erecting temporary or permanent facilities; Traffic and presence of project-related vehicles/ vessels/ machinery; Reinstating activities for trench, working strip and temporary facility plots.	• Permanent pipeline protection strip or PPS (8m wide) cleared from woody vegetation; Permanent, above ground, project structures, such as Line Valve Stations and Main Stations.

	Construction Phase	Operation Phase
Potentially Impacted Resources and Receptors	• Landscape and visual receptors (local inhabitants, commuters, passers-by, tourists, etc.) • Any nearby settlements and households.	
Particular Baseline Conditions that are Potentially Influencing Impacts/Risks	• Areas including Forests or other woody vegetation • River Crossings • Quality (Sensitivity) of compromised landscapes • Characteristics of sensitive receptors (quality of landscape, viewers, etc.) • Statutory protection for affected and or nearby landscapes	
Project Factors that are Potentially Influencing Impacts/Risks	• Architectural characteristics of permanent project facilities • Width of Pipeline Protection Strip • Location of permanent facilities for project construction (Main Stations, i.e. Facilities at Crete, Megalopoli and Achaia) • Capacity to reinstate temporary cleared areas	

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Table 2-17 Overview of Impacts regarding Landscape Characteristics.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Landscape Modification from Pipeline Construction	• Preparing pipeline working strip/ cofferdam • Erecting (construction) permanent Project features, such as line valve stations and compressor and metering stations.	• Agricultural Landscape, Agricultural Plain Landscape, Built Landscape, Coastal Agricultural Landscape, Phryganic Landscape, Rural Landscape, Coastal Rural Landscape, TIFK "Parapotami Alfeiou" (Alfios' Tributaries) (AT1011011), TIFK "Ekvoli Acheronta and Nekromanteio" (R. Acheronta Estuary and Necromancer) (AT3010051), Coastal Mosaic for Agricultural and Natural Landscape, Karteri Marshland,	Minor	

Impacts	Mechanism	Locations	SEI	Comments
	• Building temporary Project features such as construction sites. • Traffic of project-related vehicles/ vessels;	Mosaic for Agricultural and Natural (Shrublands) Landscape, Riparian Agricultural Landscape, Rodia Lagoon Wetland		
		• Hilly Natural (Shrublands) Landscape, Nearshore Seascape, Hilly Natural (Forest) Landscape, Mountainous Natural (Forest) Landscape, Mountainous Natural (Shrublands) Landscape, Nearshore Seascape, Riparian Natural Landscape	Moderate	
Disturbance to Viewers by Temporary Facilities		• Monemvasia Castle Town UNESCO site (view of LF3) • Lakopetra touristic establishments (view of LF4)	Moderate	
Operation Phase				
Landscape Modification from PPS (incl. restored temporary facilities)	• PPS establishment	• Hilly Natural (Forest) Landscape • Mountainous Natural (Forest) Landscape • Hilly Natural (Shrublands) Landscape • Mountainous Natural (Shrublands) Landscape	Moderate	In agricultural landscapes, PPS won't be visible. In natural landscapes, PPS will be typically appreciated as a forest road or local vegetation clearing. Where PPS is required to be configured as a fire protection measure, it might be more visible.
Disturbance to Viewers from Permanent Facilities	• Permanent Facilities presence	• Station sites	Minor	Facilities are located in landscapes including increased absorption capacity; no sensitive receptors are

Impacts	Mechanism	Locations	SEI	Comments
				identified in the Zone of Visual Impact.

Prepared by: ASPROFOS, 2022.

2.3.3.2 *Morphological Characteristics*

The following tables present the Key Issues for Assessment as well as an overview of the impacts regarding offshore morphological characteristics (onshore morphology is covered by Landscape section).

Table 2-18 Key Issues for Assessment – Morphological Characteristics.

	Construction Phase	Operation Phase
Impact/ Risk Sources	• Permanent modification of seabed morphology (bathymetry) in deep waters	
Potentially Impacted Resources and Receptors	• Deepwater Seabed morphology (bathymetry) • Benthic communities (Positively impacted for Creation of hard substrate)	
Particular Baseline Conditions that are Potentially Influencing Impacts/Risks	• Seabed morphology • Potential presence of: (i) Steps, (ii) Scarps and (iii) Faults	
Project Factors that are Potentially Influencing Impacts/Risks	• Free span length is partly driven by residual lay tension • Free spans tolerance is related to pipeline tension capacity • Seabed intervention method	

Prepared by: ASPROFOS, 2022.

Table 2-19 Overview of Impacts regarding Morphological Characteristics.

Impacts	Mechanism	Locations	SEI
Construction Phase & Operation			
Seabed morphology (Bathymetry) modification	• Seabed intervention works (trenching, rock dumping, anchoring, supports)	• Expected to be very limited and localized. Specific locations to be determined upon DMS completion and prior to construction phase	Minor

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2.3.4 Geological, Tectonic and Soil/Sediments Characteristics

2.3.4.1 *Onshore section*

Table 2-20 Key Issues for Assessment - Geological, Tectonic and Soil/Sediments Characteristics (onshore section).

	Construction Phase	Operation Phase
Sources of impact/ risk	Potential Activation of Geohazards due to the following: • Preparation of working strip (removal of topsoil) • Temporarily disturbed land from construction. • Set up of temporary facilities (construction sites, marshalling yards, pipe yards. • Special crossings (i.e. rivers crossings, landfall crossings) • Site preparation and installation of Compressor Stations. Set up of the pipeline facilities. Backfilling and reinstatement of pipeline. Soil erosion due to	Potential Activation of Geohazards due to the following: • Effect of the permanent loading of the geological formations from the installation of the pipeline and its Stations and the simultaneous action of the increased load of geological formations and many parameters that accelerate landslides such as heavy rainfall, seismic activity, contribute to the acceleration of landslides and similar geohazards events during the operation phase

	Construction Phase	Operation Phase
	• The removal of vegetation and the trenching activities on the mountain steep slopes and elevated areas Soil Compaction due to • Construction operations that require heavy machinery, especially if performed when soils are wet. Soil pollution. • Accidental pollution of soil during construction of the pipeline and the above ground facilities due to oils or hydraulic fluids spill from vehicles and machinery, surface run-off and sanitary waste from construction sites. Reduction of soil productivity due to • The construction of the pipeline, and specifically the works undertaken in the construction strip, despite the reinstatement of the land after pipeline construction, may have an effect on the ability of soil to perform its role in agricultural production, i.e. soil productivity.	• Restoration of any soil cover to its original state along the modified sections in elevated areas.
Potentially Impacted Resources and Receptors	For Geohazard the recipients are referred to Annex 8M: • Table M-9 for landslides along CCS1 Section • Table M-10 for landslides along CCS2 Section • Table M-11 for liquefaction along CCS1 Section • Table M-12 for liquefaction along Megalopolis branch • Table M-13 for liquefaction along CCS2 Section • Table M-14 for Main Geohazards along the route OSS2/OSS2N • Table M-16 for Main Geohazards along the route OSS3/OSS3N • Table M- 18 for Main Geohazards along the route OSS4	For Geohazard the recipients are referred to Annex 8M • Table M-9 for landslides along CCS1 Section • Table M-10 for landslides along CCS2 Section • Table M-11 for liquefaction along CCS1 Section • Table M-12 for liquefaction along Megalopolis branch • Table M-13 for liquefaction along CCS2 Section • The steep slopes on modified sections of mountains and elevated areas

	Construction Phase	Operation Phase
	For soil erosion the recipients are The steep slopes of mountains and elevated areas For soil compaction the recipients are • Clayey and silty materials of the soil, mainly in a wet statewith the simultaneous action of large loads • Construction sites, pipe yards, marshalling yards For soil pollution the recipients are • The existing soils alongside the working strip, at temporarily facilities, at crossings (area equal to 17,876,960 m^2) where spill from construction machines is possible (This area corresponds to the occupied area from working strip, Main Stations, Construction Sites, Pipe yards, River Crossings, Landfall sites). • For reduction of soil productivity the recipients are the soils for agricultural areas and specifically in the construction strip	
Special Baseline Conditions that Potentially Influence Impacts/ Risks	-	
Project Factors that Potential Influence Impacts/ Risks	The following actions of the project can possibly enhance the occurrence of geo-hazards • preparation of working strip • trench excavation • pipe-string and bending • trenching, lowering and laying • backfilling and reinstatement	The following factors of the project enhance the occurrence of geo-hazards • earthworks to reveal the pipeline for maintenance repair

	Construction Phase	Operation Phase
	The following actions of the project can possibly enhance the occurrence of soil erosion • preparation of working strip • trench excavation The following actions of the project can possibly enhance the occurrence of soil compaction • trucks and heavy machinery that operate along the construction corridor and temporary project installations such as construction sites, pipe yards, marshalling yards The following actions of the project can possibly enhance the occurrence of soil pollution • The accidental spill from construction machines for preparation of working strip, trench excavation, pipe-string/bending, trenching, lowering /laying, backfilling The following actions of the project can possibly enhance the occurrence of soil productivity reduction. • The construction works along the pipeline at areas with exclusively agricultural character	

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Table 2-21 Overview of Impacts regarding Geological, Tectonic and Soil/Sediments Characteristics (onshore section).

Impacts	Mechanism	Locations	SEI
Construction Phase			
Activation of geohazards	• earthmoving,	Presented at Annex 8M • Table M-9	Minor

Impacts	Mechanism	Locations	SEI
	• excavation, • circulation of vehicles, • accumulate of excavation materials, • accumulation of ground mantle,	• Table M-10 • Table M-11 • Table M-12 • Table M-13	
Soil erosion	• creation of landslides, creeps • soil erosion • soil compaction	• the mountain steep slopes and elevated areas alongside the pipeline	Minor
Soil compaction	• circulation of heavy machines • circulation of vehicles	• Clayey and silty materials of the soil, mainly in a wet state with the simultaneous action of large loads • In Construction sites, pipe yards, marshalling yards	Minor
Soil pollution	• The accidental leakage from construction machines for preparation of working strip,trench excavation, pipe-string ,bending,trenching,lowering /laying, backfilling • Pipeline crossings with probable contaminated areas	• The existing soils alongside the working strip, at temporarily facilities, at crossings, area equal to 17,876,960 m^2 where leakage from construction machines is possible	Minor
Reduced Soil Productivity	• The construction works along the pipeline at areas with exclusively agricultural character	• The soils for agricultural areas , and specifically in the construction strip.	Minor
Operation Phase			
Potential Activation of Geohazards	• Permanent loading of geological formations due to pipeline installation and its Stations	Presented at Annex 8M • Table M-9 for landslides along CCS1 Section • Table M-10 for landslides along CCS2 Section • Table M-11 for liquefaction along CCS1 Section	Minor

Impacts	Mechanism	Locations	SEI
		• Table M-12 for liquefaction along Megalopolis branch • Table M-13 for liquefaction along CCS2 Section	

Prepared by: ASPROFOS, 2022.

2.3.4.2 *Offshore section*

Table 2-22 Key Issues for Assessment - Geological, Tectonic and Soil/Sediments Characteristics (Offshore Section).

	Construction Phase	Operation Phase
Sources of impact/ risk	Potential Activation of Geohazards due to: • Preparation of trench at near coast areas • Special crossings (landfall crossings) • Pipeline laying at offshore sections Sediments diffusion due to: • The dredging construction activities at Landfall sites (nearcoast areas) Potential activation of sediments pollution during construction of the offshore pipeline due to: • The accidental leakage of fuel from ships/vessels • The accidental escape of sanitary waste from ships/vessels • The accidental leakage of fuels, lubricants and chemicals at landfall sites	Potential Activation of Geohazards • Effect of the permanent loading of the geological formations from the installation of the pipeline and the simultaneous action of many parameters that accelerate landslides such as seismic activity, contribute to the acceleration of landslides and similar geohazards events during the operation phase

	Construction Phase	Operation Phase
Potentially Impacted Resources and Receptors	For Geohazard the receptors are referred to Annex 8M, in particular: • Table M-14 for Main Geohazards along the route OSS2/OSS2N • Table M-16 for Main Geohazards along the route OSS3/OSS3N • Table M- 18 for Main Geohazards along the route OSS4 For sediments diffusion, the receptors are: • All the sediments along the offshore pipelines • The near coast areas at Landfall locations For sediment pollution, the receptors are • All the sediments along the offshore pipelines	For Geohazard the receptors are referred to Annex 8M: • Table M-14 for Main Geohazards along the route OSS2/OSS2N • Table M-16 for Main Geohazards along the route OSS3/OSS3N • Table M- 18 for Main Geohazards along the route OSS4 • All sediments along the offshore pipelines
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Seabed morphology which can lead to free span creation • Intersection of the pipeline with hydrates, pock marks	
Project Factors that Potential Influence Impacts/ Risks	The following project activities of the Project can possibly enhance the occurrence of geo-hazards: • Preparation of trench at landfall locations • Intersection of the pipeline with hydrates, pock marks, active landslides and other existing geohazards • Free span creation and intervention techniques. The following factors of the Project can possibly enhance the occurrence of Sediments diffusion: • Excavation of trench at landfall locations • Preparation of cofferdams at LF4 and LF5 • Preparation at causeways at LF2 and LF3 • Anchoring of ships and vessels • Backfilling and reinstatement at landfall locations	Activation of Geohazards • The permanent loading of the geological formation from the installation of the pipeline and the simultaneous action of many natural events such as seismic activity accelerate landslides and similar geohazards events during the operation phase • Maintenance works for offshore sections

	Construction Phase	Operation Phase
	• Intervention techniques for normalization of free span. The following factors of the Project can possibly enhance the occurrence of sediments pollution: • The accidental leakage of fuel from ships/vessels • The accidental escape of sanitary waste from ships/vessels • The accidental leakage of fuels, lubricants and chemicals at landfall sites.	

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Table 2-23 Overview of Impacts regarding Geological, Tectonic and Soil/Sediments Characteristics (Offshore Section).

Impacts	Mechanism	Locations	SEI
Construction Phase			
Potential Activation of geohazards	• Crossing with unstable submarine slopes • Excavation at landfalls areas • Crossing with liquefied formations • Crossing with high relief bedrock • Crossing with mud-volcanoes • Crossings with salt tectonics • Crossings with gas related hazards (Pockmarks,fluid seepage,Hydrates)	Presente d in Annex 8M • Table M-14 for Main Geohazards areas alongside the route OSS2/OSS2N • Table M-16 for Main Geohazards areas alongside route OSS3/OSS3N • Table M-18 for Main Geohazards areas alongside route OSS4	Negligible
Sediments diffusion	• Excavation of trench at landfall locations • Preparation of cofferdams at LF4, LF5 • Preparation at causeways at LF2, LF3 • Anchoring of ships and vessels	• All sediments along the offshore pipelines • The near coast areas at Landfall locations	Minor

Impacts	Mechanism	Locations	SEI
	• Backfilling and reinstatement at landfall locations • Intervention techniques for normalization of free span		
Potential activation of sediments pollution	• Accidental leakage of fuel from ships/vessels • Accidental escape of sanitary waste from ships/vessels • Accidental leakage of fuels, lubricants and chemicals at landfall sites	• All sediments along the offshore pipelines • The near coast areas at Landfall locations	Minor
Operation Phase			
Potential Activation of Geohazards	• Permanent loading of geological formations due to pipeline installation	Presented at Annex 8M: • Table M-14 for Main Geohazards along the route OSS2/OSS2N • Table M-16 for Main Geohazards along the route OSS3/OSS3N • Table M- 18 for Main Geohazards along the route OSS4	Minor

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2.3.5 Natural Environment

The following tables present the Key Issues for Assessment as well as an overview of the impacts regarding Natural Environment.

Especially for Natura2000 areas, additional information is presented in Section 2.7. APPENDIX 1 – PROJECT OVERVIEW MAP is also relevant.

2.3.5.1 *Overview*

Table 2-24 Key Issues for Assessment - Natural Environment.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Onshore: ➢ Earthmoving, excavation and trenching (land take/habitat loss and fragmentation); ➢ Circulation of vehicles (collision risk and/ or disturbance of fauna species); ➢ Dust and exhaust gas emission (disturbance of species and habitat degradation); ➢ Noise generation (disturbance of species and habitat degradation); and • Offshore: ➢ Trenching/dredging, deposition and backfill (habitat loss and fragmentation); ➢ Circulation of vessels and pipelay barge (collision risk); ➢ Vessel effluents (disturbance of species and habitat degradation);	• Onshore: ➢ Restriction of deep rooted species within the Pipeline Protection Strip; ➢ Noise generation (disturbance of species and habitat degradation); and • Offshore: ➢ Offshore maintenance works ➢ Noise and vibration from pipeline operation ➢ Release of ions ➢ Marine traffic

	Construction Phase	Operation Phase
	➢ Noise generation (underwater noise) (disturbance of species and habitat degradation); and ➢ Marine water and sediment pollution (disturbance of species and habitat degradation).	
Potentially Impacted Resources and Receptors	• Onshore Habitats: mainly areas with natural habitats, e.g. Forests or Forested Areas (Bushlands, shrublands, macquis). Agricultural habitats to a much lesser degree. • Terrestrial fauna species: Species protected under national law, international conventions and globally or nationally threatened (CR/EN/VU) or restricted range, congregatory and migratory; • Offshore habitats: *Posidonia oceanica* meadows, benthic communities; and • Marine Species: Marine mammals and sea turtles, *Posidonia oceanica*, fish species and benthic species protected under national law, european regulations and european & international convention.	• Onshore Habitats: Forests or Forested Areas (Bushlands, shrublands, macquis). • Terrestrial fauna species: Species protected under national law, international conventions and globally or nationally threatened (CR/EN/VU) or restricted range, congregatory and migratory; • Offshore habitats: *Posidonia oceanica* meadows, benthic communities • Marine Species: Marine mammals and sea turtles, fish species and benthic species
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Onshore: Shorelines at LF2 and LF3 with rocks and cobbles, at LF4 and LF5 with sand. The terrestrial morphology varies along the route, consisting typically of mountainous or hilly natural areas (forests and forested areas) and hilly or flat areas with agricultural land; and ➢ Offshore: Seabed morphology varying along the route. Nearshore section with *Posidonia oceanica* meadow on sand with presumably a weathered rock basement below some metres. From -40 m to – 2600 m there are various benthic communities and communities	• Onshore: Unfragmented/ remote areas with limited or no current access • Offshore: Seabed morphology varying along the route. Nearshore section with *Posidonia oceanica* meadow on sand with presumably a weathered rock basement below some metres. From -40 m to – 2600 m there are various benthic communities and communities of muddy detritic bottoms, sandy muds, bathyal muds. Deeper than – 2600 m there are bathyal seabeds with bathypelagic ocean waters.

	Construction Phase	Operation Phase
	of muddy detritic bottoms, sandy muds, bathyal muds. Deeper than – 2600 m there are bathyal seabeds with bathypelagic ocean waters. The offshore routing takes into account and avoids all major geomorphologically complex areas likely sustaining high biodiversity along the corridors.	The offshore routing takes into account and avoids all major geomorphologically complex areas likely sustaining high biodiversity along the corridors.
Project Factors that Potential Influence Impacts/ Risks	• Onshore: Specific techniques, topsoil removal, construction site management and waste management. Temporary footprint areas will be reinstated as per standard procedures; and • Offshore: Specific techniques used for trench excavations, pipelay vessel positioning and dredged sediment management. ➢ Construction rate and duration	• Onshore: deeprotted species clearance within the PPS. Location of permanent facilities • Offshore: Specific techniques used for periodically inspection, monitoring and maintaining to ensure adequate and normal operation of the pipeline.

Prepared by: ASPROFOS, 2022.

2.3.5.2 *Construction Phase*

Table 2-25 Overview of Impacts regarding Natural Environment during construction phase.

Impact	Mechanism	Locations	SEI
Onshore Biodiversity			
Habitats/ Vegetation loss	Earthmoving, excavation and trenching	Sparsely vegetated areas	Minor
		Mediterranean deciduous forests, Floodplain forests (Riparian forest/Fluvial forest)	Moderate
		Inland and coastal saline marshes, Grasslands	Minor

Impact	Mechanism	Locations	SEI
		Mediterranean coniferous forests, Mixed Forest	Minor
		Fruit trees and berry plantations, Olive groves, Agroforestry areas	Minor
		Transitional woodland-shrub	Minor
		Annual cultivations (Arable land, Complex cultivation patterns, Permanent crops,	Negligible
		Sclerophyllous vegetation	Minor
Fauna Habitats loss for Golden jackal (*Canis aureus*)	Earthmoving, excavation and trenching	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the jackal)	Minor
Fauna Habitats loss for Wolf (*Canis lupus*)	Earthmoving, excavation and trenching	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the wolf)	Moderate
Fauna Habitats loss for Otter (*Lutra lutra*)	Open cut crossing (excavation and trenching) of water bodies	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the otter	Minor
Fauna Habitats loss for Fish fauna	Open cut crossing (excavation and trenching) of water bodies	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for fish fauna	Minor
Fauna species loss for Small mammals	• Preparation and excavation of the terrain (working strip and facilities) • Heavy vehicle traffic	To be identified during pre-construction survey	Minor
Fauna species loss for Bats		• Forests and Forested Areas • Agricultural lands	Minor

Impact	Mechanism	Locations	SEI
Fauna species loss for Reptiles	• Air, noise and vibration emissions from the construction front • Light emission from construction areas	To be identified during pre-construction survey	Minor
Fauna species loss for Amphibians		• Floodplain forests (Riparian forest/Fluvial forest) • Inland and coastal saline marshes	Minor
Fauna species loss for Macro-invertebrates	Preparation and excavation of the terrain (working strip and facilities)	Rivers crossed with open cut	Minor
Disturbance of Fauna - Golden jackal (*Canis aureus*)	Noise from construction activities	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the jackal)	Minor
Disturbance of Fauna - Wolf (*Canis lupus*)	Noise from construction activities	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the wolf)	Minor
Disturbance of Fauna - Otter (*Lutra lutra*)	• Noise at any river crossings with presence of otter • Sediments downstream of the crossing point, in case of open cut technique.	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the otter	Minor
Disturbance of Fauna - Fishfauna	Sediments downstream of the crossing point, in case of open cut technique.	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for fish fauna	Minor
Impacts to Biodiversity during SPT	• Water abstraction • Water discharge • Noise from SPT compressors/ pumps	Water abstraction and discharge locations	Minor
Offshore Biodiversity			
Habitat/Flore species loss	• Seabed intervention works • Pipelaying and seabed occupation	Deep water section	Minor

Impact	Mechanism	Locations	SEI
Habitat/Flore species loss	• Construction of cofferdam and trenching • Anchoring of the pipelay barge • Pipelaying and seabed occupation • Increased re-suspended particles in the water column	Nearshore section at LF3	Moderate
		Nearshore section at LF4 Nearshore section at LF5	Minor
Impacts on Marine Invertebrates	• Seabed intervention works • Pipelaying and seabed occupation • Construction of cofferdam and trenching (nearshore) • Anchoring of the pipelay barge (nearshore)	• Deep water section • Nearshore section	Minor
Impacts on Marine Fish species	• Construction of cofferdam and trenching • Seabed intervention works • Anchoring of the pipelay barge • Temporary passage of different types of vessels	• Deep water section • Nearshore section	Minor
Impacts on Marine turtles	• Construction of cofferdam and trenching • Temporary passage of different types of vessels • Artificial lights from the Project activities	• Deep water section • Nearshore section at LF2, LF4 & LF5 • Nearshore section at LF3	Minor
Impacts on Marine mammals	• Construction of cofferdam and trenching • Temporary passage of different types of vessels	• Deep water section • Nearshore section • Hellenic Trench IMMA	Minor
Avifauna			
Impacts on Avifauna during Construction – Onshore/Offshore	• Preparation and excavation of the terrain before erection of temporary and permanent facilities • Preparation of the working strip excavation of the trench for onshore pipeline installation	See Chapter 9.2.5 of the ESIA (Tables with Main areas of special interest regarding avifauna, along project footprint)	Minor

Impact	Mechanism	Locations	SEI
	• Heavy vehicle traffic • Air, noise and vibration emissions from the construction front • Light emission from construction areas		
Protected Areas			
Impacts on Protected Areas - Natura2000 Sites	• Main impacts are habitat and species loss, disturbance, induced by the same mechanisms as the ones described above.	Within the Protected Areas	As per analyses at the Appropriate Assessments (see relevant Annexes)
Impacts on Protected Areas - Wildlife Refuges		Within the Protected Areas	No impacts on the integrity of the protected areas given the limited area affected, overall availability of the specific ecosystem types within the Protected Areas and their characteristics
Impacts on Protected Areas - National Parks		Within the Protected Areas	

Prepared by: ASPROFOS, 2022.

2.3.5.3 *Operation Phase*

Table 2-26 Overview of Impacts regarding Natural Environment during operation phase.

Impact	Mechanism	Locations	SEI
Onshore Biodiversity			
Habitats/ Vegetation loss	Restriction of deep rooted species within the Pipeline Protection Strip	Mediterranean deciduous forests, Floodplain forests (Riparian forest/Fluvial forest)	Moderate
		Mediterranean coniferous forests, Mixed Forest, Transitional woodland-shrub, Sclerophyllous vegetation	Minor
		Sparsely vegetated areas, Phrygana vegetation, Inland and coastal saline marshes, Low density built-up areas / Settlements, Fruit trees and berry plantations, Sea and ocean, Grasslands, Arable land, Complex cultivation patterns, Agroforestry areas, Olive groves, Permanent crops	No impacts assessed.
Fauna Habitats loss for Golden jackal (*Canis aureus*)	Restriction of deep rooted species within the Pipeline Protection Strip	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the jackal)	No impacts assessed.

Impact	Mechanism	Locations	SEI
Fauna Habitats loss for Wolf (*Canis lupus*)	• Restriction of deep rooted species within the Pipeline Protection Strip	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the wolf)	Minor
Fauna Habitats loss for Otter (*Lutra lutra*)	• Restriction of deep rooted species within the Pipeline Protection Strip	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the otter	Minor
Fauna Habitats loss for Fishfauna	• Restriction of deep rooted species within the Pipeline Protection Strip	See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for fish fauna	No impacts assessed.
Disturbance of Fauna - Golden jackal (*Canis aureus*)	Noise from Main Stations operation.	KP 250 - KP 280	Minor
Disturbance of Fauna - Wolf (*Canis lupus*)	Noise from Main Stations operation.		No impacts assessed.
Disturbance of Fauna - Small Mammals	Noise from Main Stations operation.		No impacts assessed.
Disturbance of Fauna - Fishfauna	Noise from Main Stations operation.		No impacts assessed.
Disturbance of Fauna - Avifauna	Noise from Main Stations operation.		No impacts assessed.
Disturbance of Fauna - Reptiles	Noise from Main Stations operation.		No impacts assessed.
Disturbance of Fauna - Amphibians	Noise from Main Stations operation.		No impacts assessed.
Offshore Biodiversity			
Impacts on Marine Habitats by the operation of the offshore pipeline	• Offshore maintenance works • Noise and vibration from pipeline operation • Release of ions • Marine traffic	• Deep water section • Nearshore section	Negligible

Impact	Mechanism	Locations	SEI
Impacts on Marine Invertebrates – Nearshore /Deep water sections	Physical presence of the pipelines	• Deep water section • Nearshore section	Negligible
Impacts on Marine Fish – Nearshore/Deep water sections	• Noise and vibration from pipeline operation • Release of ions • Marine traffic	• Deep water section • Nearshore section	Negligible
Impacts on Marine Reptiles – Nearshore/Deep water sections	• Noise and vibration from pipeline operation • Marine traffic	• Deep water section • Nearshore section	Negligible
Impacts on Marine Mammals by the operation of the offshore pipeline	• Noise and vibration from pipeline operation • Marine traffic	• Deep water section • Nearshore section	Negligible
Protected Areas			
Impacts on Protected Areas - Natura2000 Sites	• Main impacts are habitat and species loss, disturbance, induced by the same mechanisms as the ones described above.	Within the Protected Areas	As per analyses at the Appropriate Assessments (see relevant Annexes).
Impacts on Protected Areas - Wildlife Refuges		Within the Protected Areas	No impacts on the integrity of the protected areas given the limited area affected, overall availability of the specific ecosystem types within the Protected Areas and their characteristics.
Impacts on Protected Areas - National Parks		Within the Protected Areas	

Prepared by: ASPROFOS, 2022.

2.3.6 Anthropogenic Environment

2.3.6.1 *Spatial Planning*

2.3.6.1.1 Uses of the Land

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Uses of the Land.

Table 2-27 Key Issues for Assessment – Uses of the Land.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Temporary land-take along the pipeline working strip, trenching and onshore pipeline installation and backfilling; • Establishment of temporary construction facilities (e.g. construction sites) • Land take for permanent facilities, mainly the Main Stations.	• Permanent Right of Way for the route • Presence of Main Stations and Pipeline Route
Potentially Impacted Resources and Receptors	• Owners and users of land affected by temporary land take. • Owners and users of land affected by permanent land take or land use restrictions. • Local communities • Local authorities (regional and municipal/communal).	• Owners and users of land affected by permanent land take or land use restrictions. • Local communities • Local authorities (regional and municipal/communal).
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Existing morphology • Existing land uses within project footprint (incl. temporary facilities); • Based on analysis provided in Section 8.6.1.3, regarding the ratio of each land cover type within the study area in comparison to the total coverage of the specific land cover type in the entire Regional unit, the following are highlighted: ➢ Artificial Surfaces present the highest engagement ratio for the R.U. of Lasithi (Industrial or commercial units), Laconia & Arcadia (Road and rail networks)	• Existing morphology • Existing land uses within project footprint (incl. permanent facilities); • Pipeline crosses 6 local spatial plans (SXOOAP of Lefki, Crete; SCOOAP of Monemvasia, Peloponnese, GUB of Agrinio, Aetoloakarnania, GUB of Louros, Preveza,

	Construction Phase	Operation Phase
	Aetoloakarnania (Airports) present the highest engagement ratio for the R.U. of Laconia, Arcadia ➢ Complex cultivation patterns present the highest engagement ratio for the R.U. of Ilia, ➢ Permanently irrigated land occupies present the highest engagement ratio for the R.U. of Achaia, ➢ Fruit trees and berry plantations present the highest engagement ratio for the R.U. of Arta ➢ Inland marshes present the highest engagement ratio for the R.U. of Preveza and Thesprotia • Pipeline crosses 6 local spatial plans (SXOOAP of Lefki, Crete; SCOOAP of Monemvasia, Peloponnese, GUB of Agrinio, Aetoloakarnania, GUB of Louros, Preveza, SXOOAP of Zalongos, Preveza and GUB of Fanari, Preveza).	SXOOAP of Zalongos, Preveza and GUB of Fanari, Preveza).
Project Factors that Potential Influence Impacts/ Risks	• Project footprint • Pipeline and project facilities construction • Construction schedule (duration and season) • Project of National Importance and Project of Common Interest	• Project's footprint • Pipeline Protection Strip (8 m corridor – 4 m on each side of the pipeline axis) • Building Control Strip (40 m corridor – 20 m on each side of the pipeline axis) • Spatial Development Control Strip (400 m corridor – 200 m on each side of the pipeline axis) • Project of National Importance

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Table 2-28 Overview of Impacts regarding Uses of the Land.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Changes in Land Uses	• Temporary land-take along the pipeline working strip; • Establishment of temporary construction facilities (e.g. construction sites) • Land take for permanent facilities, mainly the Main Stations.	• Industrial - commercial zones	Negligible	Artificial surfaces which reinstatement shall take place upon construction completion. Mitigation measures can be applied to completely avoid impacts.
		• Open spaces with little or no vegetation	Negligible	Agricultural areas of annual crops or pastures, which can quickly return to their initial conditions. Mitigation measures can be applied to compensate for temporary impacts.
		• Sparsely vegetated forest areas and areas of systematic arboriculture	Minor	Semi-natural areas or tree crops requiring few years to reinstate, due to the nature of the vegetation. Decreased working strip and compensation can minimize impacts.
		• Forested Areas	Minor	Forests and forested areas requiring some years to reinstate, due to the nature of the vegetation. Decreased working strip can minimize impacts. When located within protected areas, their importance is increased. No main station nor temporary construction facility shall be located within forest area.
		• Forested Areas within protected site	Moderate	
Operation Phase				

Impacts	Mechanism	Locations	SEI	Comments
Direct Changes in Land Use	Establishment of the Pipeline Protection Strip (8 m wide corridor, 4 m on each side of the pipeline axis)	• Industrial - commercial zones	N/A	Given the design of the project, footprint has mostly avoided artificial surfaces (Continuous or Discontinuous urban fabric or Industrial/ commercial zones).
		• Open spaces of productive land with little or no vegetation	Negligible	Annual crops cultivations and the rest of the agricultural related activities and any other activity are allowed as before the construction of the project.
		• Open spaces of unproductive land with little or no vegetation	N/A	
		• Areas of systematic arboriculture	Minor	No deep-rooted species are allowed within the PPS. Conditionally that distance of planting rows is greater than 4 m, only one planting row is lost. For olive groves, a typical plantation scheme is 7x7 (for kiwi 4x6).
		• Forested Areas (within or not Protected Areas)	Minor	No deep-rooted species are allowed within the PPS. However, the character of the land use is not modified. PPS can be requested to be configured as a fire protection strip.
Indirect Changes in Land Uses	Establishment of the Building Control Strip (40 m wide	• Industrial - commercial zones	Minor	Footprint has mostly avoided artificial surfaces. Engaged areas could potentially host standalone buildings (scattered houses

Impacts	Mechanism	Locations	SEI	Comments
	corridor, 20 m on each side of the pipeline axis)			or shops). Establishment of the BCS decrease this capacity.
		• Open spaces of productive land with little or no vegetation • Open spaces of unproductive land with little or no vegetation • Areas of systematic arboriculture • Forested Areas (within or not Protected Areas)	N/A	Agricultural and/ or natural areas of low vegetation are not affected by indirect impacts, because their characteristics (e.g. identified development trends or town planning regulations) do not include buildings or high population density plans development within the specific land use types.

Prepared by: ASPROFOS, 2022.

2.3.6.1.2 Uses of the Sea

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Uses of the Sea.

Table 2-29 Key Issues for Assessment – Uses of the Sea.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Navigation of Project vessels within fishing areas • Marine vessel traffic and use of Port Facilities • Offshore pipeline construction activities • Shore crossing and related construction at landfalls	• Presence of pipeline in deep waters • Potential restrictions for deep-water pipeline safety (e.g. berthing, anchoring, in specific locations)

	Construction Phase	Operation Phase
Potentially Impacted Resources and Receptors	• Fishermen in the Study Area • Aquaculture units • Marine traffic/ routes • Port facilities	• Fishermen in the study area • Marine traffic • Port facilities
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Fishing activity in the area • Aquaculture development in the area • Oceanographic characteristics	• Fishing activity in the area • Aquaculture development in the area • Marine Traffic/ Routes
Project Factors that Potential Influence Impacts/ Risks	• Project's footprint • Pipeline construction activity • Number of marine vessels and routes • Construction schedule (duration and season/ timing – High Touristic Season) ➢ Offshore construction rate, 2-3 km/day ➢ Landfall construction duration, approximately 6 months • Construction method (seabed intervention works causing sediments resuspension)	• Project's footprint • Restrictions for deep-water pipeline safety • Number of marine vessels and routes during operation • Monitoring procedures

Prepared by: ASPROFOS, 2022.

Table 2-30 Overview of Impacts regarding Uses of the Sea.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Fishing areas restrictions	• Navigation of Project vessels within fishing areas	• Fishing areas mainly of (i) Coasts of Kefalonia,	Minor	• Fishing intensity is low.

Impacts	Mechanism	Locations	SEI	Comments
	• Marine vessel traffic and use of Port Facilities • Offshore pipeline construction activities • Shore crossing and related construction at landfalls	Zakynthos and Gulf of Patra; (ii) Kriti island; and secondary of (iii) Gulf of Laconia, (iv) Gulf of Argolida and Saronikos Gulf, (v) Dodekanissos islands, and (vi) Kyklades islands		• A safety exclusion zone of 1 km shall be enforced around the pipelay vessels.
Indirect nuisance of aquaculture development and/ or fishing activity	• Offshore pipeline construction activities • Shore crossing and related construction at landfalls	• Landfall sites and Fishing areas of (i) Coasts of Kefalonia, Zakynthos and Gulf of Patra and (ii) Kriti island.	Minor	• No aquaculture farms in the broader area. Suspended sediments concentrations in the water column fall within threshold values, just within 50 m from the project footprint (see Annex 9D).
Increase in marine traffic	• Navigation of vessels within fishing areas • Marine vessel traffic and use of Port Facilities • Offshore pipeline construction activities	• Ports used for the project	Minor	• Number of additional vessels per day is very small. • Ships density is very low; in Patraikos Gulf (of higher ships density), impact duration is only 1 week (i.e. in the deep water). • Ships with international flags may be affected. • Measures exist for reversion of any safety implications.
Operation Phase				

Impacts	Mechanism	Locations	SEI	Comments
Marine traffic (berthing) restrictions	• Presence of pipeline in deep waters • Potential restrictions for deep-water pipeline safety (e.g. berthing, anchoring, in specific locations)	• Berthing safety zone	Minor	Berthing restrictions are limited compared to available berthing area. Project is not located close to any significant port facility.

Prepared by: ASPROFOS, 2022.

2.3.6.2 *Structure and operation of anthropogenic environment*

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Structure and operation of anthropogenic environment.

Table 2-31 Key Issues for Assessment - Structure and operation of anthropogenic environment.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Presence of the construction workforce (sourced nationally and internationally) who through interactions with communities may be related with increased health risks. • The provision of health care for the workforce (both primary and secondary, i.e. hospital care) has the potential to affect access to health care for communities (due to competition for resources) with the potential for worsening health outcomes. • Community members could be involved in accidents leading to injuries and even fatalities if they enter areas where construction activities are being undertaken.	• Presence of the pipeline and Main Stations. • Changes to the environment due to increased noise, decreased air quality, waste and changes to the visual environment as a result of the Project.

	Construction Phase	Operation Phase
	• Changes to the environment due to increased noise, decreased air quality, waste and changes to the visual environment as a result of the Project may affect health and wellbeing (see relevant Sections). • Land occupation by project related facilities • Construction activities stress on health care facilities • Educational, social and economic level of engaged population • Experience from other (similar or not) development plans and projects • Current economic situation is impacting on the general feeling of anxiety and negativity. • Existing land uses, mainly on temporary facilities locations.	
Potentially Impacted Resources and Receptors	• Communities along the pipeline route. • Settlements close to compressor stations, logistic and construction sites. • Primary health care facilities in communities along the route and towns with hospitals in broader Study Area.	• Communities along the pipeline route. • Settlements close to compressor stations.
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Health care centres are located in larger settlements with villages being served by a health post with a doctor or nurse visiting on rotation (usually once a week). • However, there are settlements that do not have a health post, nor are visited by medical staff, whilst there is already increased pressure on the existing services. • Specialist health care facilities are provided to the residents of the study area by numerous health care facilities. Specifically in the Regional Units crossed by the pipeline, there are 20 Hospitals. Patra's hospitals support the population of the third biggest city in Greece; Heraklion (Crete) and Ioannina are not very far away from the Project area (approx. 20 km to the East, 30 km to the North and 40 km to the East, of the project , respectively) and are also included in the biggest cities of Greece. • COVID-19 pandemic is influencing mainly population centres. • All social groups have the same access to health care facilities.	• Distance of residential areas to permanent facilities • Concerns regarding safety issues recorded during ESIA consultation

	Construction Phase	Operation Phase
Project Factors that Potential Influence Impacts/ Risks	• Location of project's construction supporting temporary (pipeyards, construction sites) and permanent (Main Stations, i.e. Facilities at Crete, Megalopoli and Achaia) facilities • Construction schedule (duration and season/ timing – High Touristic Season) • Number of workforce	• Location of project's permanent locations and route

Prepared by: ASPROFOS, 2022.

Table 2-32 Overview of Impacts regarding Structure and operation of anthropogenic environment.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Increased pressure on health care	• Presence of the construction workforce and interactions with local community. • The provision of health care for the workforce may lead to competition of local health care facilities. • Involvement of community members in accidents.	• Closest health care facilities (Hospitals).	Minor	The engaged hospitals are considered capable of handling the increased pressure even when considering potential additional health care load from workforce and tourists. Safety procedures induced not only by law, but also by Project's HSE policies, minimize risk of accidents/ injuries.
Increased transmission of infectious diseases	• Presence of the construction workforce and interactions with local community.	• Residential areas close to Temporary facilities	Minor	Normality is emerging slowly but steadily.

Impacts	Mechanism	Locations	SEI	Comments
Break of urban fabric continuity	• Land occupation by project related facilities.	• Temporary construction sites.	Negligible	The final locations of pipeyards and construction sites shall be defined prior construction phase by the EPC Contractor(s). In any case they will be sited within agricultural, levelled areas, close to existing infrastructure (artificial areas), but at some distance from residential areas; as such limited interaction with residential areas is foreseen and impacts can be avoided.
Operation Phase				
Break of urban fabric continuity	• Land occupation by project related facilities.	• Communities close to Main Stations	Negligible	No Main Station is located within urban fabric.

Prepared by: ASPROFOS, 2022.

2.3.6.3 *Cultural Heritage*

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Cultural Heritage.

Table 2-33 Key Issues for Assessment - Cultural Heritage.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Ground/ seabed disturbing activities, including land-clearing and site preparation activities associated with Project facilities, • Excavation techniques of the pipe trench/ cofferdam,	• Traffic of vehicles, equipment and personnel to and from Main Stations • Traffic of vehicles for monitoring/ patrolling of onshore project footprint

	Construction Phase	Operation Phase
	• Establishment of working strip and other temporary facilities such as construction sites and pipeyards • Pollution (mainly dust) and vibration from blasting, hammering, and the movement of vehicles, equipment and personnel. • Construction duration	• Navigation of vessels for monitoring/ patrolling of offshore project footprint
Potentially Impacted Resources and Receptors	• Cultural heritage resources located close to the Project	• Cultural heritage resources located close to the project receiving visitors or users
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Presence of declared cultural heritage sites • Presence of identified cultural heritage sites • Areas of high potential for presence of unknown cultural heritage resources • Currents velocity and direction for the offshore section	• Presence of declared cultural heritage sites • Presence of identified cultural heritage sites
Project Factors that Potential Influence Impacts/ Risks	• Project's footprint • Pipeline construction activity • Construction schedule (duration) • Crossing method • Project of National Importance	• Project's footprint • Maintenance and monitoring plan

Prepared by: ASPROFOS, 2022.

Table 2-34 Overview of Impacts regarding Cultural Heritage.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				

Impacts	Mechanism	Locations	SEI	Comments
Direct physical damage	Mechanical engagement due to: • Ground/ seabed disturbing activities, including land-clearing and site preparation activities associated with Project facilities, • Excavation of the pipe trench/ cofferdam, • Establishment of working strip and other temporary facilities such as construction sites and pipeyards	• Declared resources at National Level (CH-LAK-009, CH-LAK-033, CH-LAK-087, CH-PRE-006, CH-PRE-011, CH-PRE-012)	Moderate	Presence of a cultural heritage resource along the project footprint (within 50 m)
Secondary Degradation or Damage	Dust (and other pollutants) dispersion and/ or Shocks/vibrations due to: • Ground/ seabed disturbing activities, including land-clearing and site preparation activities associated with Project facilities, • Excavation of the pipe trench/ cofferdam • Establishment of working strip and other temporary facilities such as construction sites and pipeyards	• Declared at National Level Resources (incl. Monuments, e.g. Stone arched bridges, Buildings and Caves) (CH-LAK-001, CH-ARK-010, CH-AIT-015) (CH-LAK-024, CH-LAK-028, CH-LAK-067, CH-LAK-073, CH-LAK-079, CH-LAK-086, CH-ARK-001, CH-ARK-002)	Moderate	Presence of a cultural heritage resource within 200 m from the project footprint.
		• Not Declared, at National Level, resources (CH-LAK-062, CH-ILI-002, CH-AIT-005, CH-ARK-003, CH-ARK-005, CH-ARK-008, CH-ART-003, CH-THE-002, T4699, T3003, T3004, T3512, T3485, T4121, T4115)	Minor	

Impacts	Mechanism	Locations	SEI	Comments
Nuisance to visitors access	• Establishment of working strip and other temporary facilities such as construction sites and pipeyards	• Declared resources at National Level	Minor	Possible interference of the project and the accessibility to a resource.
		• Not Declared, at National Level, resources	Negligible	
Operation Phase				
Direct physical damage	• n/a	• n/a	n/a	No ground disturbing mechanisms that could induce direct physical damage exists during operation phase; hence, no impacts are assessed.
Secondary Degradation or Damage	• n/a	• n/a	n/a	No sources of major vibration or pollution. All vehicles/ vessels used EU certification is mandatory by law.
Nuisance to visitors access	• Traffic of vehicles, equipment and personnel	• Permanent facilities	Negligible	All permanent facilities (i.e. line valve stations and Main Stations) have been selected so as to keep significant distance from known cultural heritage resources (incl. religious sites). No cultural heritage sites that receive visitors have been identified along the permanent facilities nor the Pipeline Protection Strip. Similar for negative effect on the landscape and surroundings of the identified cultural heritage resources

2.3.7 Socioeconomic Impacts

2.3.7.1 *Demographics*

No impacts are assessed regarding demographics.

2.3.7.2 *Economy - Employment*

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Economy and Employment.

Table 2-35 Key Issues for Assessment - Economy and Employment.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Direct (mostly unskilled) and Indirect employment opportunities • Procurement of construction goods and services and Capacity building • Economic impact of taxes, fees and local transactions (positives) (supply of the necessary goods and services; indirect economic impact related to consumption driven by Project employees and the payment of taxes to the state). • Economic impact on rural income (Pipeline passing through agricultural and arable land) • Economic impact on fisheries (safety exclusion zone)	• Economic impact on taxes, fees and local transactions (positives) (main economic impact at operation phase will be taxes to the Greek government.). • Economic impact on agricultural sector (income) (Pipeline Protection Strip on agricultural land) • Economic impact on tourism (any noise generating and/ or landscape disturbing activity)

	Construction Phase	Operation Phase
	• Economic impact on tourism (activities, noise and visual disturbance from construction works)	
Potentially Impacted Resources and Receptors	• Local and Regional economy; in general, business and workforce in the study area • Professional farmers • Professional fishermen • Tourist infrastructures (hotels, restaurants) mainly at areas near LFs • Residential areas along the pipeline route, in particular those located near temporary/ permanent facilities.	• Local and Regional economy • Greek State • Farmers • Fishermen • Tourist infrastructure professionals mainly at areas near LFs
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Availability of goods and services: • Structure of local/ regional economy. The services industry is a major employer at a regional level. In addition, several cities within a short distance to the pipeline corridor offer a full range of services. • The Tourism infrastructures (hotels, restaurants) in touristic areas along the pipeline route. • Education and skill levels providing capacity for local workforce to be engaged in the project construction/ operation. • Unemployment levels. This is of importance to local stakeholders since unemployment is significant in the Project affected regions (11.3% ÷ 21.6%)	• Availability of goods and services: • Structure of local/ regional economy. The services industry is a major employer at a regional level. In addition, several cities within a short distance to the pipeline corridor offer a full range of services. • The Tourism infrastructures (hotels, restaurants) near LF4 • Education and skill levels providing capacity for local workforce to be engaged in the project construction/ operation. • Unemployment levels. This is of importance to local stakeholders since unemployment is significant for engaged regions (11.3% ÷ 21.6%)

	Construction Phase	Operation Phase
	• Vulnerable groups: Seasonal Workers, Immigrants/ Refuges, Roma, Natural Disasters affected Population (wildfires, earthquakes, mainly in Peloponnese).	
Project Factors that Potential Influence Impacts/ Risks	• Construction workforce. In total during construction will employ staff ranging from 3,600 to 5,700 persons, in accordance to Chapter 6 (Section 6.4.8). • Duration of construction. 36 months for onshore pipeline (in total), 6-8 months per landfall site, 30 months per offshore line. • Procurement of goods and services strategy • Project footprint	• Operational workforce (approx. 100 direct new jobs) • Procurement of goods and services strategy • Project footprint • Restriction zones

Prepared by: ASPROFOS, 2022.

Table 2-36 Overview of Impacts regarding Economy and Employment.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Employment opportunities (direct and/ or indirect)	• Supply of the necessary goods and services • Local workforce engagement	• Population centres (cities or villages) close to temporary and permanent facilities • along the working strip	Moderate	Direct employment involves mainly unskilled jobs for construction and procurment of goods and services. Indirect employment involves secondary jobs creation for the providers of goods and services. Capacity building is also should be also taken into consideration.

Impacts	Mechanism	Locations	SEI	Comments
Economic impact of taxes, fees and local transactions	• Supply of the necessary goods and services	• In the entire study area	Moderate	Supply of the necessary goods and services from domestic market will be significant; Services sector is the most important for local/ regional economy, whilst Construction sector is also very important. Workforce consumption and expenditures on local market is also noted.
Economic impact on agricultural sector / income	• Pipeline passing through agricultural and arable land	• Along project footprint (onshore section)	Minor	Most of agricultural sector involves annual crops (or annual species in pastures). All impacts will be local but mid-term. However, compensation shall prevent any income loss.
Economic impact on fishing sector/ income	• Establishment of an offshore safety exclusion zone	• OSS2/OSS2N • OSS3/OSS3N • OSS4 • (offshore section)	Minor	Fishing sector importance is low in the areas affected by the Project. A safety exclusion zone of 2 km shall be enforced around the pipelay vessels. Compensation will be applicable for any income loss.
Economic impact on tourism sector/ income	• Noise and visual disturbance (Construction works)	• LF3 • LF4 • LF5	Minor	Tourism sector is developed only in the specific sites along the entire project, with few sensitive receptors. Impacts can be mitigated, through proper planning; Compensation will be applicable for any income loss.
Operation Phase				
Employment opportunities (direct and indirect)	• Workforce (direct employment)	• Population centres (cities or villages) close to temporary and permanent facilities	Moderate	Unemployment level is significant. Vulnerable groups are not affected. Direct employment will be limited. Indirect employment and capacity

Impacts	Mechanism	Locations	SEI	Comments
		• along the Pipeline Protection Strip		building will be much greater and more significant.
Economic impact of taxes, fees and local transactions	• Payment of taxes • Energy security • Improve of country's brand name	• Greece, Europe	Major	A PCI project promoting energy security to Europe. In full alignment with national strategy and policies.
Economic impact on agricultural sector/ income	• Establishment of safety/ control zones	• Tree crops along the pipeline route	Minor	Annual crops and pastures suffer no impact whatsoever, as former activities are fully allowed. Tree crops are suffering only a small negative impact, from the restriction of one single planting row (conditionally that planting rows distance is greater than 4 m).
Economic impact on tourism sector/ income	• -	• LF3, • LF4, • LF5	N/A	No noise generating or landscape disturbing activities are foreseen during operation of the project. Nuisance from vessels for maintenance purposes offshore, will be located away from sensitive receptors and can be scheduled so as to prevent any impacts. Permanent facilities are not located close to identified tourism businesses. As discussed in Section 9.3.2.1, landscape modification close to tourism sensitive receptors (i.e. the landfalls) is completely and fully reinstated in coastal areas; as documented by already constructed pipeline in Greece.

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2.3.7.3 *Quality of Life/ Value of Land*

During construction and operation of the Project there will be positive impacts on the quality of life of residents in the areas through which the pipeline is going to pass through employment creation and skills development.

Key considerations are almost identical to the discussion held for Uses of Land (see Section 2.3.6.1.1).

The main axes of the impact caused by the Project or activities on the quality of life in terms of services are the following:

- Supporting the improvement of quality of life, through increase of local/ regional economy.
- Improving skills and competences by supporting education and training of local workforce (gained during construction phase).
- Improving environmental conditions, through potential use of natural gas as a fuel.

The impact on quality of life in terms of services provided is difficult to quantify but the impacts are considered positive both during construction and operation phase.

As already mentioned, the construction of the Project will contribute to national economy through the payment of taxes, fees and local transactions throughout its operation and paves the way for more large-scale investments in the country. The implementation of such large and complex projects like the one at hand strengthens the confidence of investors in the prospects of Greece and helps to acquire know-how from Greek companies tha will be involved in various fields (construction, raw materials and services, transport, etc.).

In addition, the project is important for all four regions, as their role is enhanced in the energy map of South East Europe.

Finally, people in the wider area of the project will also benefit at a personal level since the pipeline will transfer natural gas - one of the cheapest, cleanest and more environmentally friendly energy sources - by developing the necessary infrastructure for local gas distribution networks to connect in the future, conditionally that proper network infrastructure shall be developed and naturally, adequate demand is evident.

The investigated project is not expected to affect the unity of the urban fabric, since its basic infrastructure lies beneath ground's surface. Any pressure applied focuses on changes made in the residential areas' structure which residential areas are in direct vicinity to the project.

During operation phase, the structure and operation of the anthropogenic environment will be affected by restrictive conditions in terms of minimum distance required for the construction of new residences and/or for determining the expansion limits of the residential areas.

During operation phase, the value of land will be affected by restrictions imposed as regards the minimum distance for the development of economic activities through the exploitation of farmland. In particular, the value of land is expected to be affected in areas of systematic arboriculture, since replanting of deep-rooted species is not allowed within a four (4)-meter protection zone on either side of the pipeline. Conversely, no changes in land value are expected in low vegetation areas, since all existing activities will continue throughout the area. In the case of woodland, shrubland and heathland, no change in land value is expected, mainly because they are state-owned and secondly because the economic output of activities in these areas (grazing, exploitation of forest products, etc.) is quite low per square kilometer.

The project can also have a positive impact on areas where commercial and industrial activities are being developed, increasing the land value in these areas. The presence of the pipeline gives the opportunity, where there is a strong commercial interest, for further development of the gas network. It has to be mentioned that the activity of gas distribution of gas is not part of the mission of IGI POSEIDON S.A.. Connecting commercial and industrial facilities to the gas network will lead to a reduction of energy costs, environmental load and gas emissions, a relief of possible carbon dioxide costs, and improved product competitiveness.

2.3.7.4 *Development Trends Deriving from the Project*

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Development Trends Deriving from the Project.

Table 2-37 Key Issues for Assessment - Development Trends Deriving from the Project.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Operation of the project • Capacity building of workforce and companies • Engagement of many economy sectors (infrastructures, construction, services) • Improvement of market "Brand Name"	
Potentially Impacted Resources and Receptors	• Regions • Greece • Europe	
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Geographical location (Regions, Country) • Productive sectors of economy	
Project Factors that Potential Influence Impacts/ Risks	• Natural Gas transportation (It is worth noting that positive environmental impacts are caused by the replacement of other fossil fuels by natural gas). • The transboundary character of the project at operation phase is very important; the role of Greece in the wider Balkan region, as well as Europe, is expected to be enhanced.	

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Table 2-38 Overview of Impacts regarding Development Deriving Trends from the Project.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase & Operation				

Impacts	Mechanism	Locations	SEI	Comments
Development Trends at National Level	• Construction and operation of the project • Capacity building of workforce and companies • Engagement of various economy sectors • Improvement of country's "Brand Name" • Alignment with national goals	• Greece • Europe	Extreme	• Enhance EU security of supply and Support Green Deal; • Contributes to the emergence of Greece as a key player in European energy market; • Supports national goals for reduction of greenhouse gas emissions (ESEK) • Facilitates economic growth • Create direct, indirect and induced economic effects;
Development Trends at Regional Level	• Construction and operation of the project • Capacity building of workforce and companies • Engagement of many economy sectors (infrastructures, construction, services) • Improvement of region's "Brand Name" • Alignment with national goals	• Peloponnese	Major	• In full alignement with regional planning and the SDAM.
		• Crete • W. Greece • Epirus	Moderate	• In alignement with regional planning.

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2.3.8 Technical Infrastructure

2.3.8.1 *Overview*

The following tables present the Key Issues for Assessment regarding impacts on:

- Land, Sea and Air Transportation (Table 2-39)
- Environmental Infrastructure Systems (Table 2-40)
- Water, Electricity and Telecommunication Networks (Table 2-41)

as well as an overview of the impacts regarding the above during construction phase (Table 2-42) and during operation phase.

Table 2-39 Key Issues for Assessment - Land, Sea and Air Transportation.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Potential impact on road network might be mainly caused by: ➢ Project vehicle usage (construction, transport, etc.), ➢ Construction of pipeline crossings including roads, ➢ Entry/exit traffic at construction sites; • Potential temporary impact on railroad network operation might be triggered by trenchless crossing method. • Personnel and equipment mobilization might impact local air transport.	• Road movement of personnel vehicles for pipeline operation and maintenance • Marine conditions at cable crossings
Potentially Impacted Resources and Receptors	• Road infrastructure, road network users, and local population might be affected by using existing road network and potential related impacts. • Railway infrastructure and train users might be affected by impact on railway network. • Airport users might be affected by impact on air transportation.	• Road infrastructure • Submarine cables
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Existing road and marine traffic conditions during working days might have a cumulative effect.	
Project Factors that Potential Influence Impacts/ Risks	• Heavy vehicles used as equipment transportation onshore • Heavy vessels used as for equipment transportation offshore	

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Table 2-40 Key Issues for Assessment - Environmental Infrastructure Systems.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Wastewater will be generated by the following factors: ➢ Sanitary facilities in construction sites and vessels, ➢ Ballast water from construction ships, • Solid waste is expected from the following sources: ➢ Earthworks ➢ Construction works ➢ Consumables ➢ Offshore pipe laying	• Wastewater generation by machinery washing and equipment maintenance. Oily wastewater produced by compressor station operations. Sanitary wastewater generated by station personnel. • Solid waste generation by works and workers along the route
Potentially Impacted Resources and Receptors	• Wastewater Treatment Plants • Sanitary Landfill Sites	• Local wastewater treatment plants and landfills
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Extensive local network of wastewater treatment plants and landfills	
Project Factors that Potential Influence Impacts/ Risks	• Production of liquid and solid waste during construction	

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Table 2-41 Key Issues for Assessment - Water, Electricity and Telecommunication Networks.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Crossings including sewage water, irrigation and telecommunication networks • Crossings including overground or underground telephone networks	• EastMed Pipeline operation contributes to the construction of an energy network at the eastern Mediterranean region.

	Construction Phase	Operation Phase
	• Crossing including high-pressure natural gas pipeline	
Potentially Impacted Resources and Receptors	• Local residents in case of interruptions in utility networks. • Implication with other natural gas pipelines	• Consumers in Greece, Balkans and Europe
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Crossing with the DESFA High Pressure Natural Gas Pipeline in Megalopoli broader area • Common route with IGI Poseidon High Pressure Natural Gas Pipeline (Poseidon Pipeline) and ending at the common Compressor Station in Florovouni	• EastMed pipeline operation is closely related to Poseidon Pipeline operation, as the route ends in Florovouni Compressor Station.
Project Factors that Potential Influence Impacts/ Risks	• Project route has been optimized to avoid crossing renewable energy facilities.	

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2.3.8.2 *Construction Phase*

Table 2-42 Overview of Impacts regarding Technical Infrastructure – Construction Phase.

Impacts	Mechanism	Locations	SEI
Road Network			
• Increasing traffic • Traffic delays • Traffic regulation • Increase in accident probability • Damage to road infrastructure	• Use of construction vehicles • Construction of pipeline crossings including national roads • Entry/exit traffic at construction sites	• Existing road network • Entry/exit traffic at construction sites	Minor

Impacts	Mechanism	Locations	SEI
Railway Network			
• Subsidence • Train service interruption	• Trenchless crossing method • Safety regulations	• Crossing including railway network	Minor
Airport Facilities			
• Potential small increase in air transportation	• Use of airport facilities to transport expert personnel	• Local airports	Minor
Port Facilities, Marine Traffic and Submarine Cables			
• Potential Damage to existing infrastructure • Disturbance to vessels and fishing shelters	• Increased construction vessel traffic around major ports • Marine Vessel Wakes • Increasing Traffic on Maritime Transit Corridors	• Local ports • Offshore route	Minor
Wastewater Treatment			
• Increasing wastewater for disposal in WWTPs	• Hygiene installations in construction sites • Ballast water	• Construction sites • Construction vessels	Minor
Sanitary Landfill Sites			
• Increased solid waste for disposal in landfills	• Construction activities	• Onshore and offshore section	Minor
Watering & Irrigation Network			
• Potential damage to the network	• Crossing including watering and irrigation network	• Onshore section	Minor
Telecommunication Networks			

Impacts	Mechanism	Locations	SEI
• Potential disruption of the network	• Construction works	• Communication lines within working strip	Minor
Renewable Energy Sources			
• Temporary reduction of energy production in photovoltaics	• Dust emission byconstruction works	• Photovoltaic stations close to working strip	Negligible
Water Abstraction Points			
• Temporary water supply interruption	• Construction works	• Water abstraction points within working strip	Minor

Prepared by: ASPROFOS, 2022.

2.3.8.3 *Operation Phase*

Table 2-43 Overview of Impacts regarding Technical Infrastructure – Operation Phase.

Impacts	Mechanism	Locations	SEI
Road Network			
• Limited Increasing traffic	• Regular and maintenance works	• Existing road network	Negligible
Port Facilities, Marine Traffic and Submarine Cables			
• Potential Damage of existing cables	• Crossing including cables	• Offshore route	Negligible
Wastewater Treatment			
• Wastewater generation	• Machinery washing	• Project stations	Negligible

Impacts	Mechanism	Locations	SEI
	• Equipment maintenance • Sanitary facilities • Local treatment facilities		
Sanitary Landfill Sites			
• Solid waste generation	• Regular operation • Maintenance works • Solid waste by employees	• Onshore route & stations	Negligible
High Pressure Natural Gas Pipelines			
• Θετικές επιπτώσεις στις εθνικές ενεργειακές υποδομές, όπως ο αγωγός ΠΟΣΕΙΔΩΝ και το εργοστάσιο της ΔΕΗ στη Μεγαλόπολη	• Σύνδεση με τον αγωγό IGI Poseidon • Σύνδεση με μονάδα παραγωγής ενέργειας της ΔΕΗ	• Florovouni, R.U. of Thesprotia • Megalopoli	Major

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2.3.9 Correlation to man-made pressures on the environment

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Correlation to man-made pressures on the environment.

Table 2-44 Key Issues for Assessment - Man-made pressures on the environment.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Industrial areas • Fishing activities: restriction of fishing	• Permanent pipeline protection strip or PPS (8 m wide) cleared:

	Construction Phase	Operation Phase
	• Quarries of Aggregates: Transportation of aggregates • Deforestation of forest Areas: Vegetation clearance and formation of working zone • Water Resources: ➢ Rivers and watercourses crossings ➢ Water intake / discharge for hydraulic testing • Agricultural Crops: Loss of agricultural resources	➢ Permanent land take • Permanent, above ground, project structures: ➢ Permanent land take
Potentially Impacted Resources and Receptors	• For fishing activities the recipients are: ➢ The fishermen mainly at landfalls sites ➢ Fishermen at areas OSS3, OSS4 , OSS2 as referred to in subsection 8.9 • For quarries of aggregates the recipients are the quarries along the route • For deforestation of forest areas the recipients are the natural environment due to the forest vegetation clearance • For water resources the recipients are the quality and quantity of water resources • For agricultural crops the recipients are the land owners	• For the permanent pipeline protection strip or PPS (8 m wide) cleared: • Land owners • For the permanent, above ground, project structures: • Land owners
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Characteristics of sensitive receptors (olive trees, vineyards etc.) • Statutory protection of affected areas (eg Natura sites)	
Project Factors that Potential Influence Impacts/ Risks	• Vicinity with PPC installation • Extended construction schedule at landfalls locations • Big quantity of aggregates consumed for the project • Width of Safety Exclusion Zone	• Vegetation clearance and formation of working zone ➢ Erection of temporary or permanent facilities;

	Construction Phase	Operation Phase
	• Vegetation clearance and formation of working zone • Erection of temporary or permanent facilities; • Reinstatement activities of trench, working strip and temporary facilities plots. • Location of project's construction supporting temporary facilities (pipeyards, construction sites) • Construction schedule (duration and season/ timing) • Number of river crossings • Quantity of water intake / discharge for hydraulic testing • Construction schedule (duration and season/ timing)	➢ Reinstatement activities of trench, working strip and temporary facilities plots. • Location of project's construction supporting temporary facilities (pipeyards, construction sites) • Construction schedule (duration and season/ timing) • Width of Pipeline Protection Strip

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Table 2-45 Overview of Impacts regarding Man-made pressures on the environment.

Impacts	Mechanism	Locations	SEI
Construction Phase			
Potential need and/or discard of aggregates	• Earthmoving works along the working zone. (e.g. backfilling)	• Quarries along the pipeline route	Moderate

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- For Industrial Areas and Fisheries activities, reference is made to Sections 2.3.6 and 2.3.7.
- For Forest areas, reference is made to Sections 2.3.5 and 2.3.6
- For Water Resources, reference is made to Section 2.3.13

- For Agricultural Areas, reference is made to Sections 2.3.6 and 2.3.7.

2.3.10 Air Quality

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Air Quality.

Table 2-46 Key Issues for Assessment - Air Quality.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Use of IC engines (internal combustion engines) for earthmoving activities, excavation works, vehicle and ship traffic causes a temporary increase in dust and air pollutant emissions (NOx, PM10, SO2, VOCs, CO, HAPS). • Equipment used for pre-commissioning activities	• Emissions from Compressor Stations. • During operation, the compressor station facilities emit air pollutants as a result of the combustion of natural gas that drives the compressor units. The emissions mainly consist of nitrogen dioxide (NO2), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter less than 10 micrometers in diameter (PM10), sulphur dioxide (SO2), and hazardous air pollutants (HAPs). Mainly increase in NOx and CO emissions is presented from the use of IC engines (Compressor Stations CS2/MS2-CS2/MS2N, CS3).
Potentially Impacted Resources and Receptors	• Local communities along the route and along transport routes. More specifically there are 8 settlements at a distance to 50 m on either side of the pipeline axis (4 settlements at Section CCS1 and 4 settlements at Section CCS2).	• Nearby settlements from Compressor Stations CS2/MS2-CS2/MS2N, CS3 • Natural Environment

	Construction Phase	Operation Phase
	• Local communities near CSs, MS4/PRS - Heating Station and O&M • Natural Environment • LF2 and LF5 where pre-commissioning activities will take place.	• Alongside the pipeline during inspection and maintenance works
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• The PPC plant in Atherinolakkos is close to the CS2/MS2-CS2/MS2N facilities.	
Project Factors that Potential Influence Impacts/ Risks	• Project Compressor Stations (CS2/MS2-CS2/MS2N, CS3) for onshore section, and vessels used for inspecting for offshore pipeline	• Project Compressor Stations (CS2/MS2-CS2/MS2N, CS3) • Inspecting the offshore pipeline using vessels

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Table 2-47 Overview of Impacts regarding Air Quality.

Impacts	Mechanism	Locations	SEI
Construction Phase			
Temporary increase of dust emissions	• Use of IC engines (internal combustion engines) • Earthworks • Excavation works • Vehicle and ship traffic	• Local communities across the pipeline route. There are 8 settlements at a distance up to 50 m on either side of the pipeline axis. (4 settlements at Section CCS1 and 4 settlements at Section CCS2) • Local communities near CSs and Heating Station • Natural Environment	Minor

Impacts	Mechanism	Locations	SEI
Temporary exhaust emissions to the atmosphere (NOx, PM2.5, SO2,VOCs,CO, HAPS)	• Use of excavators, dozers, trucks, cars, vessels and ships	• Local communities across the pipeline route. There are 8 settlements at a distance up to 50 m on either side of the pipeline axis. (4 settlements at Section CCS1 and 4 settlements at Section CCS2) • Local communities near CSs and Heating Station • Natural Environment	Minor
Temporary exhaust emissions to the atmosphere (NOx, PM10, CO)	• Pre-commissioning activities	• Local communities near LF2and LF5	Minor
Operation Phase			
Emissions from Compressor Stations	• Operation of Compressor Stations	Nearby settlements from Compressor Stations CS2/MS2-CS2/MS2N (settlements boundaries at a distance included in the range 0-8 Km) • Ag. Triada (3.77Km), Goudouras (2.56Km), Perivolakia (7.57Km), Ziros (7.83 Km), Nearby settlements from Compressor Station CS3 (settlements boundaries at a distance included in the range 0-8Km) • Kalivakia(1.99Km), Agrapidochori(3.33 Km), AnoVelitses (3.01 Km), Kandalos (3.43 Km), Portes (3.12 m), Velanidi (4.97 Km), Dafni B (5.60 Km), Latas (5.47 Km), Michio (5.69 Km), Mazaraki 6.82Km), Kampos (7.10 Km), Santomeri (7.59 Km), Charavgi (7.87 Km)	Moderate

Prepared by: ASPROFOS, 2022.

2.3.11 Acoustic Environment

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Acoustic Environment.

Table 2-48 Key Issues for Assessment - Acoustic Environment.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Construction noise and vibration from equipment and machinery, • Pre-commissioning activities	• Operation Phase: noise from Compressor Stations
Potentially Impacted Resources and Receptors	• Nearby settlements and households • Nearby industrial receptors	
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• The ambient noise baseline monitoring did not highlight specific criticalities in the study area because the pipeline route crosses mostly agricultural and undeveloped areas.	• The ambient noise baseline monitored did not highlight specific criticalities in the study area because the pipeline route crosses mostly agricultural and undeveloped areas. • The ambient noise in the centers of the settlements near the proposed site for the construction of the 'Atherinolakkos' Compressor Stations is in the LDEN = 55 – 60 dB(A) zone. The main noise source is the traffic noise from vehicles crossing the main road of each settlement. During nighttime the noise levels are in the L_night = 45 – 55 dB(A) zones. • The noise currently at the proposed site location (CS2/CS2N) is in the 55 – 60 dB(A) zone due to the noise from the adjacent factory from Public Power Company (PPC). • The ambient noise in the centers of the settlements near the proposed site for the construction of the 'Achaia' Compressor Station is in the LDEN = 50 – 55 dB(A) zone. The main noise source is the traffic noise from vehicles crossing the main road of each village. During nighttime the noise levels are in the Lnight = 40 – 45 dB(A) zone.

	Construction Phase	Operation Phase
Project Factors that Potential Influence Impacts/ Risks	• Amount and type of machinery in use during the construction phase, • Specific techniques used for pre-commissioning activities • Construction times	• Compression Stations equipment

Prepared by: ASPROFOS, 2022.

Table 2-49 Overview of Impacts regarding Acoustic Environment.

Impacts	Mechanism	Locations	SEI
Construction Phase			
Impact on Acoustic Environment during Construction– Onshore	• excavation works • preparation and installation of pipeline • Planting and reinstatement of land • horizontal drilling • preparation of construction sites • miscellaneous works	• Goudouras (1.5 km) • Agia Triada (3,5 km) • Public Power Cooperation (0.1 km) • Galatas (3.2 km) • Krioneri (3.7 km)) • Evinohori (4.5 km)	Minor
Impacts on Acoustic Environment during Pre-commissioning – Onshore	• Pre-commissioning activities		Minor
Operation Phase			
Impacts on Acoustic Environment during Operation – Onshore	• Noise from Compressor Stations	• Nearby settlements and households. • Nearby industrial receptors	Moderate

Prepared by: ASPROFOS, 2022.

2.3.12 Electomagnetic Fields

No impacts are assessed regarding Electromagnetic Fields.

2.3.13 Water Resources

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Water Resources. No impacts during operation are expected.

Table 2-50 Key Issues for Assessment – Water Resources.

	Construction Phase
Sources of impact/ risk	• Watercourse crossings; • Shore crossings; • Upgrading existing access roads for moving vehicles, equipment and staff; • Preparation, construction and operation of temporary facilities • Work zone preparation, drainage, erosion control, trench cut, hosting and laying the pipeline; • Hydraulic Testing; • Construction of Compressor Stations and Metering Stations; • Accidental leakages of toxic waste into the soil;
Potentially Impacted Resources and Receptors	• Surface water resources • Groundwater resources

	Construction Phase
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Protection Status • Ecological status • Chemical Status • Availability Status • Natural Flow of Water System • Riparian Woodland and forest land
Project Factors that Potential Influence Impacts/ Risks	• Type of machinery in use • Proximity of camp sites with the water resources • Crossing techniques • Water management plan • Workers' sites management • Waste management plan • Construction time • Period in which construction work is performed

Prepared by: ASPROFOS, 2022.

Table 2-51 Overview of Impacts regarding Water Resources.

Impacts	Mechanism	Locations	SEI
Surface Water Systems (SWS)			
	• Watercourse crossings	• SWS which will be crossed with the Open Cut Method	No impact
		• SWS which will be crossed with the Trenchless Method.	Minor

Impacts	Mechanism	Locations	SEI
Changes in the morphology of SWS (rivers)		• High sensitivity SWS which will be crossed with the Open Cut Method.	Moderate
Changes in the morphology of shore	• Shore crossing	• Landfall sites LF2, LF4 and LF5	Minor
		• Landfall site LF3	Moderate
Impacts on the quality of water resources	• Re-suspension and dispersion of sediment • Discharge of the hydraulic testing water	• Continuous flow SWS which will be crossed with the Open Cut Method.	Minor
		• High sensitivity SWS which will be crossed with the Open Cut Method.	Moderate
		• ContinSeasonal flow SWS which will be crossed with the Open Cut Method.	Negligible
		• SWS which will be crossed with the Open Cut Method	Negligible
Impacts on the quality of water resources	• Re-suspension and dispersion of sediment	• SWS which will be crossed with the Open Cut Method	Negligible
		• High sensitivity SWS which will be crossed with the Trenchless Method.	Minor
Impacts on the quality of Coastal Water Systems	• Shore crossings	• EL0228C0003N (LF4) • EL0415C0002N (LF5) • EL0331C0005N (LF3) • EL1341C0016N (LF2)	Minor
Impacts on the availabilityof surface waters	• Draining water when excavating the trench Discharge of the hydraulic testing water	• Possible water resources	Minor

Impacts	Mechanism	Locations	SEI
Accidental pollution	• Preparation, construction and operation of temporary facilities • Work zone preparation, drainage, erosion control, trench cut, hosting and laying the pipeline. • Hydraulic Testing • Construction and operation of Compressor Stations, Meter Station and O&M.	• Seasonal or continuous flow SWS which will be crossed with the Open Cut Method	Negligible
		• Continuous flow, high sensitivity, SWS which will be crossed with the Open Cut Method	Minor
GroundWater Systems (GWS)			
Impact on the quality of Groundwater Systems	• Upgrading existing access roads for moving vehicles, equipment and staff • Preparation, construction and operation of temporary facilities • Construction of Compressor Stations, Meter Station and O&M.	• GWS characterized by good chemical and availability conditions and Moderate or High or Very High sensitivity	Minor
		• GWS characterized by poor chemical and availability conditions and Low sensitivity	Negligible
		• GWS characterized by poor chemical conditions and poor/ good availability conditions and Moderate sensitivity	Negligible
Impact on the availability of Groundwater Systems	• Work zone preparation, drainage, erosion control, trench cut, hosting and laying the pipeline.	• All	No impact
Accidental pollution	• Work zone preparation, drainage, erosion control, trench cut, hosting and laying the pipeline.	• General	Negligible
		• GWS characterized by Very High sensitivity	Minor
Operation Phase			

Impacts	Mechanism	Locations	SEI
Accidental pollution	• Operation of Compressor /Metering Stations and O&M.	• EL0228R000203009N & EL0200060, EL0200100 (close to CS3) • EL0129R000220055N & EL0100070 (close to MS4/PRS4) • EL1300141 (close to CS2/MS2 - CS2/MS2N)	Negligible
		• EL0100080 (close to MS4/PRS4)	Minor

Prepared by: ASPROFOS, 2022.

2.3.14 Wave Conditions Oceanographic Characteristics – Coastal Mechanics

The following tables present the Key Issues for Assessment as well as an overview of impacts regarding Wave Conditions Oceanographic Characteristics – Coastal Mechanic.

Table 2-52 Key Issues for Assessment - Wave Conditions Oceanographic Characteristics – Coastal Mechanics.

	Construction Phase	Operation Phase
Sources of impact/ risk	• Construction activities during shore crossing.	• Physical presence of pipelines and structures on the seabed
Potentially Impacted Resources and Receptors	• Beaches on the wider area in Landfall locations.	
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Beach and Seabed characteristics • Waves • Tides & Currents	
Project Factors that Potential Influence Impacts/ Risks	• Construction method • Period in which construction work is performed	

	Construction Phase	Operation Phase
	• Construction time	

Prepared by: ASPROFOS, 2022.

Table 2-53 Overview of Impacts regarding Wave Conditions Oceanographic Characteristics – Coastal Mechanics.

Impacts	Mechanism	Locations	SEI	Comments
Construction Phase				
Modification for Coastal Dynamic Balance	• Construction activities during shore crossing	• LF2	Minor	• Medium Coastal Erosion Hazard Degree • Rocky sea cliffs, characterized by discontinuous and intermittent occurrence of pocket beaches.
		• LF3	Minor	• Low Coastal Erosion Hazard Degree • Rocky sea cliffs, characterized by discontinuous and intermittent occurrence of pocket beaches.
		• LF4 • LF5	Minor	• Low Coastal Erosion Hazard Degree • Long straight sandy beaches
Operation Phase				
		•		No impacts assessed

Prepared by: ASPROFOS, 2022.

2.3.15 Project's Vulnerability to Risks of Serious Accidents

The following tables present the Key Issues for Assessment as well as an overview of the impacts regarding Project's Vulnerability to Risks of Serious Accidents (onshore and offshore). The potential impacts due to the construction of the project are presented in the related sections for each parameter, whilst as no major accidents due to the project are expected during the construction phase that may have significant environmental impacts

The data used are taken from the ongoing Safety Study (incl. a Quantitative Risk Assessment) which will be submitted for approval prior the issuance of the Installation Act of the project. All the accidents will be taken into during the detail design and will be verified for being under the acceptability threshold in collaboration with competent authoritires.

Table 2-54 Key Issues for Assessment - Project's Vulnerability to Risks of Serious Accidents.

	Operation Phase
Sources of impact/ risk	Construction Phase: • No major accidents or disasters are expected. Operation Phase: The main major hazard scenario is the loss of containment as result of a leak or rupture, the following failure modes can be distinguished • External Interference: Fishing Interaction (trawling), Shipping Interaction (ship sinking, ship grounding, anchoring, anchor dragging, dropped objects), Industrial Accidents, Vandalism, Terrorism and/ or armed conflicts • External and internal corrosion and erosion • Material and construction defects • Geohazards (e.g. earthquakes, landslides following earthquakes, flooding erosion etc)
Potentially Impacted	• Human health and life • Infrastructures • Land Use

	Operation Phase
Resources and Receptors	• Economy • Flora • Fauna • Cultural Heritage
Special Baseline Conditions that Potentially Influence Impacts/ Risks	• Areas of intense ship traffic along the pipeline route • Water sections where depth is equal to a ship draught (for ship grounding) • Sections in water depths from 30m to 100 m (for anchoring) • Areas of intense fishing activities (trawling) • Industries in the vicinity of the project (PPC at Atherinolakos and DESFA's facilities) • Areas prone to ground movements • Areas of increased flood risk (river crossings and coastal areas) • Backfilling soil properties
Project Factors that Potential Influence Impacts/ Risks	• The properties of the fluid in the pipeline • The selected pipeline material • Corrosion protection design (coating, inhibitor injection) • Corrosion control procedures (pigging) • External coating • Cathodic protection system • Project Owner Pipeline Inspection Plan • Project Owner Emergency Management Plan

Prepared by: ASPROFOS, 2022.

Table 2-55 Overview of Impacts regarding Project's Vulnerability to Risks of Serious Accidents.

Impacts	Mechanism	Locations	SEI
Shipping Interraction			
Gas cloud at the sea surface after pipeline failure (leak / rupture).	• Ship sinking	• Along OSS3 & OSS4 • Along OSS2	Minor
	• Ship grounding	• In water sections where the depth is equal to a ship draught.	Minor
	• Anchoring	• In water depths for 30m to 100m.	Minor
	• Anchor Dragging	• In water depths for 30m to 100m.	Minor
	• Dropped objects.	• The crew of passing vessels crossing the release area.	Minor
Industrial Accidents			
Jet Fire would cause damage and escalation	• A crater formed due to rupture on the EastMed pipeline that would expose the parallel pipeline segment	• EastMed onshore CCS1a KPs 146 – 147, near DESFA pipeline to Megalopolis • EastMed onshore CCS2 KPs 224-225, near the POSEIDON Pipeline • EastMed onshore CCS2 KPS 228-232, near the POSEIDON Pipeline	Minor
Geohazards			
JetFire / Fireball	• A rupture on the EastMed pipeline due to seismic loads.	• EastMed onshore CCS1b KPs 289-299-300, Near LF4 • EastMed onshore CCS2 KPs 28-29-30, Between villages Gavalou (population 1018) and Grammatikou (population 802)	Minor

Prepared by: ASPROFOS, 2022.

2.4 Mitigation Measures

2.4.1 Introduction

This section provides an overview of foreseen measures for minimizing negative impacts or enhancing positive impacts. Details are presented in Chapters 6, 9 and 10 of the ESIA.

2.4.2 Climatic and Bioclimatic Characteristics

Mitigation measures for impact regarding Climatic and Bioclimatic Characteristics are presented in the following table. More details are presented in Section 2.4.10

Table 2-56 Mitigation Measures for Impacts on Climatic and Bioclimatic Characteristics.

Impact	Mitigation Measures	Location
Construction Phase		
Temporary increase of greenhouse gas emissions	1 Driver training for efficient driving, which will result in low vehicle emissions 2 Maintenance of vehicle and vessel equipment. 3 Equipment, vehicle and vessel certifications (eg compliance with EU and Marpol) 4 Turning off the machines if they are to be left inactive for long periods.	All
Operation Phase		
Change in Greenhouse Gas Emissions	1 Regular maintenance of the Equipment 2 Monitoring of main emission sources (generators, turbines) - according to Environmental Monitoring Plan 3 Adoption of Best Available Techniques (BAT) for air pollutant	Compression Stations CS2/MS2 - CS2/MS2N and CS3

2.4.3 Landscape and Morphological Characteristics

Table 2-57 Mitigation Measures for Impacts on Landscape and Morphological Characteristics.

Impact	Mitigation Measures	Locations
Construction Phase		
Landscape Modification from Pipeline Construction/ Viewers disturbance from temporary facilities	1 The areas to be used during construction will be fully restored to their former state. The natural terrain, soils and vegetation will be restored as close as possible to their original condition and preferably local materials should be used. 2 Application of working strip width, according to the area type. Specifically, a reduced working strip width in areas with woody vegetation (e.g. forests, shrublands, fruit trees, olive groves, etc.) should be selected. 3 Existing landscape features (e.g. roads, fencing, property boundaries, forest boundaries) will be taken into consideration to select definitive location of temporary facilities and temporary storage of excavation materials and products, in order to minimize visual impacts. 4 Materials and machines will be stored carefully during works, in designated areas within project's temporary facilities. 5 Permanent buildings will be designed to maximize their integration into the landscape. Specifically, permanent buildings will be constructed as per detailed design which is subject to Authorities approval. 6 An Aggregate Management Plan for the management of aggregates will be developed. 7 Micro-modifications (adjustments) of the pipeline route may be performed by EPC Contractor during the construction phase taking into consideration	All

Impact	Mitigation Measures	Locations
	the local conditions to avoid landscape features (e.g. individual trees or clusters) where feasible 8 Temporary fences, obstacles, traffic management and signals will be removed after completion of the works (i.e. as soon as they are not necessary any more). 9 The lighting of materials and work sites will be limited to working hours, with the exception of safety lighting. 10 Landscape Management and Restoration and Erosion Control Plan shall be developed which will define, upon communication with the competent authorities, details regarding phytotechnical restoration, reforestation of forest areas (in compliance to L. 4280/2014), erosion control measures, and possible hydroseeding as a measure for protecting top soil and restore the landscape.	
	11 In forests, especially within protected areas, the working strip will be 22 m for 46'' & 48" pipeline, while for 16" pipeline (Megalopolis branch) it will be 14 m.	Forests as defined by forest legislation as amended and in force (L. 998/1979), e.g.: • Hilly Natural (Forest) Landscape • Mountainous Natural (Forest) Landscape • Riparian Natural Landscape
	12 In forest areas (shrublands), the working strip will be 28 m for 46'' & 48" pipeline, while for 16" pipeline (Megalopolis branch) it will be 14 m.	Forest areas as defined by forest legislation as amended and in force (L. 998/1979), e.g.: • Hilly Natural (Shrublands) Landscape • Mountainous Natural (Shrublands) Landscape
	13 In forest and forest areas crossed by the pipeline, a special phytotechnical restoration study will be carried out, as requested and approved by the Forest Authorities. The selection of the species to be planted and the	Forests and forest areas as defined by forest legislation as amended and in force (L. 998/1979), e.g.:

Impact	Mitigation Measures	Locations
	planting scheme will be finalized in consultation with the competent authorities. In any case, the species will be local. The pipeline protection strip (8 m wide) is excluded, as this will be, according to the regulations, free of deep-rooted trees. 14 The competent authorities will be consulted on whether the working strip may be configured as a fire protection strip, if this is requested and serves the purposes of the stakeholder.	• Hilly Natural (Shrublands) Landscape • Hilly Natural (Forest) Landscape • Mountainous Natural (Forest) Landscape • Mountainous Natural (Shrublands) Landscape • Riparian Natural Landscape
	15 Hydroseeding shall be performed in specific areas susceptible to erosion	Forests and forest areas as defined by forest legislation as amended and in force (L. 998/1979), with slopes gradient > 45%, e.g.: • Hilly Natural (Forest) Landscape • Mountainous Natural (Forest) Landscape with slopes gradient > 45%.
	16 A special study of phytotechnical restoration of vegetation and landscape for areas of high landscape sensitivity will be carried out. This study will be customized for each specific location, providing for: i. planting species and appropriate planting scheme ii. plantation of grass and herbaceous species within the working strip, for landscape designing iii. hydroseeding within the working strip	• Monemvasia Castle Town UNESCO site (view of LF3) • Lakopetra touristic establishments (view of LF4) • Coastal Rural Landscape • TIFK “Parapotami Alfeiou” (Alfios‘ Tributaries) (AT1011011) • TIFK “Ekvoli Acheronta and Nekromanteio” (R. Acheronta Estuary and Necromancer) (AT3010051)
Operation Phase		

Impact	Mitigation Measures	Locations
Landscape Modification from PPS (incl. restored temporary facilities)	1 Monitoring of plant restoration for at least 3 years after the completion of planting works. In case of unsatisfactory regeneration, plantings will be repeated and / or other corrective actions will be carried out, which will be agreed with the competent authorities. These actions will burden the project budget. 2 Maintaining pipeline protection strip free of deep-rooted species development (annual plants are excempted) and/or any other provisions of the operation Plans. 3 Maintenance of the pipeline protection strip as a fire protection zone if requested by the competent authorities.	Forests and forest areas as defined by forest legislation as amended and in force (L. 998/1979), e.g.: • Hilly Natural (Forest) Landscape • Mountainous Natural (Forest) Landscape • Monemvasia Castle Town UNESCO site (view of LF3) Landscapes of high sensitivity, i.e.: • Monemvasia Castle Town UNESCO site (view of LF3) • Lakopetra touristic establishments (view of LF4) • Coastal Rural Landscape • TIFK "Parapotami Alfeiou" (Alfios' Tributaries) (AT1011011) • TIFK "Ekvoli Acheronta and Nekromanteio" (R. Acheronta Estuary and Necromancer) (AT3010051)
Viewer nuisance	1 Appropriate lighting design to minimize light diffusion 2 Use of lighting equipment that minimizes the upward diffusion of light or glare to the recipients. 3 Perimetric tree planting to contribute to the visual concealment and landscape concealment (if possible and in accordance to any safety distances).	Locations of permanent building installations

Impact	Mitigation Measures	Locations
	4 Buildings will be designed (including the use of appropriate materials and colours. 5 Elements with greater visibility are the vent and stacks that, depending on authorities' regulations in terms of security for civil or military aviation, could be marked with typically coloured white/red aircraft warning painting or, if possible, with other colours defined to limit their visibility and landscape impact	
Seabed morphology (Bathymetry) modification	1 Local adjustments to avoid seabed intervention areas, e.g. rocky outcrops, cliffs, can be considered. 2 Selection of appropriate seabed intervention method according to water depth and ecological constraints, where necessary, in the deep water sections.	Specific locations to be determined upon finalization of DMS and prior of construction phase begin.

Prepared by: ASPROFOS, 2022.

2.4.4 Geological, Tectonic, Soil-Sediments Characteristics

Table 2-58 Mitigation Measures for Impacts on Geological, Tectonic, Soil-Sediment Characteristics.

Impact	Mitigation Measures	Locations
Construction Phase		
Geohazards and seismicity	1 In order to reduce the seismic load due to seismic action, the usual measures include an increase in the wall of the pipe, special construction at the seismic fault crossing locations	See Annex 8M specifically sites referred in the following tables:

Impact	Mitigation Measures	Locations
	2 A special Faults Crossing Study will be prepared during the detail design of the project for the active seismic faults based on their characteristics (e.g. fault type and length, max. displacement, etc). 3 Moreover, the geotechnical data will be evaluated based on the results of the geotechnical campaign, during the detail design of the project, in order to be specified the protection measures that should be applied.	• Table M-7: Faults that cut the CCS1 route, including the Megalopolis branch; • Table M-8 : Faults that cut the CCS2 route; • Table M-15: Faults along OSS2/OSS2N; and • Table M-17: Faults along OSS3/OSS3N; • Table M- 18: Geohazards along OSS4.
	4 In areas characterised as of high or moderate liquefaction susceptibility, an additional geotechnical survey must be performed in the next design phase, comprising the performance of a detailed geotechnical investigation program and site-specific studies, focusing on the assessment of the properties of the subsoil layers. Having quantitatively estimated the liquefaction potential, it will be feasible to accurately evaluate the liquefaction induced deformations triggered by strong seismic motions. Thus, adequate mitigation measures will be implemented, if required, by EPC Contractor, in terms of design or installation standards in order to avoid or reduce the risk to an acceptable level.	See Annex 8M specifically sites referred in the following tables: • Table M-11: Liquefaction along CCS1; • Table M-12: Liquefaction along Megalopolis branch; and • Table M-13:Liquefaction along CCS2.
	For onshore, 1 During the Detailed Design phase of the project, the areas that are prone to landslides, have to be further investigated and analysed. The sequence of the required geological and geotechnical works are outlined in the following steps: i. Step 1: Identification of potential recent and old landslides	See Annex 8M, specifically sites referred in the following tables: • Table M-9: Landslides along CCS1; and

Impact	Mitigation Measures	Locations
	ii. Step 2: Proposal-Execution of geotechnical investigation iii. Step 3: Extended engineering geological surveys – studies, in scale 1:1,000 (if necessary) iv. Step 4: Slope stability analysis and landslide mitigation measures (if necessary) Geological and geotechnical evaluation of the areas will allow a verification of the potential displacements to be calculated by analytical and/or semi-empirical methods (e.g. Newmark) to assess the final estimation of the land-sliding effect. Slope stability analysis will be performed for static and seismic state, in order to determine failure mechanisms, to ensure adequate stability against failure or extended deformations and to design, if required, stabilization measures. 2 For the slopes that cannot be totally stabilized with usual mitigation measures (i.e. drainage, retaining walls) the verification of pipeline' s integrity will be executed in the framework of SSAD (Seismic Stress Analysis and Design).	• Table M-10: Landslides along CCS2.
	For offshore section 1 Increase of wall thickness; 2 Inspection survey (free span length) after strong earthquake event; 3 Conservative pipeline route selection.	See Annex 8M specifically sites referred in the following tables: • Table M-14: Geohazards along OSS2/OSS2N; • Table M-15: Faults along OSS2/OSS2N; • Table M-16: Geohazards along OSS3/OSS3N; • Table M-17: Faults along OSS3/OSS3N; and • Table M-18: Geohazards along OSS4.

Impact	Mitigation Measures	Locations
Soil erosion	1 Storage of the original surface soil resources along pipeline. The appropriate topsoil conservation and separation follows the steps below: i. Heaps of soil will be protected from rain, and will be covered with drapes. Also their height should not exceed 2- 3 m; ii. Deep plowing may take place throughout the working area where morphology allows. iii. Reduction of stockpiling spoil and soil materials close to water bodies; iv. Control of sediment runoff from stockpiles; and v. Installation of diversion drains to intercept uncontaminated surface runoff around facilities and away from construction areas. 2 Original surface contours will be reinstated after construction where practical. 3 Soil restoration techniques will include seeding, hydroseeding, other soil re-vegetation practices and silt curtains, especially at areas of high risk of erosion. Potentially using the hydroseeding method, seed mixtures of endemic species and varieties already present in the section shall be used. 4 Restoration of the construction strip will take place progressively in sections after construction especially promptly in the sites that have high or medium erosion sensitivity in order to reduce erosion risk; 5 Restoration/reinstatement of the working strip to its original state will take place immediately after construction; 6 Silt fences will be placed perpendicular to the slopes and to remain there beyond the end of the pipeline construction activities in order to assist the reinstatement. 7 Promotion and monitoring of natural revegetation processes; 8 Soil replantation practices along the pipeline route. The plants to be used for the restoration shall be defined in the phytotechnical study that shall be approved by the competent Forest Authority.	Alongside the working strip, at temporarily facilities, at crossings areas

Impact	Mitigation Measures	Locations
Soil compaction	1 Heaps of soil will be protected from rain, out of the dry season, and will be covered with drapes. Also their height should not exceed 2- 3 m; 2 Heavy vehicles will move through the working strip and the main roads. 3 Soil stockpiles will be protected from run-off, out of dry season, e.g. by heavy rainfall, by covering with sheets; 4 Deep plowing will take place throughout the working area where morphology allows.	
Soil Pollution	1 The following topic-specific management plans will be prepared: i. Emergency Response Plan (ERP) ii. Pollution Prevention and Management Plan (PPMP) iii. Waste Management Plan (WsMP) iv. Hazardous Waste and Materials Management Plan (HWsMP) 2 The Contractor of the Project will apply a Pollution Prevention Plan to avoid accidental soil contamination during work; The pollution prevention plan include the following: i. Waste management procedures to ensure works are kept closely in line with the applicable legal framework and best practice principles. All waste will be safely collected, stored and transported separately in appropriate and approved bins and containers. The waste management procedures will address waste handling, storage and disposal; ii. Potential contamination from fuel, lubricant oils and chemicals will be avoided applying engineering best practice and compliance with local regulations. Specific procedures for water, waste and pollution prevention will be defined; iii. Fuel storage systems will be built above ground and within double-walled tanks or containment bunds. Oil spill prevention and response procedures will be put in place. Fuel temporarily stored along the pipeline working strip and access roads will be correctly banded during construction;	

Impact	Mitigation Measures	Locations
	iv. Procedures for vehicle/equipment refuelling will be implemented to prevent spillage, including not allowing construction vehicles and equipment to be refuelled outside dedicated areas. Appropriate spill containment equipment will be available at refuelling sites. All drivers will be trained in emergency spill response procedures; v. Washing equipment, vehicles or machinery near or within watercourses will be prohibited. Dedicated areas will be designated for these operations; vi. Non-equipment areas at plant facilities will be graded and sloped to allow uncontaminated storm water to drain naturally via the storm water drains prior to routing offsite vii. Land drainage infrastructure, other networks and facilities disturbed/moved during construction will be reinstated to their former condition 3 In case that polluted soils are found during trench excavation, the following measures should be taken: i. In cases of serious pollution, personal protection measures should be taken for workers in order to ensure the safety of workers and soil samples should be taken; ii. The contaminated excavated soil will be handled by an authorized waste contractor; iii. Near to any pollution, the duct trench will be covered with impermeable materials. iv. Only appropriately and licensed companies will be used for the transport, recycling and disposal of waste.	
Potential Soil Disturbance and Degradation During Construction	1 Before starting any construction work, topographic and photographic records will be made of the existing condition of the pipeline route and access roads. These records will be used as the standards against which the quality of the restoration work will be judged when construction work will have been completed;	

Impact	Mitigation Measures	Locations
	2 Topsoil, which supports plant life and contains seed stock, will be removed from the Working Strip by suitable earth moving equipment and stockpiled in the form of a continuous ridge along the edge of the strip. The topsoil stockpile will be typically no higher than 2 m to prevent degradation of the soil and will be kept free from disturbance to reduce the possibility of physical damage and compaction; 3 Topsoil will be deposited on one side of the working corridor where it will be stored in such a way that it is not mixed with other trenched materials or driven over by vehicles 4 The removed topsoil will be placed back on the working corridor. The original contours of the land will be restored as closely as possible; 5 Attention will be paid to the latter operation on route sections running through arable land and permanently cultivated fields, which are essentially flat with a good pedogenic substrate. Stone removal activities will be performed, where necessary; 6 No machinery will be allowed to leave the working strip or access roadways; and 7 At the end of this phase, a shallow tillage of the soil will be realised through mechanical agitation in order to aerate the top layer of soil compacted by machinery. 8 Excavated material should be used as much as possible for backfilling purposes.	
Reduced Soil Productivity	1 Mitigation measures described above will help restore soil productivity.	
Sediments diffusion (Offshore Section)	At the landfall locations during dredging, it is proposed to adopt all available measures to reduce the Suspended Sediments Concentrations; based on the results of the Marine Sediment Dispersion Modelling presented in Annex 9D the following indicative mitigation measures proposed: 1 Use Auger dredgers that employ special equipment to move material towards the suction head and use of pumping by piston action to enable the transportation of high-density material;	Landfall locations

Impact	Mitigation Measures	Locations
	2 Use disc-cutter dredgers with a cutter head which rests horizontally and rotates its vertical blades slowly; 3 Use scoop/sweep dredgers using special equipment to scrape the material towards the suction intake; 4 When using a trailing suction hopper dredger: optimize trailing velocity, suction mouth and suction discharge and reduce or even eliminate overflow; 5 When using a cutter suction dredger: optimize cutter speed, swing velocity and discharge and employ a special cutter-head design; 6 When using a grab dredger, employ watertight grab/clamshell, use silt screen, limit grab time above water and limit grab dragging on bed; 7 When using a backhoe dredger, use a special bucket for reducing sediment losses and silt screen (applicable for current velocities less than 0.5 m/s).	
Activation of Sediments Pollution (for offshore Section)	1 Use of high efficiency dredging equipment to avoid / minimise sediment loss during dredging and transport 2 Ensure that dredging equipment and vessels are inspected and maintained to prevent loss of dredge spoil during sediment dredging and transport; 3 Inspection and monitoring (such as feedback or adaptive monitoring) of dredging activities will be conducted regularly to evaluate the impact of operations, the effectiveness of mitigation measures, and the need for technical adjustments to avoid and minimise impacts to identified sensitive receptors. 4 Special mitigation measures for sediments accidental pollution are presented in Section 10.15.	Landfall locations
Operation Phase		

Impact	Mitigation Measures	Locations
Activation of Geohazards	1 Periodic inspection to identify areas of instability as well as the design of stabilization measures. More generally, the measures which will be provided in the slope stability study, that is carried out as part of the basic design of the Project, will be applied 2 At the locations of active faults crossings inspection survey after strong earthquake event (if any) will be applied. 3 Inspection surveys for onshore and offshore section of pipeline (during lifetime) are necessary	See Annex8M, specifically sites referred in the following tables: • TableM-9 Landslides along CCS1; • Table M-10: Landslides along CCS2; • Table M-11: Liquefaction along CCS1; • Table M-12: Liquefaction along Mgalopolis branch; • Table M-13: Liquefaction along CCS2; • Table M-14: Geohazards along OSS2/OSS2N; • Table M-15: Faults along OSS2/OSS2N; • Table M-16: Geohazards along OSS3/OSS3N; • Table M-17: Faults along OSS3/OSS3N • Table M-18: Geohazards along OSS4
Potential Contamination of Soil	1 Mitigation measures for potential contamination from fuels, lubricant oils and chemicals are related to engineering best practice and compliance with local regulations for water management, waste management and in general to prevent any kind of pollution.	All Main Stations

Impact	Mitigation Measures	Locations
	2 Development and adoption of: i. Water Management Plan; ii. Waste Management Plan; and iii. Pollution Prevention Plan	

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2.4.5 Natural Environment

2.4.5.1 *Onshore Biodiversity*

Table 2-59 Mitigation Measures for Impacts on Onshore Biodiversity.

Impact	Mitigation Measure		Location (approximately)
Construction Phase			
Habitat/ Vegetation loss	1	The construction contractor will obtain all required permits from the Competent Authorities, to commence works in forest areas.	Forest areas
	2	All construction activities must be done within a restricted working area.	General application
	3	Establishment of a pre-construction biodiversity baseline from which all mitigation measures will be specified.	General application
	4	Establishment of reduced working strip through forest areas and sensitive areas	Forest areas
	5	Avoidance, where possible, to open new access roads. Upgrade of existing road is recommended.	General application
	6	Temporary construction facilities will be sited on land of low ecological value.	General application

Impact	Mitigation Measure		Location (approximately)
	7	Construction (aggregate and other) materials to be acquired from permitted areas only and not from the surrounding area.	General application
	8	The working zone will be reinstated upon the completion of pipeline backfilling. In forest areas, the reinstatement will be elaborated according to the forest legislation (L. 4280/14 as in force). Itx must be mentioned that an 8m zone will be left without vegetation with rooting system > 1 m, for safety purposes.	Forest areas
	9	In protected areas, the forest vegetation reinstatement will take place by the application of hydroseeding	Forest areas within Natura Areas
	10	An offset of the forest vegetation permanently removed (8m safety zone) may take place, through Reforestation Studies, as per forest legislation (L. 4280/14 as in force).	Forest areas
	11	For the protection of riparian vegetation, trenchless techniques will be applied, where feasible; where open trench is applied, the impact will be mitigated by reducing the width of the trench as far as possible.	General application
	12	Light of fire in the construction site is forbidden. Also, a Firesafety Study for the construction activities and relevant firesafey measures in the working sites, will be in place.	General application
	13	An ecology specialist will be present on site during construction for sensitive areas.	General application
	14	Training on ecological aspects/behaviours will be made available for all workers.	General application
	15	Landscape Management and Restoration and Erosion Control Plan shall be developed which will define, upon communication with the competent authorities, details regarding phytotechnical restoration, reforestation of forest areas (in compliance to L. 4280/2014), erosion control measures, and possible hydroseeding as a measure for protecting top soil and restore the landscape.	In specific areas, as agreed with the Authorities.

Impact	Mitigation Measure	Location (approximately)
Fauna Habitat fragmentation	1 All construction activities must be done within a restricted working area. 2 Avoidance to open new access roads. Upgrade of existing road is recommended. 3 An ecology specialist will be present on site during construction for sensitive areas. 4 Training on ecological aspects/behaviours will be made available for all workers. 5 Develop a Biodiversity Management Plan.	General application
Fauna Habitat fragmentation (jackal)	1 Establishment of a pre-construction biodiversity baseline from which all mitigation measures will be specified 2 Develop a Large Mammals Management Plan, including interaction guidelines for employees. This Plan will have applicability in the sections of the pipeline, where the pre-construction biodiversity baseline study will document the presence of large mammals and/or suitable habitats.	• See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the jackal) • Exact sections to be determined following the results of the pre-construction biodiversity baseline study
Fauna Habitat fragmentation (wolf)	1 Establishment of a pre-construction biodiversity baseline from which all mitigation measures will be specified. 2 Develop a Large Mammals Management Plan, including interaction guidelines for employees. This Plan will have applicability in the sections of the pipeline, where the pre-construction biodiversity baseline study will document the presence of large mammals and/or suitable habitats. 3 No construction of new access roads in areas which have critical habitats for wolf. These areas will be specified in the Large Mammals Management Plan.	• See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the wolv) • Exact sections to be determined following the results of the pre-construction biodiversity baseline study
Fauna Habitat Fragmentation –	1 For each river crossing a special crossing study will be carried out 2 Whenever possible, open-cut techniques will take place when the water flow is in the lowest level	At rivers where open-cut technique will be used

Impact	Mitigation Measure	Location (approximately)
freshwater species loss (otter/ fishfauna)	3 Reduce, as much as feasible, the riparian vegetation clearance. 4 Reinstatement of the banks and of the river bed will commence immediately after the end of crossing activities. 5 In order to be limited the excavations at the river banks, sheet piles could be installed (instead of bored piles), taking into consideration the geological formations at these areas. 6 Use of silt curtains to prevent the transport of sediment out of the work site during dredging operation on shore crossings, if necessary. 7 A temporary passage across the water body will be constructed in order to keep the flow of water. 8 Sedimentation pools will be constructed. 9 Wherever feasible vehicles and machinery will avoid contact with waters. 10 Technical solutions to minimise sediment plumes, such as placement of protective geotextile screens around building sites close to shore. 11 Establishment of a pre-construction biodiversity baseline from which all mitigation measures will be specified. 12 Implementation of a monitoring program for fauna status after end of construction. 13 A Pollution Prevention and Emergency Spill Response Plan will be established by the construction contractor 14 A pre-construction survey for otters will take place at the river crossings. Based on the findings, specific mitigation measures will be developed by the construction contractor, where necessary. 15 A pre-construction survey for macro-inverterbrates will take place at the water bodies to be crossed by open-cut technique. Based on the findings, specific mitigation measures will be developed. 16 A pre-construction survey for fish will take place at the river crossings. Based on the findings, specific mitigation measures will be developed by the construction contractor, where necessary. 17 Fish and macro-invertebrate species should be carefully removed from the works corridor and translocated within the water body, as much as possible.	

Impact	Mitigation Measure		Location (approximately)
	18	An ecology specialist will be present on site during construction for sensitive areas.	
	19	Training on ecological aspects/behaviours will be made available for all workers.	
	1	For each river crossing a special crossing study will be carried out	At rivers where trenchless techniques will be used
	2	Reduce, as much as feasible, the riparian vegetation clearance.	
	3	Wherever feasible, vehicles and machinery will avoid contact with waters.	
	4	Establishment of a pre-construction biodiversity baseline from which all mitigation measures will be specified.	
	5	Implementation of a monitoring program for fauna status after end of construction.	
	6	A Pollution Prevention and Emergency Spill Response Plan will be established by the construction contractor	
	7	Muds will be properly managed to avoid discharges to the water body	
	8	Water will be discharged free of any chemicals and so as not to impact water temperature in the river	
	9	An ecology specialist will be present on site during construction for sensitive areas.	
Fauna species loss (general/ small mammals)	1	Establishment of reduced working strip (22m) through forest areas and sensitive areas	Forest areas
	2	Avoidance, where possible, to open new access roads. Upgrade of existing road is recommended.	General application
	3	Temporary construction facilities will be sited on land of low ecological value.	General application
	4	Pipeline ends shall be covered to prevent fauna species entering the installed segements.	General application
	5	Some type of escape ramps or other structures to cross the working zone will be constructed in order to avoid entrapment of animals	General application
	6	A maximum vehicle speed on all construction sites and along the working zone will be set (the common practice is a 15 - 20 km/hr speed limit), in order to minimize the risk of fauna collisions	General application
	7	An ecology specialist will be present on site during construction for sensitive areas.	Forest areas

Impact	Mitigation Measure		Location (approximately)
	8	Training on ecological aspects/behaviours will be made available for all workers.	Forest areas
Fauna species loss/ Disturbance (bats)	1	A pre-construction survey in forest areas where there is a possibility for bat roosting will taken place. Based on the findings, specific mitigation measures will be developed by the construction contractor which may include discouraging of roosting, relocation, etc.	Forest areas
Fauna species loss/ Disturbance (reptiles/ amphibians)	1	A pre-construction inspection for tortoises will take place where it is likely that such populations exist, in order to be removed to nearby safe locations, of similar ecological characteristics.	General application
Fauna species loss/ Disturbance (macro-inverterbrates)	1	A pre-construction survey for macro-inverterbrates will take place at the water bodies to be crossed by open-cut technique. Based on the findings, specific mitigation measures will be developed.	All water bodies crossed by open-cut technique
Disturbance / displacement of fauna (general)	1	All construction activities must be done within a restricted working area.	General application
	2	Establishment of reduced working strip (22 m) through forest areas and sensitive areas	Forest areas
	3	Avoidance, where possible, to open new access roads. Upgrade of existing road is recommended.	General application
	4	Temporary construction facilities will be sited on land of low ecological value.	General application
	5	Based on the results of the Biodiversity Managment Plan, if needed, habitat compensation measures will be considered to replace permanently lost and damaged sensitive (critical) habitats. This may include new habitat creation or restoration of damaged habitats.	General application
	6	All construction activities requiring removal of forest vegetation should be programmed in order to minimize disturbance of species engaging in reproductive activities during late spring.	General application
	7	Directional lighting in order to minimise potential impacts to nocturnal species will be applied.	General application

Impact	Mitigation Measure		Location (approximately)
	8	An ecology specialist will be present on site during construction for sensitive areas.	General application
	9	Training on ecological aspects/behaviours will be made available for all workers.	General application
Disturbance of fauna – terrestrial species (mamals)	1	Develop a Large Mammals Management Plan, including interaction guidelines for employees (see previous lines in this table)	See for jackal and wolf, above.
Disturbance of fauna – freshwater species (otter)	1	A pre-construction survey for otter will take place at rivers's crossings where species might be present. Based on the findings, specific mitigation measures will be developed.	• See Chapter 9.2.5 of the ESIA (Table with Sensitive areas for the otter) • Exact sections to be determined following the results of the pre-construction biodiversity baseline study
Disturbance of fauna – freshwater species (fishfauna)	1	A pre-construction survey for fish will take place at rivers where open-cut techniques will be used. Based on the findings, specific mitigation measures will be developed. This survey will take place to all river crossings.	At rivers where open-cut technique will be used
Operation Phase			
Vegetation / flora less	1	Maintenance of the reforestation done for the offset of the forest vegetation permanently removed (8m safety zone) will take place, as per approved Reforestation Studies, as per forest legislation (L. 4280/14 as in force).	Forest areas
	2	Training on ecological aspects/behaviours will be made available for all workers.	General application
	3	Development of a Biodiversity Action Plan for operation	General application
	1	Development of a Biodiversity Action Plan for operation	General application

Impact	Mitigation Measure		Location (approximately)
Habitat fragmentation	2	Implementation of a monitoring program for assessing fauna status during operation. The monitoring program will be detailed in the Biodiversity Action Plan	Applied in section defined in the Biodiversity Action Plan
	3	Training on ecological aspects/behaviours will be made available for all workers.	General application
Disturbance / displacement of fauna	1	Development of a Biodiversity Action Plan for operation	General application
	2	Implementation of a monitoring program for assessing fauna status during operation. The monitoring program will be detailed in the Biodiversity Action Plan	Applied in section defined in the Biodiversity Action Plan
	3	Implementation of noise mitigation measures for the operation of compressor stations, as applicable.	Compressor stations areas
	4	Noisy maintenance activities along the pipeline will be scheduled, where feasible, outside faunal sensitive periods	General application
	5	Training on ecological aspects/behaviours will be made available for all workers.	General application
Protected Areas	1	Mitigation measures for habitat loss are defined in the annexed Appropriate Assessements.	See Annex 9E

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2.4.5.2 *Offshore Biodiversity*

Table 2-60 Mitigation Measures for Impacts on Offshore Biodiversity.

Impact	Mitigation Measure		Location (approximately)
Construction Phase			
Habitat loss	1	Mooring should be avoided to the extent possible over Posidonia oceanica. If this is not feasible, seagrass-friendly moorings should be installed on meadow clearings,	General application

Impact		Mitigation Measure	Location (approximately)
	2	depending on the substrate. Indicatively, screw anchors on sandy patches, dead weight moorings on large sandy patches, or bolted anchors on rocky patches. In meadows without clearings but with a well-developed matte, special anchoring can be used (e.g. Harmony P anchors). For that reason, moorings installation must be preceded by a detailed preliminary study.	
	3	Technical solutions to minimise sediment plumes, such as placement of protective geotextile screens around construction sites close to shore.	At LF areas
	4	Use of high efficiency anchors and/ or other appropriate buoying solutions to avoid and minimise anchors and steel cables dragging on the seafloor;	Nearshore
	5	SSS and ROV video inspection of the area selected for anchor positioning; and	Nearshore
	6	Anchor handling with tugboat aimed at avoiding impacts on the seabed	Nearshore
	7	All project vessels shall operate under international standards (MARPOL)	General application
Fauna Species' loss	1	Vessels must maintain speeds of 6 knots at all times to reduce the risk and severity of collision during surveys or transiting to and from survey areas.	Marine Natura 2000 sites (LF3 site)
	2	Litter and other waste material have to be stored and disposed off appropriately. Any environmentally hazardous material used during construction works have to be carefully stored and in accordance with the applicable legislation.	General application
	3	Collection of injured marine wildlife individuals and transfer to wildlife rehabilitation centres, (if possible). At all events get into contact with the nearest Port Police authority to report the incident.	General application
	4	Training on ecological aspects/behaviours will be made available for all workers.	General application

Impact	Mitigation Measure		Location (approximately)
	5	Works can be performed during times of good visibility (e.g., daylight, clear weather conditions) when marine wildlife individuals presence can be sufficiently monitored. Otherwise, monitoring could be performed through other means (e.g. sonars).	Essential habitat areas year-round for seals, during months of high use for marine reptiles.
	6	On the ship(s) for the shore crossing construction works, there will be a Marine Species Observer (aka Marine Mammals Observer – MMO) so as to inform immediately the ship(s) commander(s) for risks of marine reptile collisions.	General application
	7	Temporary pause of activities if a marine reptile is detected within a 50 m zone from the construction activities vessels.	General application (especially in Marine Natura 2000 sites LF3 site)
	8	For dredging and shore-crossing activities, implement time-constraints and undertake construction works outside the high season of the nesting and hatching period. Details shall be defined within the Biodiversity Action Plan.	Marine Natura 2000 sites (LF3 site)
	9	Develop a Marine Traffic Management Plan, including maximum speed per marine area, notification procedures, anchoring and berthing areas, guidelines for employees, etc.	General application
Risk of collision with marine mammals	1	Collection of injured marine wildlife individuals and transfer to wildlife rehabilitation centres, (if possible). At all events get into contact with the nearest Port Police authority to report the incident.	General application
	2	Training on ecological aspects/behaviours will be made available for all workers.	General application
	3	On the ship(s) for the offshore pipeline laying, there will be a Marine Mammals Observer(s) (MMOs), using Passive Acoustic Monitoring (PAM) system and visual observations, so as to inform immediately the ship(s) commander(s) for risks of mammals' collisions.	General application

Impact	Mitigation Measure		Location (approximately)
	4	Before beginning any noise producing action there should be a dedicated watch to ensure no animals are within a 200 m zone close to the vessels.	General application
	5	Temporary pause of all activities, except for safety related ones, if a marine mammal is detected within a 100 m zone from the construction activities vessels.	General application
	6	Vessels must maintain speeds of 10 knots or less at all times to reduce the risk and severity of collision during work or transiting to and from working areas.	IMMAs/cIMMAs
	7	Works can be performed during times of good visibility (e.g., daylight, clear weather conditions) when marine wildlife individuals presence can be sufficiently monitored. Otherwise, monitoring could be performed through other means (e.g. sonars).	IMMAs/cIMMAs
	8	Prior to the beginning of the work, AMD[11] should be used to drive away groups or individuals of marine mammals. Only AMDs allowed in the ACCOBAMS area are to be employed (see ACCOBAMS Resolution 4.9, 2010 for cetacean devices).	IMMAs/cIMMAs
Disturbance	1	Implementation of Spill Prevention and Response Plan.	General application
	2	Dredging material should be used as much as possible for backfilling purposes.	In areas where dredging will take place
	3	Application of all measures for mitigating impacts from dredging, which are presented in section 2.4.4.	In areas where dredging will take place
Impacts from underwater noise	1	On the ship(s) for the offshore pipeline laying, there will be a Marine Mammals Observer(s) (MMOs), using Passive Acoustic Monitoring (PAM) system and visual	General application

[11] Acoustic Mitigation Devices. This terminology is employed to include all devices which use acoustics as a means of mitigating interactions between cetaceans and human activities. Usually AMDs encompass Acoustic Deterrent Devices (ADD), developed for cetaceans, and Acoustic Harassment Devices (AHD), conceived for seals.

Impact		Mitigation Measure	Location (approximately)
		observations, so as to inform immediately the ship(s) commander(s) for risks of mammals collisions.	
	2	Before beginning any noise producing action there should be a dedicated watch to ensure no animals are within a 200 m zone close to the vessels.	General application
	3	Temporary pause of all activities, except for safety related ones, if a marine mammal is detected within a 100 m zone from the construction activities vessels.	General application
	4	Vessels must maintain speeds of 10 knots or less at all times to reduce the risk and severity of collision during work or transiting to and from working areas.	IMMAs/cIMMAs
	5	Works can be performed during times of good visibility (e.g., daylight, clear weather conditions) when marine wildlife individuals presence can be sufficiently monitored. Otherwise, monitoring could be performed through other means (e.g. sonars).	IMMAs/cIMMAs
	6	Prior to the beginning of the work, AMD should be used to drive away groups or individuals of marine mammals. Only AMDs allowed in the ACCOBAMS area are to be employed (see ACCOBAMS Resolution 4.9, 2010 for cetacean devices).	IMMAs/cIMMAs
Operation Phase			
Impact by the operation of offshore pipeline	1	During periodic pipeline inspections with the use of ROV along the entire offshore route, biodiversity development will be also recorded.	General application

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2.4.5.3 *Impacts on Biodiversity during System Presure Test (SPT)*

mitigation measures for the impacts on the biodiversity (onshore and offshore), during the System Pressure Test (SPT), are shown in the following table. 9.

Table 2-61 Mitigation Measures for impacts on biodiversity during System Presure Test (SPT).

Impact	Mitigation Measure	Location (approximately)
Impacts during System Pressure Test (Hydrotesting)	1 The construction contractor will obtain all relative pemits from the Competent Authorities, prior to water abstraction and hydrotest water discharge. 2 A Hydtotesting Plan for each hydrotesting section, plus hydrotesting in above ground facilities (i.e. compressor stations) will be developed by the construction contractor. 3 Hydrotest water will not be discharged in different river body, if possible. 4 Hydrotest water should be free of biocides and oxygen prior of discharge. If any additives have to be used, they will be included in the PLONOR list[12]. 5 The water abstraction from rivers shall be limited to a maximum of 10 % of the run-off rate during the abstraction period. 6 Hydrotest water will be discharged in a maximum rate of 3 m3/s. 7 A fine mesh (hole diameter 5 mm) will be applied to water abstraction to avoid entrainment of small fish. 8 Water discharge back to rivers / streams (or sea, e.g. Patraikos Gulf) will be done through settlement ponds so that any contaminants can settle down prior to discharge and the discharge is also controlled in a way to avoid bank erosion. 9 Water quality will be monitored, as per monitoring plan. 10 An ecology specialist will be present on site during construction for sensitive areas.	For the locations selected for hydrotestins (abstraction / discharge)

[12] PLONOR is a list of substances used and discharged offshore which are considered to 'Pose Little or No Risk to the Environment' which was issued by OSPAR.

Impact	Mitigation Measure	Location (approximately)
	11 Training on ecological aspects/behaviours will be made available for all workers.	

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2.4.5.4 *Impacts on Avifauna – Onshore/ Offshore*

The mitigation measures for the impacts on the avifauna (onshore and offshore), during the construction phase, are shown in the following table. This parameter is not applicable during operation phase.

Table 2-62 Mitigation measures for the impacts on avifauna (onshore and offshore) during the construction phase.

Impact	Mitigation Measure	Location (approximately)
Impacts on Avifauna (Onshore/ Offshore))	1 In case that forest vegetation clearance will take place during the avifauna breeding period (May – July), a bird nest survey will take place.	Forest areas
	2 Avifauna breeding will be discouraged in the working zone by installing plastic bands which will flutter in the wind, before breeding season starts.	General application

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2.4.5.5 *Impacts on Protected Areas – Onshore/ Offshore*

Table 2-63 Mitigation measures for the impacts on protected areas (onshore and offshore).

Impact	Mitigation Measure	Location (approximately)
Impacts on Protected Areas – Natura2000	1 Mitigation measures are defined in the annexed Appropriate Assessements (overlappings are taken into consideration).	See Annex 9E

Impact	Mitigation Measure	Location (approximately)
Impacts on Protected Areas – Wildlife Refuges/ National Parks	1 Impacts on onshore and offshore biodiversity are applicable.	See Chapter 9.2.5 of the ESIA (Table with Engagement of protected areas with the investigated project during construction phase).

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2.4.6 Anthropogenic Environment

2.4.6.1 *Spatial Planning – Uses of Land & Sea*

2.4.6.1.1 Uses of the Land

The mitigation measures for impacts on spatial planning and land use during construction phase are given in the table below. More details are presented in Section 2.4.7.2.

Table 2-64 Mitigation measures in the Uses of the Land.

Impact	Mitigation measures	Locations
Construction Phase		
Changes in land uses	1 Selection of proper working strip within which all project related construction activities would take place. Specifically, the following construction strips shall be applied: i. a 38 m wide in agricultural lands ii. a 28 m wide in sparsely vegetated forest areas (transitional woodland areas, moors and heathland) and in systematic tree crops	General

Impact	Mitigation measures	Locations
	iii. a 22 m wide in forest and forested areas covered by lush vegetation, especially within protected areas. In case the Forest Authorities request it, the working strip can be formulated (reinstated) as a fire protection belt. 2 Affected landowners and/or rights-holders are entitled to compensation for reduced income during the recovery period (in accordance with the Livelihood Restorationn Plan). 3 Compensation for orphan land, once recognised, will be based on the same entitlements as the main affected piece of land. 4 Project Owner commits to restore the conditions of the land to the ante-operam status. 5 Through stakeholder engagement and public disclosure, it will be communicated to affected communities along the route that restrictions will apply to building activities in the 40 m and that Spatial Development (high population density buildings) and preventive control in a 400 m corridor to ensure safe operation of both activities. 6 Land owners will receive timely and clear information on timing of construction works in the course of community liaison activities so that they become fully aware of the exact time for start of construction and of the duration of interruption of agricultural activities. 7 The Project Promoter will put in place a grievance process to capture and effectively respond to any stakeholder issues arising from the Project construction phase.	
	8 Landowners'/land users' compensantion measures will be as defined in the Land Acquisition Strategy and Livelihood Restoration Plan.	Permanent facilities
	9 Landowners / land users that are affected by the construction, usage or stewardship of the pipeline, are entitled to total compensation (in principle and where possible, prior to construction): i. For temporary loss of working strip (of 38m, 28m, or 22m wide) during construction period ii. For limitations (such as prohibition of deep rooted species plantation) in the pipeline protection strip (8 m wide), during operation phase	Low or no vegetation areas, Semi-natural areas and areas of systematic arboriculture

Impact	Mitigation measures	Locations
	10 Landowners / land users are entitled of compensation (prior to construction) due to removal of trees and other perennial crops from the working strip 11 Landowners / land users are entitled to compensation (prior to construction) due to yield that shall not be harvested within the working strip, during construction phase.	
Operation Phase		
Changes in land uses	1. Establishment of statutory regulated safety/ control zones: i. Pipeline Protection Strip (8 m corridor – 4 m on each side of the pipeline axis) ii. Building Control Strip (40 m corridor – 20 m on each side of the pipeline axis) iii. Preventive Spatial Development Control Strip (400 m corridor – 200 m on each side of the pipeline axis) 2. Compensation for loss of crops/dameges in case of entry in the 8m zone 3. Through stakeholder engagement and public disclosure, it will be communicated to affected communities along the route that restrictions will apply to building activities in the 40 m and that Spatial Development (high population density buildings) and preventive control in a 400 m corridor to ensure safe operation of both activities. 4. Systematic engagement with local authorities in order to cover the entire range and all levels of local and regional planning which will be affected by the Project. 5. Develop and implement a Grievance Mechanism .	General

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2.4.6.1.2 Uses of the Sea

The mitigation measures for impacts on spatial planning and land use during construction phase are given in the table below. More details are presented in Section 2.4.7.2.

Table 2-65 Mitigation Measures for Impacts on Uses of the Sea.

Impact	Mitigation measures	Locations
Construction Phase		
Fishing areas restrictions	1. Establishment of a 1 km safety exclusion zone around pipelay vessels for navigation safety purposes. 2. While the Project does not foresee any economic displacement impacts to fishermen from routine construction or operations, any unforeseen impacts (through routine or non-routine circumstances) will be compensated in accordance with Greek legal requirements and Internationally Recognised Practice. 3. Through stakeholder engagement and public disclosure, it will be communicated to affected communities close to the landfall sites, that some restrictions will be applied to fishing and navigation activities in the safety exclusion zone. 4. Local Communities and competent Marine/ Port Authorities will receive timely and clear information on timing of construction works in the course of community liaison activities so that they become fully aware of the exact time for start of construction, the duration, location of vessels involved and dimension of safety exclusion zone. 5. As defined in the Framework SEP, the Project Proponent will put in place a grievance process to capture and effectively respond to any stakeholder issues arising from the Project construction phase.	General
Indirect nuisance of aquaculture development and/ or fishing activity	1. Minimize construction duration time 2. Minimize sediments dispersion (see Section 2.4.4)	Offshore section
Increase in marine traffic	1. Establishment of an offshore safety exclusion zone of 1 km around the construction axis 2. Timely communication to competent authorities of construction schedule and location of pipelay vessels for marine traffic to avoid.	• Offshore section • Berthing facilities

Impact	Mitigation measures	Locations
	3. Information to authorities/ fishermen/ mariners. Navigational warnings 4. Lights, radio communications and other safety devices. 5. Stakeholder engagement and public disclosure to explain need and importance of exclusion zone. 6. Where feasible, optimize the time schedule during the construction in order to minimize the impacts to fishing/shipping areas. 7. Local Communities and competent Marine/ Port Authorities will receive timely and clear information on timing of construction works in the course of community liaison activities so that they become fully aware of the exact time for start of construction, the duration, location of vessels involved and dimension of safety exclusion zone. 8. Vessel routes between the site and the logistic base will be carefully evaluated with the aim to minimise potential interference with the existing naval routes and anchoring areas 9. Develop and Implement a Grievance Mechanism	
Operation Phase		
Marine traffic (berthing restrictions)	1. Establishment of a 500 m Berthing Safety Zone, i.e. restriction of whatsoever berthing within a 250 m radious around the pipeine axis, if and as requested by the competent authorities. 2. Information to authorities/ fishermen/ mariners. Navigational warnings 3. Stakeholder engagement and public disclosure to explain need and importance of exclusion zone. 4. Development and implementation of a Grievance Mechanism	Offshore section

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2.4.6.2 *Structure and functions of anthropogenic environment*

2.4.6.2.1 Community Health & Safety

Table 2-66 Mitigation Measures for Impacts on Community Health and Safety.

Impact / Risk	Mitigation measures	Locations
Construction Phase		
Increased pressure on health care	1. IGI POSEIDON will develop a Health & Safety Management policy where it sets out a clear commitment to ensuring the health and safety of all Project personnel encompassing contractor personnel. 2. IGI POSEIDON will adopt EBRD guidelines regarding the provisions of first aid medical facilities at worker construction sites. 3. IGI Poseidon will control access to construction site and fence all temporary facilities, including pipeyards 1. IGI POSEIDON will ensure that signs are put up around work fronts and construction sites advising people of the risks associated with trespassing.	All temporary construction sites and fronts (offshore and onshore)
Increased transmission of infectious diseases	1. IGI POSEIDON will ensure that all project related workers (Company's and any subcontractor directly under Company's supervision of any EPC's Contractors), will abide on a specific Code of Conduct. 2. The Code of Conduct will include guidelines on protection of local community and workforce from potential infectious diseases. 3. IGI POSEIDON will provide training on minimizing distribution of infectious diseases to any person related to the project implementation. This shall be described also in the Code of Conduct. 4. IGI POSEIDON will develop a Health & Safety Management policy where it sets out a clear commitment to ensuring the health and safety of all Project personnel, encompassing contractor personnel. 5. IGI POSEIDON will ensure all workers including contractors and subcontractors undergo regular health check ups. IGI POSEIDON will ensure all workers including contractors and subcontractors receive education around transmission routes and symptoms of infectious diseases of concern.	Residential areas close to Temporary facilities

Impact / Risk	Mitigation measures	Locations
	6. IGI POSEIDON will monitor WHO and National Public Health Organization (EODY) and implement appropriate measures.	
Environmental Changes	1. IGI POSEIDON will undertake stakeholder engagement with affected communities and other stakeholders on a range of issues including changes to the visual environment, noise and social concerns. 2. IGI POSEIDON will implement a Grievance Mechanism to address stakeholder concerns related to the Project in a timely manner. Additional, topic specific measures are described in Landscape (2.4.3), Air Quality (2.4.10) and Acoustic Environment (2.4.11) sections.	Residential areas close to Temporary facilities
Operation Phase		
Environmental Changes	1. IGI POSEIDON will develop an Emergency Responce Plan where it will set out clear instructions and action plan in case of accidents/ risk of accidents 2. IGI POSEIDON will fence permanent facilities 3. IGI Poseidon will undertake an educational programme for its employees, as well as for local inhabitants, on the prevention and avoidance of accidents. 4. IGI POSEIDON will ensure that signs are put up around permanent facilities advising people of the risks associated with trespassing. 5. IGI POSEIDON will implement a Grievance Mechanism to address stakeholder concerns related to the Project in a timely manner. Additional, topic specific measures are described in Landscape (2.4.3), Air Quality (2.4.10) and Acoustic Environment (2.4.11) sections.	Closest communities to project footprint.s

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2.4.6.2.2 Community Cohesion

Table 2-67 Mitigation Measures for Impacts on Community Cohesion.

Impact / Risk	Μέτρα αντιμετώπισης	Τοποθεσία
Construction Phase		
Break of urban fabric continuity	1. IGI POSEIDON will ensure that all project related workers (Company's and any Contractors' and their subcontractors' personnel involved in the project will abide on a specific Code of Conduct. 2. IGI POSEIDON will maintain a community relations team that will include one community liaison officer during construction activities. 3. Project update leaflets will be distributed from six months prior to construction until the end of the construction phase. 4. The Grievance Mechanism will be adjusted based on needs to the Project construction phase with the relevant contractor and sub-contractor staff fully aware of their roles in third party grievance resolution process; 5. The Project will release performance reports which will be posted on the project website. 6. Meeting minimum standards for stakeholder engagement and social performance will be expected from the main contractors. 7. Separate meetings will be held with Vulnerable groups identified within the study area prior to construction and during the construction activities in the local area to identify and manage any specific issues. 8. Inform about alternative access routes when roads are blocked during construction. 9. Systematic consultation and involvement of local authorities for all local and regional planning development initiatives likely to be affected by the Project.	• Communities along the project footprint. • Temporary construction sites. • Pipeline construction strip
Operation Phase		

Impact / Risk	Μέτρα αντιμετώπισης	Τοποθεσία
Break of urban fabric continuity	1. IGI POSEIDON will ensure that all project related workers (Company's and any contractor directly under Company's supervision), will abide on a specific Code of Conduct. 2. IGI POSEIDON will mantain a community liaison officer during the operation phase. 3. The Project will release performance reports which will be posted on the project website. 4. Consultation with local Spatial and Building authorities for all local and regional planning development initiatives in the wider area of the Project. 5. Develop and implement a Grievance Mechanism. The grievance mechanism will remain in place and updates will be regularly communicated to all stakeholders (possible through posting on Owner's website) Additional, topic specific measures are described in Sections 2.4.6.1 and 2.4.7.	• Communities along the project footprint. • Communities close to Major Stations.

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2.4.6.3 *Cultural Heritage*

The distance of cultural heritage resources, the consequent impact assessment and the proposed impact mitigation measures are based on the specific, investigated, footprint of the project. Based on the results of the Cultural Heritage Management Plan and further consultation and study of the project, minor adjustments of the piprline route and/or otherl measures may be applied. Indicatively, it is reported that resources identified at a distance less than 50 m are subject to further study, according to the Cultural Heritage Management Plan.

The mitigation measures for impacts on cultural heritage resources during construction phase are given in the table below. Some measures are general and apply to most projects, as they are mainly international best practice but often stem from national legislation

No impacts on cultural heritage resources are assessed during operation phase; hence no mitigation measures are necessary.

Table 2-68 Mitigation Measures for Cultural Heritage during Construction Phase.

Impact	Mitigation measures	Locations
All impacts on cultural heritage Resources	1. Appropriate siting of the Project and the relevant facilities (temporary or permanent). 2. All excavation work should be performed under the supervision of the competent Ephorate Authorities, which should be notified in writing by the Project Owner (or Contractor) about their start. 3. Signing a Memorandum of Understanding between the Project Owner and the relevant Competent Authorities (Ministry of Culture. Local Ephorates). In the event that antiquities are found during construction, the works may be temporary suspended until the findings are investigated and / or a local route adjustment is applied. 4. Raise awareness of workers in respect of cultural heritage resources. 5. Develop a Cultural Heritage Management Plan, which will include, among other things, specifications on procedures for chance findings of cultural heritage resources.	All
Direct physical damage	1. Consultation with the competent Greek authorities. 2. Increase the distance of the pipeline axis, if possible. 3. Archaeological delimitation and marking of site boundaries, located and/ or identified within the working strip. 4. Labeling and resource protection. 5. Training staff to respond to Chance Findings. 6. Record the static integrity of the identified sensitive monuments (e.g. arched bridges) close to the project, so that they can be strengthened or stabilized structurally before any work. 7. Limitation of vibrations capable of disturbing the integrity of existing structures.	Declared resources at National Level (CH-LAK-009, CH-LAK-033, CH-LAK-087, CH-PRE-006, CH-PRE-011, CH-PRE-012)
Secondary Degradation or Damage	1. Recording of the static integrity of the above ground elements close to the project footprint so that they can be reinforced or stabilized structurally before any work. 2. Limitation of vibrations capable of disrupting the integrity of existing structures. Use of appropriate means to minimize vibration. 3. Vehicles speed limitation.	See Chapter 9.6.3

Impact	Mitigation measures	Locations
	4. Marking and protection. 5. Dust minimization strategies such as wetting. 6. Small local reroutings, if feasible.	
Nuisance to visitors access	1. Siting of equipment and scheduling of activities so as to prevent restriction to resources access. 2. Alternative access following consultation with users and competent authorities. 3. Timely notification to the public of any inconvenience. 4. In case religious festivals are planned in areas close to active construction fronts, EPC Contractor shall collaborate with stakeholders for optimum planning of construction activities, during religious festivals.	See Chapter 9.6.3

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2.4.7 Socio-economic Impacts

2.4.7.1 *Demographics*

No impacts are assessed on demographics from the project during construction phase. Therefore, no specific mitigation measures are provided.

2.4.7.2 *Economy – Employment*

The following table summarizes the mitigation and/ or enhancement measures for all assessed impacts on Economy - Employment.

Table 2-69 Mitigation/ Enhancement Measures for Impact on Economy – Employment.

Impact	Mitigation Measures	Locations
Construction Phase		
Employment opportunities (direct and/ or indirect)	1. IGI Poseidon will ensure that the recruitment process is fair and transparent, public and open to all regardless of ethnicity, religion or gender; 2. IGI Poseidon will provide clear information on the number of open positions throughout the Social Study Area; and 3. Contracts clearly defining working hours, pay, and other terms of employment will be stipulated with each employee prior to work commencement 4. The Contractor shall select also workforce from the local community, as appropriate. 5. The Project Owner will implement project-specific vocational training programs in the project areas. These programs can be organized in cooperation with local authorities and other local bodies and organizations. 6. The Project Owner will develop explicit strategy to ensure that all members of vulnerable groups will not suffer any loss of livelihood means. 7. The Project will provide clear information for the number and skills requirements concerning employment opportunities. 8. In the process of selecting permanent staff, locality will be taken into consideration.	• Population centres (cities or villages) close to temporary and permanent facilities • Along the working strip
Economic impact of taxes, fees and local transactions	1. Optimizing contract opportunities with local companies, as appropriate. 2. Affected businesses are entitled to compensation at replacement value for the lost income if applicable	In the entire study area
Economic impact on agricultural sector (income)	1. Restoration framework for the means of livelihood which reliably determines the compensation (prior to construction) to be paid to the eligible farmers due to loss of income from the crops. Compensation will include at least financial compensation for all growing seasons that will be lost due to occupation of the working strip and construction works (usually one growing season).	Along project footprint (onshore section)

Impact	Mitigation Measures	Locations
	2. Compensation measures for affected agricultural workers, including vulnerable groups, will be as defined in the Land Acquisition Strategy and Livelihood Restoration Plan. 3. Affected land and asset owners are entitled to the restoration of all assets to its pre-project condition and/or the total costs to restore all damaged assets to pre-project conditions; 4. Compensation (prior to construction) for orphan land, once recognised, will be based on the same entitlements as the main affected piece of land 5. Gather forest products (e.g. timber) in appropriate areas to be collected by residents and users of forests, after consultation with the competent authorities 6. Develop and implement a Grievance Mechanism 7. Develop a Land Acquisition Strategy 1. Develop a Livelihood Restoration Plan	
Economic impact on fishing sector (income)	1. Establishment of an offshore safety exclusion zone of 2 km around the construction axis, as will be agreed with the competent authorities. 2. Restoration framework for the means of livelihood which reliably determines the compensation (prior to construction) to be paid to the eligible fishers due to loss of income. 3. Compensation measures for affected fishing workers, including vulnerable groups, will be as defined in the Land Acquisition Strategy and Livelihood Restoration Plan. 4. Timely communication of construction schedule and location of pipelay vessels for third party vessels to avoid. 5. Information to authorities/fishermen/mariners. Navigational warnings, including lights, radio communications and other safety devices. 6. Stakeholder engagement and public disclosure to explain need and importance of exclusion zone. 7. Where feasible, optimize the time schedule during the construction in order to minimize the impacts to fishing/shipping areas. 8. All Project vessels will have Health, Safety and Environmental management systems in place in accordance with international regulations (MARPOL)	• OSS2/OSS2N • OSS3/OSS3N • OSS4 (offshore section)

Impact	Mitigation Measures	Locations
	9. Develop and implement a Grievance Mechanism 10. Develop a Livelihood Restoration Plan	
Economic impact on tourism sector (income)	1. Where possible minimize the time needed for construction activities 2. Ensure engagement with tourism operators during all project phases and in particular during construction, as defined in the Framework SEP, to evaluate potential impacts on the project schedule. 3. Construction schedule to avoid high touristc season, as much as possible. 4. Clear and timely information will be provided to tourism operators on the exact timing of construction works, so that they are fully aware of the time of start and the period of duration of construction 5. Affected land and asset owners are entitled to the restoration of all assets to its pre-project condition or the total costs to restore all damaged assets to pre-project conditions; 6. More Mitigation Measures about landscape at Section 2.4.3 7. More Mitigation Measures about noise at Section 2.4.11 8. Develop and implement Grievance Mechanism 9. Develop a Land Acquisition Strategy 1. Develop a Livelihood Restoration Plan	• LF3 • LF4 • LF5
Operation Phase		
Employment opportunities (direct and/ or indirect)	1. The Project will provide clear information for the number and skills requirements concerning employment opportunities. In the process of selecting permanent staff, locality will be taken into consideration.	• Population centres (cities or villages) close to temporary and permanent facilities • Along the pipeline protection strip

Impact	Mitigation Measures	Locations
Economic impact of taxes, fees and local transactions	See Construction Phase	• Greece, Europe
Economic impact on agricultural sector (income)	See Construction Phase	• Tree crops along the pipeline route
Economic impact on fishing sector (income)	1. Monitoring/ surveillance of marine biodiversity dynamic along the offshore pipeline. 2. Development and implementation of a Stakeholder Consultation and Grievance Management Mechanism Additional measures are presented in Construction Phase.	• OSS2/OSS2N, OSS3/OSS3N, OSS4 (offshore section)
Economic impact on tourism sector (income)	1. In case that tourism/ sport interest in diving expeditions is expressed, the Company will cooperate to set up safety procedures. Additional measures are presented in Construction Phase.	• LF3 • LF4 • LF5

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2.4.7.3 *Socio-economic Impact on Quality of Life*

2.4.7.3.1 Quality of life

The following measures are applicable both during Construction Phase and Operation Phase.

Table 2-70 Mitigation measures for Quality of Life.

Impact	Mitigation measures	Locations
Quality of life	1. Consultation with local authorities for all local and regional planning development initiatives likely to be affected by the Project.	• Population centres and development areas within the entire Spatial Development Control Strip, i.e. 200 m of

Impact	Mitigation measures	Locations
	2. Affected land owners and/or right holders are entitled to compensation (in accordance with the Livelihood Restoration Plan).	the axis of the pipeline. This includes all safety/ control zones. • Fishing Shelters and Port Authorities

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2.4.7.3.2 Value of Land

The following measures are applicable both during Construction Phase and Operation Phase.

Table 2-71 Mitigation measures for Value of Land.

Impact	Mitigation measures	Locations
Value of Land	1. Affected land owners and/or right holders are entitled to compensation (in accordance with the Livelihood Restorationn Plan)	Population centers and development areas within the entire Spatial Development Control Strip, i.e. 200 m of the axis of the pipeline. This includes all safety/ control zones.

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2.4.7.4 *Development Trends Deriving from the Project Trends*

In the following table, the right steps will be described to enhance the positive impacts. Sections 2.3.6.2 and 2.3.7.2 are also applicable.

Table 2-72 Enhancement Measures for Development Trends.

Impact	Mitigation Measures	Locations
Development Trends at National/ Regional Level	1. In the process of selecting permanent staff, locality will be taken into consideration. 2. Systematic consultation and involvement of Regional Authorities for all regional planning development initiatives likely to be affected by the Project. 3. Close collaboration with Megalopoli's SDAM board for maximization of potential interactions and partnerships 4. In case that tourism/ sport interest in diving expeditions is expressed, the Company will cooperate to set up safety procedures. 5. Project Owner will publicize implementation of the project in Greece, emphasizing support of local communities/ businesses in its implantation.	All engaged Regions

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2.4.8 Technical Infrastructure

2.4.8.1 *Construction Phase*

Table 2-73 Mitigation Measures to Address Impact on Technical Infrastructures during Construction Phase.

Impact	Mitigation Measures	Locations
Road Network		
• Increase in traffic • Traffic delays • Traffic regulation	1 Obtaining relevant crossing permit from competent authority 2 Preparation of traffic studies where necessary 3 Compliance with Highway Code 4 Establishment of strict speed limits	• Crossings of the pipeline with roads • Road network (highways, primary and secondary road network, local roads) used to access to the construction sites

Impact	Mitigation Measures	Locations
• Increase in the likelihood of accidents • Damage to road infrastructure	5 Placing of traffic lights and signage where necessary 6 Compliance with the legal framework for heavy vehicle traffic 7 Traffic arrangements, bypasses in open cut crossings 8 Road restoration after completion in case of damage	• Entry/exit traffic at construction sites
Railway Network		
• Subsidence • Halt of train service	1 Obtaining relevant crossing permit from competent authority 2 Monitoring of ground level during drilling operations 3 Temporary suspension of train passage during drilling to prevent accidents in case of subsidence. 4 Technical inspection with the railway Company, at the end of the drilling activity.	Crossings with railway network
Airport Facilities		
Potential small increase in air transport	Positive impact, no mitigation measures assessed	Local airports
Port Facilities, Marine Traffic and Submarine Cables		
• Potential damage of existing infrastructure • Disturbance of vessels and fishing shelters	1 Elaboration of a (Marine) Traffic Management Plan 2 Establishment of speed limits for project vessels 3 Restoration of infrastructure in case of damage	• Local ports • Offshore route
Wastewater Treatment		
Increased waste water for disposal in WWTPs	1 Preparation of Waste Management Plan 2 Disposal of wastewater in the nearest treatment plant	• Construction sites • Construction vessels
Solid Waste Management sites		

Impact	Mitigation Measures	Locations
Increased solid waste for disposal	1 Preparation of Waste Management Plan 2 Placing of buckets on construction sites 3 Separation of recyclable materials and disposal in recycling plants	Onshore and Offshore section
Watering & Irrigation Network		
Potential damage to the network	1 Obtaining relevant crossing permit from competent authority 2 Interruption of supply network if and where necessary 3 Restoration in case of damage	Onshore section

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2.4.8.2 *Operation Phase*

Table 2-74 Mitigation Measures to Address Impact on Technical Infrastructures during Operation Phase.

Impact	Mitigation Measures	Locations
Road Network		
Limited Increase in traffic	1 Establishment of Traffic Management Plan 2 Elaboration of traffic study for the entry-exit point of stations	• Road network • Entry – exit points of stations
Port Facilities, Marine Traffic and Submarine Cables		
Potential Damage of existing cables	1 Monitoring of cables by competent authority	Offshore route, crossing with cables
Wastewater Treatment		

Impact	Mitigation Measures	Locations
Wastewater generation	1 Waste disposal plan shall include provisions for waste originated from equipment maintenance 2 Oily and sanitary wastewater treatment within compressor stations	Project stations
Sanitary Landfill Sites		
Solid waste generation	1 Separation of recyclable materials and disposal in recycling plants 2 Elaboration of a disposal plan for equipment maintenance	Project stations
High Pressure Natural Gas Pipelines		
Positive impact in national energy infrastructure	1 Positive impact, no mitigation measures assessed	Project stations

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2.4.9 Correlation to man-made pressures on the environment

2.4.9.1 *Construction Phase*

Table 2-75 Mitigation Measures for Impacts on man-made pressures to the environment- Construction Phase.

Impact	Mitigation Measures	Location
Fishing Activities		
Restriction of fishing activities.	1 Where feasible, optimize the time schedule during the construction in order to minimize the impacts to fishing/shipping areas. 2 Information to authorities/ fishermen/ mariners. Navigational warnings 3 Lights, radio communications and other safety devices on board.	Width of Exclusion Safety Zone.

Impact	Mitigation Measures	Location
	4 Consultation with communities to explain need and importance of exclusion zone, potential compensation for loss of livelihoods (if any) 5 Elaboration of a Social Management Plan 6 Develop and implement a Grievance Mechanism	
Exploitation of Natural Resources		
• Potential need of large amount of aggregates, suitable for backfilling works. • Potential discard of excavation materials, unsuitable for backfilling works	1 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 2 Identify beneficial uses or opportunities for recycling construction spoil and other waste wherever possible 3 Waste management plan and system to be implemented 4 Environmental and social management plan	Along the pipeline route
Forest Areas		
Complete clearance of the working zone from vegetation	1 Development of a phytotechnical study of the restoration of the vegetation after the installation of the pipeline. 2 Implementation and monitoring of the forest vegetation restoration process.	Pipeline routing through forest areas.
Agricultural crops		
• Partial loss of agricultural resources • Loss of agricultural land at station construction sites.	1 Compensation for loss of agricultural income and permanent loss of trees by the owner of the Project 2 Appropriate restoration of agricultural land after installation. 3 Implement a Land Easement and Acquisition Strategy (LEAS) and a Land Access Plan (LAP).	• Pipeline routing through agricultural land and especially through deep-rooted crops. • Construction sites for compressor andmetering stations and valves.

Impact	Mitigation Measures	Location
	4 Implement a land restoration plan to ensure, to the extent possible, previous use and users returning on completion of construction. 5 Purchase of all necessary land for the installation of the project's main onshore facilities	

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2.4.9.2 *Operation Phase*

Table 2-76 Mitigation Measures for Impacts on man-made pressures to the environment - Operation Phase.

Impact	Mitigation Measures	Location
Forest Areas		
Complete clearance of the PPS from vegetation	1 Monitoring of the vegetation restoration for at least 3 years, and/ or as agreed with the competent authorities.	Pipeline routing through forest areas.
Agricultural crops		
• Partial loss of agricultural resources • Loss of agricultural land at the areas of permanent facilities.	1 Appropriate restoration of agricultural land after installation and maintenance of plant land on the surface	• Pipeline routing through agricultural land and especially through areas with deep-rooted crops. • Areas of permanent facilities

Prepared by ASPROFOS, 2022.

2.4.10 Impacts on Air Quality

Table 2-77 Mitigation Measures for Impacts on Impacts on Air Quality.

Impact	Mitigation Measures	Location
Construction Phase		
Temporary increase of dust emissions	1. Dusty Vehicles will be washed to remove any materials from the body and wheels immediately before leaving a construction area or temporary facilities 2. Vehicles carrying soil or materials from/to the construction sites will be covered to minimise entrainment by the wind 3. Vehicle speed to be limited, especially during the dry season 4. The unpaved accesses routes, in sensitive areas (close to settlements or relevant natural areas), will be kept clear or sprayed with water to maintain the entire road surface wet. This measure is recommended to be applied during the dry months. 5. Watering for dust suppression, depending on soil type, in the work zone and on dirt roads that lie <200 m away from the settlements.	All
Temporary exhaust emissions to the atmosphere (NOx, PM2.5, SO_2 ,VOCs ,CO, HAPS)	1. Maintenance of vehicles, machinery and vessels. 2. Driver training for optimal driving, which will result in low vehicle emissions. 3. Equipment, vehicle and vessel certifications (eg compliance with EU and Marpol). 4. Turning off the machines if they are to be left inactive for long periods. 5. Selecting fuels without low sulphur for marine vessels to reduce SOx emissions associated with the Project. 6. Periodic maintenance of equipment and machinery used. 1. Establishment of Traffic Management Plan.	
Operation Phase		
Pollution from NOX emissions	1. Regular maintenance of the equipment 2. Installation of NOx, SOx and CO emission monitoring systems, according to the proposed Monitoring Plan.	• Compression Stations

Impact	Mitigation Measures	Location
	Periodic air quality monitoring in the area of the compressors during the period 6-12 months after operations start to verify compliance to statutory limits.	• Nearest sensitive recipients.
Changes in Greenhouse Gas Emissions	1. State of the art equipment (energy generation equipment in CS's) Adoption of Best Available Techniques (BAT) for air pollutants.	Compression Stations

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2.4.11 Acoustic Environment

Table 2-78 Mitigation Measures for Impacts on Acoustic Environment.

Impact	Mitigation Measures	Location
Construction Phase		
Noise from Construction works	1 Onshore and nearshore construction works (including preparatory activities) will be performed between the hours of 06:00 and 22:00 (exceptions only for activities requiring continuous operation, e.g. HDD or System Pressure) 2 Mechanical equipment, including noise-suppression devices, should be maintained to the manufacturer's specifications. Internal combustion engines are to be fitted with a suitable muffler in good repair 3 Health and safety requirements for use of warning systems must be followed; 4 Turning off of equipment, including vehicles, when not being used. 5 All vehicular movements to and from the site to only occur during the scheduled normal working hours, unless approval has been granted by the relevant authority. Details shall be provided in the Traffic Management Plan.	All

Impact	Mitigation Measures	Location
	6 In areas, where blasting and hammering is going to perform near standing buildings (at a distance of 200 m from the pipeline axis), a Pre-Construction Conditions Assessment of the structure	
	7 Where construction activities must occur outside of the above hours (hydrostatic pressure testing of the pipeline) on-site noise monitoring will be undertaken to ensure the alignment with EMMP;	In locations of hydraulic test and pre-commissioning test equipment installation
	8 Ensure that all construction activity incorporates techniques for the control of noise to noise-sensitive land uses in the vicinity; 9 If work is to be conducted in a residential area or other noise-sensitive location, use the lowest-noise work practices and equipment that meet the requirements of the job, as far as reasonably possible; 10 Fit all pneumatic tools to be operated near a residential area with an effective silencer on their air exhaust port, as far as reasonably possible; 11 Install less noisy movement/ reversing warning systems for equipment and vehicles that will operate for extended periods, during sensitive times or in close proximity to sensitive sites, as far as reasonably possible; 12 Where possible, no vehicle associated with the work shall be left standing with its engine idling in a street adjacent to any residential area; 13 Use of best practice explosion techniques (i.e. mats, micro-charges etc.) in proximity of sensitive receptors;	Recommended in all positions. Imposed in the positions specified in Section 9.2.11 of the ESIA.
	14 Notification/ engagement of stakeholders regarding scheduling of blasting or hammering activities near sensitive areas. Additional noise monitoring, during blasting or hammering activities near sensitive receptors, should be applied if required	Protected Areas
	15 Mitigation measures for impacts to offshore biodiversity are applicable (see Section 2.4.5.2). Indicatively, the following are repeated:	General application

Impact	Mitigation Measures	Location
	i. During the construction works there will be a Marine Mammal Observer, on each pipelaying vessel, so as to inform immediately the ship commander. ii. Temporary pause of activities if a marine reptile is detected within a 50 m zone from the construction activities vessels. iii. Temporary pause of activities if a marine mammal is detected within a 100 m zone from the construction activities vessels.	
	16 Prior to the beginning of the work, Acoustic Mitigation Devices (AMDs) should be used to drive away groups or individuals of marine mammals. Only AMDs allowed in the ACCOBAMS area are to be employed (see ACCOBAMS Resolution 4.9, 2010 for cetacean devices).	IMMAs/ cIMMAs
Operation Phase		
Noise from Pipeline operation works	1. Application of appropriate sound insulation measures to equipment inside the Compression Stations so as to comply with legislative limits within residential areas. 2. Vegetation planting in the fence line of the compressor stations is also applicable as a noise screening measure. 3. Noise monitoring will be performed at the compressor stations fence line according to national legislation and at the closest sensitive receptor, if and as required 4. Any maintenance event that could cause temporarily noise nuisance to the local population will be timely notified, providing necessary and easy to comprehend appropriate information.	Compression stations

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2.4.12 Electromagnetic Fields

No impacts were identified during the operation phase. Therefore, no special mitigation measures are reported.

2.4.13 Water Resources

2.4.13.1 *Construction Phase*

Table 2-79 Mitigation Measures for Impacts on Water Resources - Construction Phase.

Impacts	Mitigation Measures	Location
Surface Water Systems		
All	1 Monitoring, among others, of the specific construction works by Environmental Supervisor 2 Implementation of Environmental Information - Awareness Programs for all project personnel. 3 Water Management Plan to identify and manage any surface and/or groundwater pumping needs and to manage surface water runoff. 4 Waste Management Plan of Hazardous Waste and Materials 5 Pollution Prevention and Response Plan. 6 All machines will be checked for leaks before starting. 7 For each river crossing a special crossing study will be carried out which will include management details and leakage prevention of bentonite	All
	8 Vehicles will be prohibited from driving through watercourses. 9 Portable bridges may be used to prevent contact of vehicles and equipment with surface water. 10 The maximum permissible speed for vehicles shall be 20 km/h within a short distance (100 m) of surface water. 11 Wherever possible, contact of machinery with surface water will be avoided. 12 Appropriate scheduling of construction work during periods of low flow or preferably during dry conditions . 13 Flood and erosion control measures will be implemented.	SWS where the open excavation method will be applied

Impacts	Mitigation Measures	Location
Modification of morphology	1 The waters to be disposed off by drainage, if discharged into SWB, shall be disposed off in a way so as to minimize the physical effects on the morphology of the channel, e.g. without turbulent flows and with sediment levels lower than those of the receiving waters.	All
	2 Restoration of the morphology and physical functions of the SWB where this is feasible with modern, environmentally friendly techniques. 3 The riverbed will be restored as much as possible to its original conditions and will be stabilized to minimize the risk of erosion. 4 Excavation materials will be temporarily stored so they can be reused for restoration of the same area. If additional materials are required, they will be procured from the wider region. 5 In order to be limited the excavations at the river banks, sheet piles could be installed (instead of bored piles), taking into consideration the geological formations 6 Maintaining temporary passages across water courses so as to ensure at least the unobstructed minimum ecological flow. 7 The removal of vegetation of the banks will be avoided and/ or minimized as much as possible. Minor route changes will be made so as to avoid significant riparian vegetation.	SWS where the open excavation method will be applied
	8 In the horizontal directional drilling, special measures will be taken to contain drilling residues and of bentonite.	SWS where the trenchless crossing method will be applied
	9 All possible sources of water take-off should have a minimum flow of 3 m3/s. 10 Discharge of hydraulic test water in such a way (location, height and rate of discharge) so as to minimize physical effects on recipient morphology. Maximum run-off rate 3 m3/s.	SWS of water collection & discharge for the needs of hydraulic testing
Impact on qualitative conditions	1 Measures shall be taken to prevent escape from the working area, for example with sandbags and settling tanks or cisterns to reduce the load from suspended sediments in water. Alternatively, water can be filtered using a suitable membrane, such as geotextile, to clean the water before disposal.	SWS where the open excavation method will be applied

Impacts	Mitigation Measures	Location
	2 During the crossing of rivers by an open excavation method, safety distances for machinery and piles of earth material from rivers will be maintained	
Impact on qualitative conditions	1 Prior to disposal, the water will be checked to ensure that its quality complies with local and international requirements for waste water disposal. On-site processing (e.g. filtering) will be performed if necessary. 2 Quality of the hydraulic test waters will be monitored prior to discharge to ensure zero risk to the aquatic recipient. 3 Development of a Pollution Prevention and Response Plan for avoidance of any pollution of water bodies that might occur due to an accident as a result of leakage of hydrocarbons/combustibles and for the response to such a leakage.	SWS where the trenchless crossing method will be applied
Impact on qualitative conditions	1 Use of silt curtains to prevent the transport of sediment out of the work site during dreging operation on shore crossings, if necessary.	Coastal Surface Waters
Impact on the availability of water resources	1 Minimization of water consumption associated with construction activities. 2 A Water Management Plan will be developed to analyze the measures to be implemented so as to minimize water consumption throughout the construction and trial operation phases.	Inland SWS
Impact on the availability of water resources	1 Discharges of water from drainage operations will take place following agreement and approval by the competent authorities. 2 Wherever possible, water will be reused in downstream sections in order to minimize fresh water pumping needs. 3 The surface water sources with the largest amounts of water flow have been taken into consideration for water pumping. 4 Water take-off will be limited to a maximum of the 10% of the flow during the period of water intake, and in any case it will not affect the minimum ecological run-off of the river.	SWS of water collection & discharge for the needs of hydraulic testing

Impacts	Mitigation Measures	Location
Accidental pollution	1 Disposal of liquid oils and fuels as well as of any kind of waste on the ground or underground is prohibited. 2 Carrying out construction vehicles maintenance work within the construction site is prohibited. 3 A Waste Management Plan will be established including specific instructions to avoid disposal of solid or liquid waste in water systems. 4 Establishment of a Management Plan for Hazardous Waste and Materials, so as to stablish the procedures for handling chemicals. 5 Preparation of a Pollution Prevention and Response Plan to avoid any pollution of water bodies. 6 The resulting packaging waste should be temporarily stored and delivered to licensed management bodies in accordance with the applicable legislation. 7 Periodic inspections should be carried out and an immediate response should be made in case escape or leakage is identified. 8 All areas for which there is a risk of leaks or spills during machinery or vehicle storage, maintenance or refuelling, and areas where materials with polluting potential will be stored will be bounded. Bounded areas will be designed to contain at least a 110 % of the largest storage tank plus 10% of the aggregate volume of all storage tanks within the bounded area. 9 Hazardous substances will be stored within impermeable bounded areas to protect groundwater from pollution by accidental spills.	All
Accidental pollution	1 Operate all vessels in accordance with national and international standards (e.g. MARPOL) 2 Development of a fuelling/bunkering procedure for machinery, generators, etc. on vessels 3 All oil/fuel or chemical products shall be stored in bounded or contained sites within the vessels. 4 An oil & chemical spill contingency prevention Plan should be developed and enforced before beggining of activities 5 Chemical handling procedures should be developed and enforced 6 Oil & Chemical spill response kit to be made available on vessels (where applicable) 7 Preparation of Waste Management Plan, including waste water	Coastal Surface Waters

Impacts	Mitigation Measures		Location
	8	HSE training of all on-site personnel on environmental awareness and oil & chemical spill prevention and response	
	9	Adoption of the Best Environmental Practices (BEP)	
Ground Water Systems			
All	1	Any required discharge of water will take place after the necessary permits from the competent authorities have been obtained.	All
	2	Full restoration of drainage characteristics (e.g. soil structure) of the soil damaged during construction will be carried out.	
	3	An assessment will be carried out to assess drainage and irrigation networks within the work area. This will facilitate the assessment to be made of any damage caused during construction and rehabilitation (such as adding or replacing drainage pipes) that need to be approached appropriately.	
Impact on quality	1	Carrying out construction vehicles maintenance work within the construction site is prohibited if it involves handling of hazardous or toxic material.	All
	2	Disposal of oil, fuel, or any kind of waste on the ground or in the subsoil is prohibited.	
Accidental pollution	1	Development of a Pollution Prevention and Response Plan to avoid any pollution of water bodies that may occur from an accident as a result of fuel leakage and for the response to such a leakage.	All
	2	Hazardous substances shall be stored in areas with impermeable layers (e.g. geotextile, concrete slabs, etc) to protect groundwater from pollution due to accidental spills.	

Prepared by: ASPROFOS, 2022.

2.4.13.2 *Operation Phase*

Table 2-80 Mitigation Measures for Impacts on Water Resources - Operation Phase.

Επιπτώσεις	Μέτρα Αντιμετώπίσης	Τοποθεσία
Surface Water Systems	Surface Water Systems	Surface Water Systems
Accidental pollution	1 Accidental pollution	Accidental pollution
Accidental pollution	1 Accidental pollution	Accidental pollution
Ground Water Systems	Ground Water Systems	Ground Water Systems
Accidental pollution	1 Accidental pollution	Accidental pollution
	2 Εκπόνηση Σχεδίου Αντιμετώπισης Έκτακτης Ανάγκης (ΣΑΕΑ), όπου προσδιορίζονται οι συγκεκριμένες ενέργειες και διαδικασίες που πρέπει να εκτελούνται σε καταστάσεις έκτακτης ανάγκης που μπορεί να συμβούν κατά τη λειτουργία του έργου. 3 Εκπόνηση Σχεδίου Πρόληψης και Αντιμετώπισης Ρύπανσης για την αποφυγή ρύπανσης υδάτινων σωμάτων που μπορεί να λάβει χώρα από ατύχημα ως αποτέλεσμα διαρροών υδρογονανθράκων και για τους τρόπους αντιμετώπισης τέτοιων περιστατικών. 4 Περιοδική παρακολούθηση ποιότητας υπόγειων υδάτων 5 Ανοιχτό σύστημα αποστράγγισης για τη συλλογή της βροχής ή/και των ρυπασμένων υγρών και την προώθησή τους σε ελαιοδιαχωριστή πριν από την τελική απόρριψή τους.	Σταθμοί Μέτρησης και Συμπίεσης

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2.4.14 Wave Conditions Oceanographic Characteristics – Coastal Mechanics

During construction phase, it is proposed to apply the following good practices to minimize the coastal mechanics impacts which may occur during installation of cofferdams or causeways at landfalls locations from construction activities (see table below). Generally, a Coastal Engineering study may have to be prepared, and followed during the construction phase. In addition, the time of the construction works in the LFs locations should be minimised.

During the operation phase no effects are expected to Wave Conditions-Oceanographic characteristics-Coastal Mechanics, therefore no mitigation measures are required.

Table 2-81 Mitigation Measures for Impacts on σε Κυματικές Συνθήκες - Ωκεανογραφικά Χαρακτηριστικά – Ακτομηχανικά Φαινόμενα κατά τη Construction Phase.

Impact	Mitigation Measures	Location
Coastal mechanics impacts which occurs during installation of cofferdams or causeways	1. Preparation of a Coastal Engineering study, if deemed necessary, where the specific wave patterns in the LFs locations will be determined and the depth of influence will be estimated. 2. Application of the best common practices in construction sites, according to the coastal engineering study.	LFs
	1 Not to prolong the execution time of the following tasks in the LF2, LF3 locations i. Pre-lay dredging ii. Post-lay backfilling iii. Bund Construction	LF2,LF3
	1 Not to prolong the execution time of the following tasks in the LF4, LF5 locations i. Pre-lay dredging ii. Post-lay backfilling	LF4,LF5

Impact	Mitigation Measures	Location
	iii. Cofferdam installation	

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2.4.15 Risks to human health, cultural heritage and / or the environment, mainly due to accidents or disasters

No relevant impacts and mitigation measures have been evaluated, as no major accidents due to the project are expected during the construction phase.

The following table presents suggested mitigation measures for risks to human health, cultural heritage and/ or the environment, mainly due to accidents or disasters during Operation Phase.

Table 2-82 Mitigation Measures for Impacts on human health, cultural heritage and/ or the environment, mainly due to accidents or disastersduring Operation Phase.

Impact	Mitigation Measures	Location
General	1. Safety studies (including QRA) 2. Emergency Response Plan 3. Pollution prevention and combating plan 4. Project Health and Safety Management Plan 5. Land Easement and Acquisition Strategy (LEAS) and Land Access Plan LAP) 6. Cultural Heritage Management Plan 7. Community, Helath, Safety and Security Management Plan 8. Installation of appropriate signs and fencing, where applicable. 9. Inspection Program	All pipelay route

Impact	Mitigation Measures	Location
Shipping Interaction		
Gas cloud at the sea surface after pipeline failure (small leak/ rupture).	1. As-built coordinates will be comunicated to authorities for inclusion of the pipeline on sea charts	Along the offshore route.
Geohazards – Seismic Activity		
Jet Fire / Fireball	1. Adequate distance at least 200m from areas of high population density. 2. Increased class location, as dictated in the Greek technical regulation (see section 6.3.2.5)	• EastMed onshore CCS1b KPs 289-299-300, Near LF4 • EastMed onshore CCS2 KPs 28-29-30, Between villages Gavalou (population 1018) and Grammatikou (population 802)

Prepared by ASPROFOS, 2022

2.5 Benefits from the Implementation of the Project

This section provides an overview of available information regarding benefits from project's implenetation, including benefits to local and national economy. More details are presented in Chapters 4 and 9 of the ESIA.

Apart from what was described in Section 2.1.1, the Project meets a number of development, environmental and social goals linked to its implementation. From a strategic point of view, these include the following:

- 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 Cyprus, Greece and Italy;
- Enhance EU security of supply by facilitating diversification of energy sources and routes by providing solutions to supply disruption and emergency scenarios;
- Broaden the Southern Gas Corridor, developing natural gas resources within the EU and close border sources;
- Ensure the supply of natural gas (and/ or hydrogen) to areas of Greece that do not have access to the National Network, such as Crete, part of Peloponnese and Western Greece, ending their energy isolation with respect to the European System, through a direct interconnection;
- Support the transitory phase, from coal (or oil) to renewable sources using sources, as natural gas, that are less polluting but still capable of guaranteeing the power supply demand covering energy production peaks;
- Promote environmental sustainability according to the decarbonisation goals to be achieved as defined in the framework of the Paris Agreement, therefore facilitating the replacement of fossil fuel with natural gas reducing greenhouse gas emissions in the aforementioned areas; and
- Provide a new energy corridor to sustain and encourage the South-East Europe and east Mediterranean region's transition towards a sustainable and efficient energy transmission network, supporting the development of hydrogen production plants as well.

The previously mentioned goals add on to similar benefits on Local, Regional and National level. Here below, some additional benefits at national and regional levels are presented, resulting from implementing the Project:

- Contributes to the emergence of Greece as a key player in European energy market;

- Provides a competitive gas supply source for EU markets, including Greek one, that allows reduction of energy costs;
- Facilitates economic growth as well as increasing competition in the gas market;
- Enhances security of supply at the European regional levels;
- Create direct, indirect and induced economic effects during its development, construction and operation phases;
- Opens a new energy corridor for Greece that can cover future and additional sources as well as future accommodation of increased quantities of hydrogen;
- Facilitates the reduction of greenhouse gas emissions. In particular, natural gas can curtail greenhouse gas emissions (60% less CO_2 than coal) but also of dust (up to 99% less than coal) and other pollutants such as NOx and SOx[13]. Moreover, it provides an intermediate path to a less carbon-intensive economy, and allows for gradual and effective contribution to EU climate neutrality by 2050[14]; and
- Contributes to development of natural gas resources within the EU or in neighbouring countries (Israel), thus reducing Europe's dependence on third countries.

At a regional level, it will spotlight the importance in the energy network of Europe of the four (4) regions crossed (i.e. Crete, Peloponnese, Western Greece and Epirus). The EastMed Pipeline Project can support introduction of natural gas to the Regions where natural gas distribution pipelines have not been introduced yet , such as Epirus, conditionally that market interest and infrastructure networks are established.

At a regional and local level, the Project will create direct and indirect employment opportunities in various sectors of the economy, of extreme importance in the regions particularly affected by the economic crisis. During construction, the Project will employ thousands of people, buy goods and services, which will obviously have a positive effect on local communities. Employment in an international infrastructural project will allow local force to acquire new skills and better employment perspectives for future. The Project will also give Greek companies an opportunity to participate in construction projects tender procedures improving their capabilities and their corporate profile.

During operation, the Project Owner will employ about 100 permanent employees, most of them of specialized jobs based around the Compression Stations; moreover, services that support plant

[13] (Häsänen, Pohjola, Hahkala, Zilliacus, & Wickström, 1986)

[14] Position paper of Bulgaria, Czechia, Greece, Hungary, Lithuania, Poland, Romania, Slovakia (Role of natural gas in climate-neutral Europe, May 25, 2020)

operation (water supply, waste collection, emergency maintenance, etc.) will contribute to the local economy.

2.6 Alternative Assessment

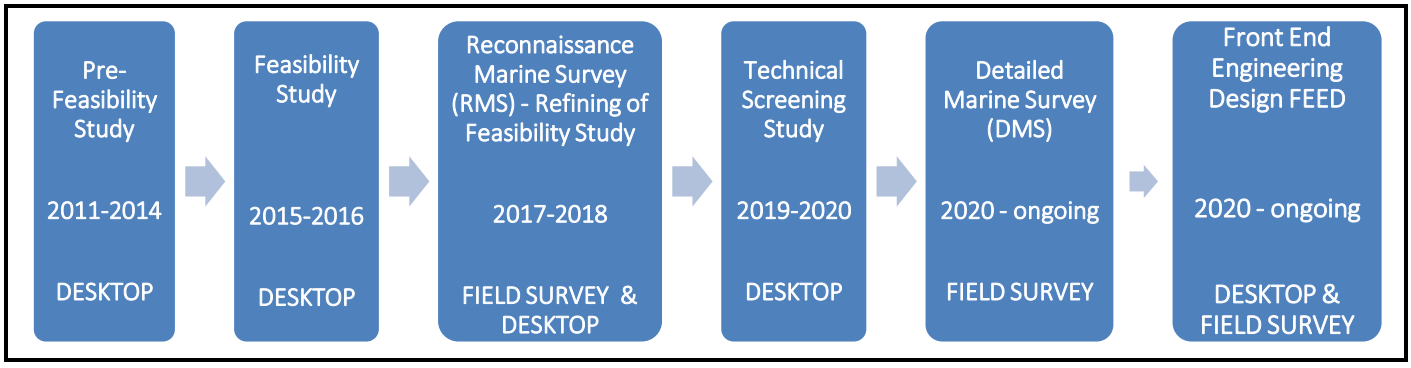
This section provides an overview of the viable alternatives assessment. More details are presented in Chapter 7 of the ESIA.

The Project configuration presented in the ESIA is the result of a long and step-wised process. Along with the engineering and design steps undertaken by the Project various alternatives have been investigated for the EastMed Greek section: the assessment has been mainly carried out in terms of project footprint, including non-realization of the project (zero alternative). At this stage of the Project the assessment of alternative includess:

- Zero alternative
- Pipeline route alternatives;
- Main Facilities alternative locations.

It needs to be noted that the presented alternatives are viable and have been taken into consideration during the design of the Project.

The identification of the conceptual design of the Project, meaning basic geomorphological, technical, environmental and economic considerations, started back in 2012. During that time and up until 2018, the feasibility study of the Project was elaborated which investigated various conceptual corridors and potential critical aspects of the EastMed Project. The Project definition was developed during different phases, including the steps presented in Figure 2-11.



Source: ERM, 2021

Figure 2-11 EastMed Pipeline Project: Route Refinement Process Flow Chart.

2.6.1 Zero Alternative

A zero solution is equivalent to the "do nothing" scenario. The selection of this solution leads to the maintenance of 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, would result in the loss of all positive effects that the investigated project could induce in Greece and Europe in general (in terms of replacement of other more polluting fossil fuels, with the less polluting ones, transferred via EastMed Pipeline). This is especially so, given the fact that potential negative impacts of the project can be largely managed through sound design and management/monitoring practices. The following are a number of adverse effects under the zero alternative:

- No enhancement of competition in the energy market, through loss of access provision to additional new sources of supply currently not reaching any part of the European Union Member States or new points of entry for natural gas in Cyprus, Greece and Italy;
- No enhancement of EU security of supply by facilitating diversification of energy sources and routes by providing solutions to supply disruption and emergency scenarios;
- No broadening of the Southern Gas Corridor, no developing of natural gas resources within the EU or close border sources;
- No ensurance of supply of natural gas (and/ or hydrogen) to areas of Greece that do not have access to the National Network, such as Crete, part of Peloponnese and Western Greece; no ending to their energy isolation with respect to the European System, through a direct interconnection;
- Lack of support of the transitory phase, from coal (or oil) to renewable sources using sources, as natural gas, that are less polluting but still capable of guaranteeing the power supply demand covering energy production peaks;
- No promotion of environmental sustainability according to the decarbonisation goals to be achieved as defined in the framework of the Paris Agreement, therefore no facilitating of the replacement of fossil fuel with natural gas reducing greenhouse gas emissions in the aforementioned areas; and
- No provision of a new energy corridor to sustain and encourage the South-East Europe and east Mediterranean region's transition towards a sustainable and efficient energy transmission network, supporting the development of hydrogen production plants as well.

Based on the above, the zero alternative is not considered an advantageous one and thus is not contemplated further.

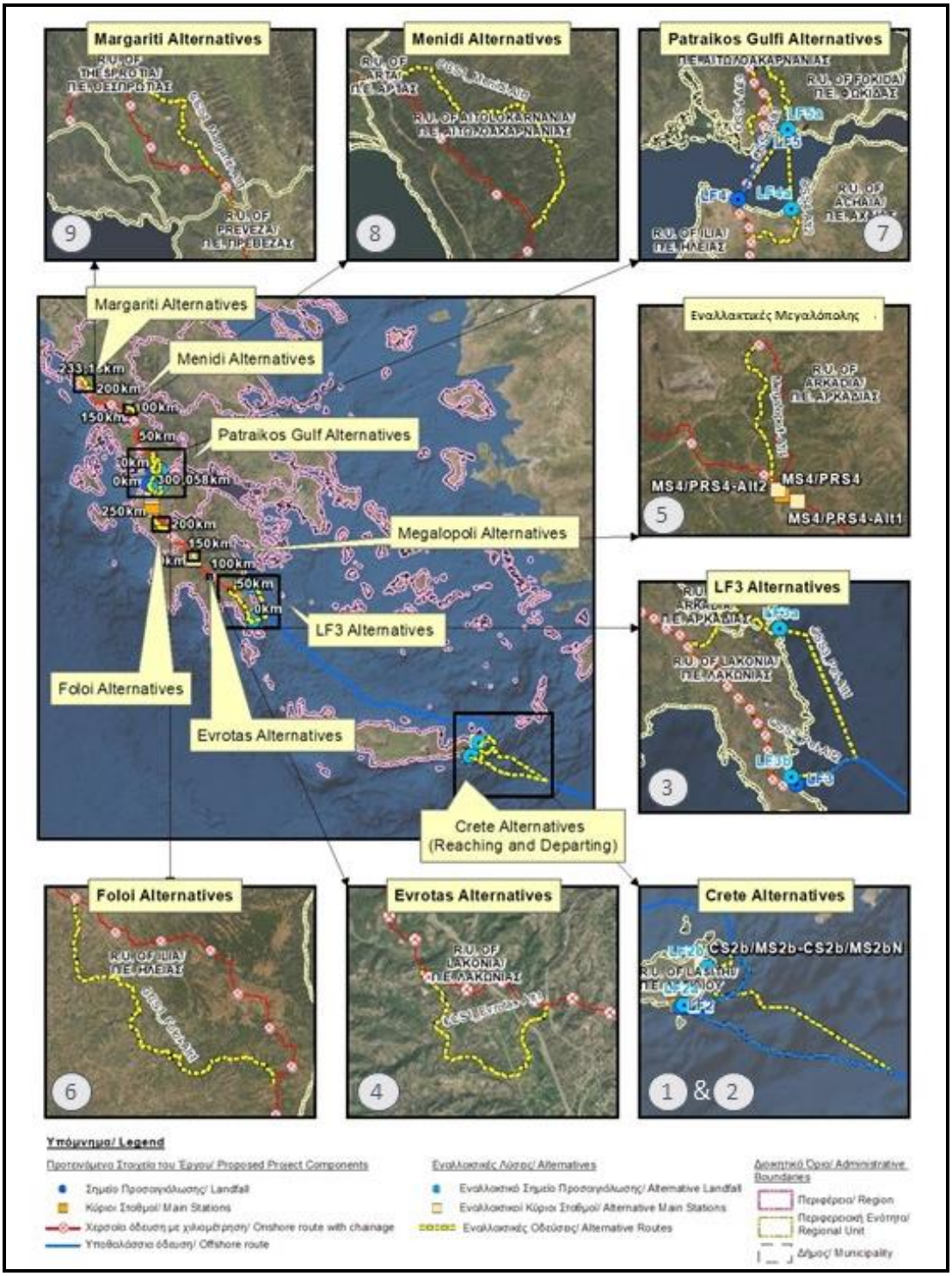
2.6.2 Routing Alternatives

Route overall alternatives assessment is based on technical, economic, environmental, social and cultural criteria. In order to define a set of objective criteria for defining the proposed routing a comparison matrix, based on a multi-criteria analysis and classification/scoring, has been defined. In total, eighty (80) criteria have been used for the pipeline route alternatives assessment.

The assessment, as previously described, resulted in assessing alternatives for nine (9) different areas of the entire project footprint, both onshore and offshore. More specifically:

1. Three (3) different alternatives were investigated reaching SE Crete, including OSS2/OSS2 N and LF2 project components (referred to as “OSS2 Reaching Crete” alternatives);
2. Three (3) different alternatives were investigated starting from SE Crete, including OSS3/OSS3 N and LF2 project components (referred to as “OSS3 Departing Crete” alternatives);
3. Three (3) different alternatives were investigated reaching SE Peloponnese, including OSS3/OSS3 N, LF3 and CCS1 project components (referred to as “OSS3 Reaching Peloponnese” alternatives);
4. Two (2) different alternatives were investigated in the area of R. Evrotas, including CCS1 project component (referred to as “Evrotas” alternatives);
5. Two (2) different alternatives were investigated in the area of Megalopoli, including Megalopoli Branch project component (referred to as “Megalopoli” alternatives);
6. Two (2) different alternatives were investigated in the area of Foloi Plateau, including CCS1 project component (referred to as “Foloi Plateau” alternatives);
7. Four (4) different alternatives were investigated for Patraikos Gulf crossing, including CCS1, LF4, OSS4, LF5 and CCS2 project components (referred to as “Patraikos Crossing” alternatives);
8. Two (2) different alternatives were investigated in the area of Menidi, as part of CCS2 project component (referred to as “Menidi” alternatives); and
9. Two (2) different alternatives were investigated in the area of Margariti, as part of CCS2 project component (referred to as “Margariti” alternatives).

Figure 2-12 presents an overview of the Alternative Routes and the main environmental and social restrictions in favor of the chosen solution. Details are provided in Section 15.1.3.1 Alternative Routes Map.



Source: ASPROFOS,2021

Figure 2-12 Overview of feasible pipeline route alternatives

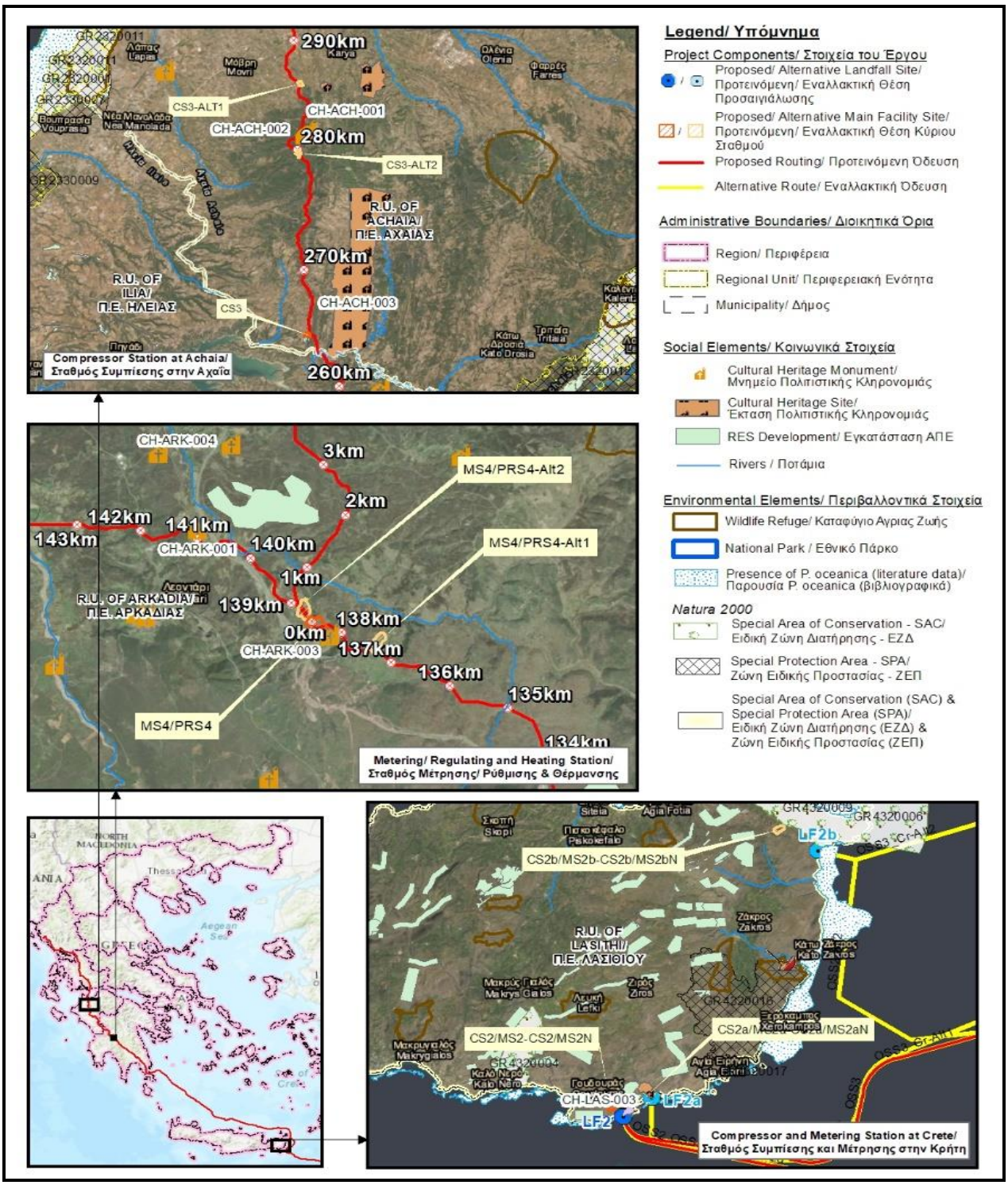
2.6.3 Stations Alternatives

Stations overall alternatives assessment is similar to the one presented for the pipeline route, even if the criteria used are obviously different. In total thirty-one (31) criteria were used for the assessment of the main stations facilities.

The alternative site locations evaluated are summarized as follows:

- For the Compressor and Metering Stations at Crete (CS2/MS2-CS2/MS2N), three alternative locations were investigated;
- For the Compressor Station at Peloponnese (CS3), three alternative locations were investigated; and
- For the Metering, Pressuring and Heating Station (MS4/PRS4) at Peloponnese, three alternative locations were investigated.

Figure 2-13 presents an overview of the Alternative Stations and the main environmental and social restrictions in favor of the chosen solution. Details are provided in Section 15.1.3.2 Alternative Stations Map.



Source: ASPROFOS,2021

Figure 2-13 Overview of feasible pipeline route alternatives

2.7 Summary of Appropriate Assessments

For the Natura 2000 sites, Appropriate Assessments have been prepared according to national and European legislation requirements, including performance of seasonal fieldworks, focusing on the protected features of each Natura 2000 site. More details are presented in the relevant annexes (see Annex 9E).

It is noted that before preparation of the Appropriate Assessments for potentially affected Natura2000 sites, a screening process was performed (see Annex 9E.1). The purpose was to identify if the project's construction and operation may result in potential impacts upon Natura2000 sites located in the broader area of the Project. Out of the 16 sites identified, 14 sites were assessed as potentially affected by the project resulting in the preparation of 14 Appropriate Assessments.

Out of the 14 Natura2000 sites (refer to Table 2-83).) for which Appropriate Assessment was performed, the most important interaction is identified in the following sites:

- SAC GR2540001. At the LF3, Posidonia beds* priority habitat (1120*) is going to be impacted for the shore crossing. For the shore crossing an area of approx. 600 m long and 30 m wide, including 8000 m² of this habitat, is going to be affected. Impact for the specific parameter (Posidonia beds habitat loss) is assessed as **Moderate.** Details are provided in Annex 9E.10
- SAC GR2310010. Wolf presence may be affected. Species suitable habitats may be impacted whilst construction activities may disturbe species presence. Impact for Wolf's habitat loss is assessed as **Moderate;** impacts for Wolf's disturbance is assessed as **Moderate,** also. Details are provided in Annex 9E.7

Based on the fact that impacts are assessed, mainly, against the integrity of the protected feature of the site but, also, to other elements of the biodiversity of the Protected Area, as an integral component of the ecosystems that indirectly affect the conservation status of protected species, a summary of impacts to Natura Areas, as analysed at the annexed Appropriate Assessments, is presented in the following tables.

More information is presented in Chapters 8, 9, 10 and 11 of the ESIA, as well as in Annex 9E.

Table 2-83 Engagement of Natura2000 areas with the investigated project.

Project Component	Site Code	Name	Spatial Correlation* (From KP-To KP)
Natura 2000 Sites - Special Areas of Conservation			
OSS3/OSS3N	GR4320006	Voreioanatoliko Akro Kritis: Dionysades, Elasa kai Chersonisos Sidero (Akra Mavro Mouri – Vai – Akra Plakas) Kai Thalassia Zoni (Northeast Coast of Krite: Dionysades, Elasa and Sidero Peninsula (Peninsula Mavro Mouri – Vai – Peninsula Plakas) and Marine Zone)	60-61
OSS3/OSS3N	GR2540001	Ori Gidovouni, CHIONOVOUNI, Gaidourovouni, Korakia, Kalogerovouni, Koulochera kai Periochi Monemvasias Spilaio Solomou Trypa kai Pyrgos Ag. Stefanou kai Thalassia Zoni eos Akrotirio Kamili (Mountains of Gidovouni, Chionovouni, Gaidourovouni, Korakia, Kalogerovouni, Koulochera and area of Monemvasia Spilaio Solomou Trypa and Pyrgos Ag. Stefanou and Marine Zone to Akrotirio Kamili)	426 – 429
CCS2	GR2310001	Delta Acheloou, Limnothalassa Mesolongiou - Aitolikou, Ekvoles Evinou, Nisoi Echinades, Nisos Petalas (Delta of Acheloos, Lagoon of Mesologi - Aitoliko, Estuary of Evinos, Echinades Islands, Petalas Island)	2-6
CCS2	GR2310005	Oros Varasova (Mountain of Varasova)	5-7
CCS2	GR2310010	Oros Arakynthos kai Stena Kleisouras (Mountain of Arakynthos and Kleisoura Straits)	11 - 25
CCS2	GR2310009	Limnes Trichonida kai Lysimacheia (Trichonida and Lysimacheia Lakes)	37 – 38
CCS2	GR2110001	Amvrakikos Kolpos, Delta Lourou kai Arachthou (Petra, Mytikas, Evryteri Periochi, Kato Rous Arachthou, Kampi Filippiadas) (Amvrakikos Gulf, Delta's of Louros and Arachthos rivers (Petra, Mytikas, broader area, Arachthos Downstream, Filippiadas Plains))	135 – 160
CCS2	GR2120002	Elos Kalodiki (Kalodiki Marshland)	212 - 213
Natura 2000 Sites - Special Areas of Conservation & Special Protection Areas			
CCS1	GR2330002	Oropedio Folois (Plateau of Foloi)	227 - 228
Natura 2000 Sites - Special Protection Areas			

Project Component	Site Code	Name	Spatial Correlation* (From KP-To KP)
CCS1	GR2540007	Ori Anatolikis Lakonias (Mountains of East Lakonia)	20 – 23
CCS2	GR2310015	Delta Acheloou, Limnothalassa Mesolongiou - Aitolikou kai Ekvoles Evinou, Nisoi Echinades, Nisos Petalas, Dytikos Arakynthos kai Stena Kleisouras (Delta of Acheloos, Lagoon of Mesologi - Aitoliko, Estuary of Evinos, Echinades Islands, Petalas Island. Western Arakynthos and Kleisoura straits)	2-7
CCS2	GR2310013	Limni Lysimacheia (Lake Lysimacheia)	40-44
CCS2	GR2110004	Amvrakikos Kolpos, Limnothalassa Katafourko kai Korakonisia (Amvrakikos Gulf, Lagoon of Katafourko and Korakonisia)	159 – 160
CCS2	GR2120006	Eli Kalodiki, Margariti, Karteri kai Limni Prontani (Marshlands of Kalodiki, Margariti, Karteri and Prontani Lake)	212 – 213

Prepared by: ASPROFOS, 2022.

2.7.1 Construction Phase

Table 2-84 Impacts on Natura 2000 sites during construction phase.

Natura2000 site type & code	Relevant ESIA Annex	Threat	Receptor	Nature	Extent	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
SAC GR4320006	Annex9E.11	Habitat loss etc.	Habitat types	Negative	No impact expected							
			Fauna	Negative	No impact expected							
		Loss of individuals	• Marine mammals • Sea turtles	Negative	Local	Short term	Low	High	Negligible	Low	Medium	Negligible
		Disturbance	• Marine mammals • Sea turtles	Negative	Local	Short term	Low	High	Negligible	Low	Medium	Negligible
SAC GR2540001	Annex9E.10	Habitat loss etc.	1120*	Negative	Local	Long term	Low	High	Medium	Medium	Medium	Medium
		Habitat loss (Nesting sites)	*C. caretta**	Negative	Local	Long term	Low	High	Medium	Medium	Low	Low
		Habitat loss (Range, Marine habitat)	*M. monachus**	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Loss of individuals	*C. caretta**	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Loss of individuals (breeding popul.)	*M. monachus**	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	*M. monachus**	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
SPA GR2540007	Annex9E.12	Species habitat loss, deterioration, fragmentation	Birds	Negative	Local	Short term	Low	Medium	Low	Negligible	-	Negligible
		Loss of individuals	Birds	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Birds	Negative	Local	Short term	Low	High	Low	Low	Low	Low
SAC GR2110001	Annex9E.2	Habitat type loss, deterioration, fragmentation	92A0, 92D0, 3150	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Species habitat loss, deterioration, fragmentation	• Fauna & • Conservation objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Loss of individuals	• Fauna & • species' Conservation objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	• Fauna • species' Conservation objectives	Negative	Local	Short term	Low	High	Low	Low	Low	Low
SPA GR2110004	Annex9E.3	Species habitat loss, deterioration, fragmentation	• Birds • Cons. objectives	Negative	Local	Short term	Medium	High	Low	Medium	High	Low

Natura2000 site type & code	Relevant ESIA Annex	Threat	Receptor	Nature	Extent	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
		Loss of individuals	• Birds • Conservation objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Birds	Negative	Local	Short term	Medium	High	Low	Medium	Medium	Low
SAC GR2310001	Annex9E.4	Habitat loss etc.	• 92D0 • Conservation objectives	Negative	Local	Short term	Low	High	Negligible	Negligible	-	Negligible
			• Fauna • species' Conservation objectives	Negative	Local	Short term	Low	High	Negligible	Negligible	-	Negligible
		Loss of individuals	• Fauna • species' Conservation objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Mammals	Negative	No impact expected							
SAC GR2310009	Annex9E.5	Habitat type loss, deterioration, fragmentation	Habitat types	Negative	No impact expected							
		Species habitat loss, deterioration, fragmentation	• Fauna • Species Conservation Objectives	Negative	Local	Short term	Negligible	High	Low	Negligible	-	Negligible
		Loss of individuals	• Fauna • Species Conservation Objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	• Mammals • Species Conservation Objectives	Negative	Local	Short term	Low	High	Low	Low	Low	Low
SAC GR2310010	Annex9E.7	Habitat loss etc.	Habitat types	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
			Fauna	Negative	Local	Short term	High	High	Medium	High	Medium	Medium
		Loss of individuals	Fauna	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Fauna	Negative	Local	Short term	Medium	High	Low	Medium	Low	Medium
SPA GR2310013	Annex9E.6	Species habitat loss, deterioration, fragmentation	• Birds • Species Conservation Objectives	Negative	Local	Short term	Low	Medium	Low	Negligible	-	Negligible
		Loss of individuals	• Birds • Aythya nyroca	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible

Natura2000 site type & code	Relevant ESIA Annex	Threat	Receptor	Nature	Extent	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
			• Species Conservation Objectives									
		Disturbance	• Birds	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
SPA GR2310015	Annex9E.8	Species habitat loss, deterioration, fragmentation	• Birds • Conservation Objectives	Negative	Local	Short term	Low	Medium	Low	Negligible	-	Negligible
		Loss of individuals	• Birds • Conservation Objectives	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Birds	Negative	Local	Short term	Low	High	Low	Low	Low	Low
SPA/SAC GR2330002	Annex9E.9	Habitat type loss, deterioration, fragmentation	Habitat types	Negative	Local	Long term	Low	High	Medium	Medium	Medium	Low
		Species habitat loss, deterioration, fragmentation	Fauna	Negative	Local	Long term	Low	High	Medium	Medium	Medium	Low
		Loss of individuals	Fauna	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	Fauna	Negative	Local	Short term	Medium	High	Low	Medium	Medium	Low
SAC GR2120002	Annex9E.13	Habitat type coverage loss, deterioration, fragmentation	5420	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Species habitat loss, deterioration, fragmentation	Conservation objectives for • *Elaphe quatuorlineata* • *Zamenis situla,* • *Testudo hermanni,* • *Testudo marginata*	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Loss of individuals	Conservation objectives for • *Elaphe quatuorlineata* • *Zamenis situla,* • *Testudo hermanni,* • *Testudo marginata*, • *Lutra lutra*	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
		Disturbance	• Conservation objectives for • *Lutra lutra*	Negative	Local	Short term	High	High	Low	Medium	Medium	Low
SPA GR2120006	Annex9E.14	Species habitat loss, deterioration, fragmentation.	• Birds • Conservation objectives	Negative	Local	Short term	Medium	High	Low	Medium	High	Low
		Loss of individuals	• Birds	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible

Natura2000 site type & code	Relevant ESIA Annex	Threat	Receptor	Nature	Extent	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
			• Conservation objectives									
		Disturbance	Birds	Negative	Local	Short term	Medium	High	Low	Medium	Medium	Low
			Aythya nyroca breeding population	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible

Prepared by: ASPROFOS, 2022.

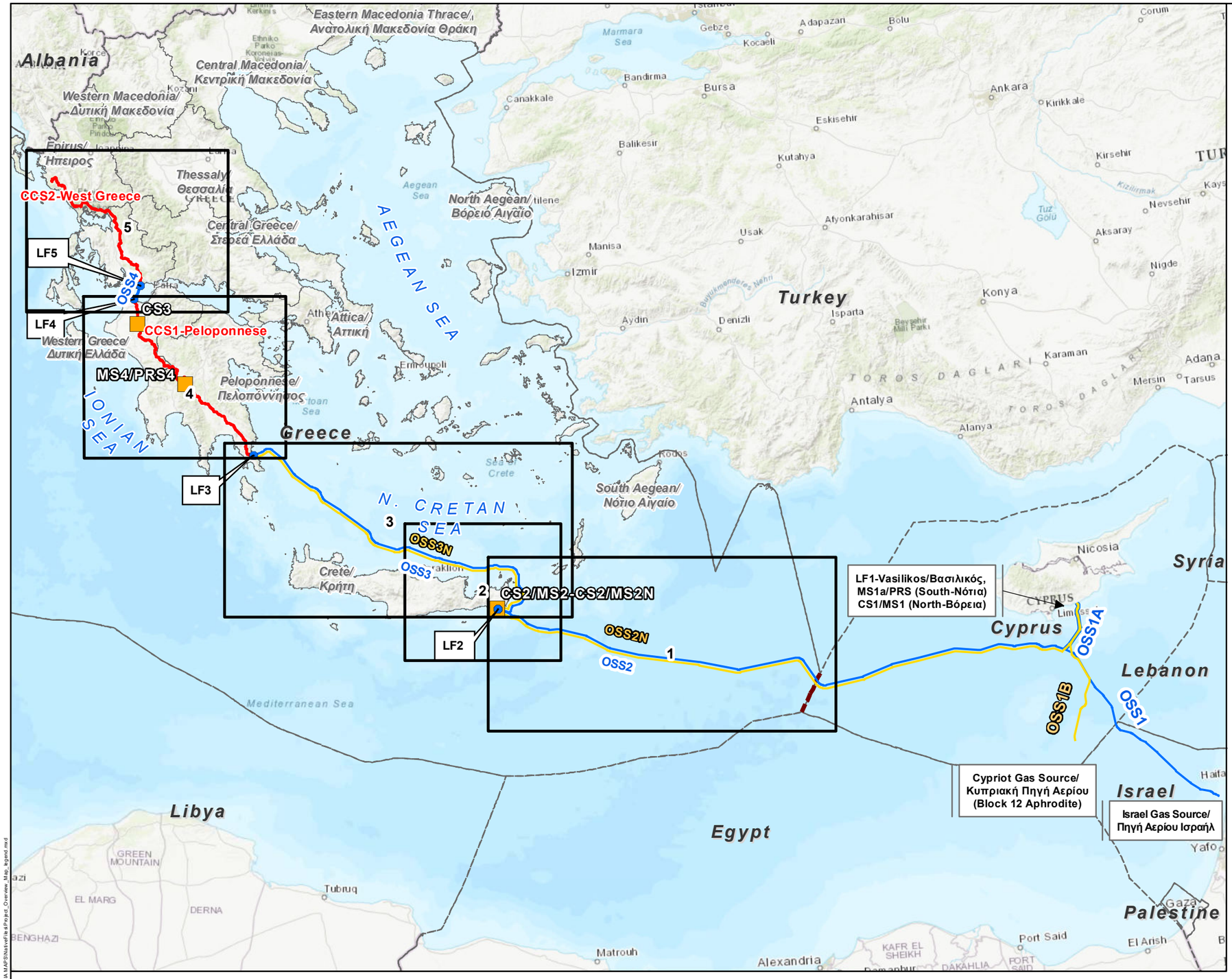
2.7.2 Operation Phase

Table 2-85 Impacts on Natura 2000 sites during operation phase.

Natura2000 site type & code	Relevant ESIA Annex	Threat	Receptor	Nature	Extent	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
SAC GR2310010	Annex9E.7	Habitat loss	Fauna	Negative	Local	Short term	Medium	High	High	High	Medium	Medium
		Disturbance	Fauna	Negative	Local	Short term	Medium	High	Low	Medium	Medium	Low
SPA/SAC GR2330002	Annex9E.9	Habitat type loss, deterioration, fragmentation	Habitat	Negative	Local	Long term	Negligible	High	Medium	Low	-	Low
			Fauna	Negative	Local	Long term	Negligible	High	Medium	Low	-	Low
SAC GR2120002	Annex9E.13	Habitat type coverage loss, deterioration, fragmentation	Habitat 5420	Negative	Local	Long term	Negligible	High	Medium	Low	Medium	Negligible

Prepared by: ASPROFOS, 2022.

APPENDIX 1 – PROJECT OVERVIEW MAP



Key Plan of EastMed Pipeline Project- Greek Section /
Κλείδα του Έργου του Αγωγού EastMed- Ελληνικό Τμήμα

1. From the middle of the sea straits between Greece and Cyprus to Crete - Offshore Section,
   Από το μέσον του θαλάσσιου στενού μεταξύ Ελλάδας και Κύπρου έως την Κρήτη - Υποθαλάσσιο Τμήμα, OSS2/OSS2N
2. Crete - Onshore Section/ Κρήτη - Χερσαίο Τμήμα, LF2 & CS2/MS2-CS2/MS2N
3. From Crete to Peloponnese- Offshore Section,
   Από Κρήτη προς Πελλοπόνησο- Υποθαλάσσιο Τμήμα, OSS3/OSS3N
4. Peloponnese - Onshore Section / Πελοπόννησος - Χερσαίο Τμήμα, CCS1
5. West Greece & Ipirus - Onshore Section & Patraikos Gulf/
   Δυτική Ελλάδα & Ήπειρος - Χερσαίο & Πατραϊκός Κόλπος, CCS2 & OSS4:

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/ Στοιχεία του Έργου

- Proposed Onshore Routing / Προτεινόμενη Χερσαία Όδευση
- Proposed Offhore Routing (Southern System)/ Προτεινόμενη Υποθαλάσσια Όδευση (Νότιο Σύστημα)
- Proposed Offhore Routing (Northern System)/ Προτεινόμενη Υποθαλάσσια Όδευση (Βόρειο Σύστημα)
- Proposed Main Station/ Προτεινόμενος Κύριος Σταθμός
- Proposed Landfall Location/ Προτεινόμενη Θέση Προσαιγιάλωσης

Administrative Boundaries/ Διοικητικά Όρια

- Region Border / Όριο Περιφέρειας
- Offshore Border/ Υποθαλάσσιο Όριο
- Starting Point of Greek Offshore Section of EastMed / Σημείο Αρχής του Ελληνικού Υποθαλλάσιου τμήματος του EastMed

SCALE/ ΚΛΙΜΑΚΑ

N

0 100 200 km

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
0	13/4/2022	ISSUED FOR REVIEW	GIE	HOD	SPP

Contract No: Αρ. Συμβολαίου: AF117275

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

CONSULTANT / ΣΥΜΒΟΥΛΟΣ: Asprofos engineering

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT
ΕΡΓΟ ΑΓΩΓΟΥ EASTMED

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

EASTMED GREEK SECTION - ENVIRONMENTAL & SOCIAL IMPACT ASSESMENT
EASTMED ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ - ΜΕΛΕΤΗ ΠΕΡΙΒΑΛΛΟΝΤΙΚΩΝ & ΚΟΙΝΩΝΙΚΩΝ ΕΠΙΠΤΩΣΕΩΝ

Map n°:	*PROJECT OVERVIEW MAP/ ΕΠΟΠΤΙΚΟΣ ΧΑΡΤΗΣ ΕΡΓΟΥ*	
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Scale/ Κλίμακα: 1:4.800.000	Project DWG No./ Αρ. Σχ. Έργου: **PERM-GREE-ESIA-DWG-0001 / Section 15.1.1**	Rev/ Αναθ 0
Size/ Μέγεθος: A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή:
		Sheet/ Φύλλο 0/5

Document Name: Project_Overview_Map_legend

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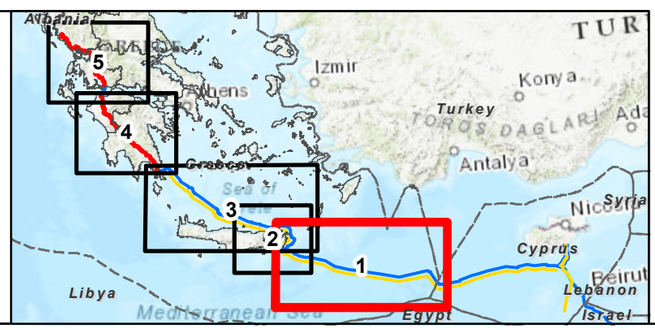
Key Plan of EastMed Pipeline Project - Greek Section /
Κλείδα του Έργου του Αγωγού EastMed - Ελληνικό Τμήμα

1

From the middle of the sea straits between Greece and Cyprus to Crete - Offshore Section, OSS2/OSS2N
Από το μέσον του θαλάσσιου στενού μεταξύ Ελλάδας και Κύπρου έως την Κρήτη - Υποθαλάσσιο Τμήμα

N

0 20 40 km



REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

LEGEND/ ΥΠΟΜΝΗΜΑ

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Administrative Boundaries/ Διοικητικά Όρια

- Settlement (population>900) / Οικισμός (πληθυσμός>900)
- Regional Unit Border / Όριο Περιφερειακής Ενότητας
- Region Border / Όριο Περιφέρειας
- Exclusive Economic Zone / Αποκλειστική Οικονομική Ζώνη Source: https://www.marineregions.org/
- Starting Point of Greek Offshore Section of EastMed / Σημείο Αρχής του Ελληνικού Υποθαλλάσιου τμήματος του EastMed

Protected Areas/ Προστατευόμενες Περιοχές

- National Park / Εθνικό Πάρκο
- Natura 2000

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
0	13/4/2022	ISSUED FOR REVIEW	GIE	HOD	SPP

Contract No: / Αρ. Συμβολαίου: AF117275

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

CONSULTANT / ΣΥΜΒΟΥΛΟΣ: Asprofos engineering

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT
ΕΡΓΟ ΑΓΩΓΟΥ EASTMED

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

EASTMED GREEK SECTION - ENVIRONMENTAL & SOCIAL IMPACT ASSESMENT

EASTMED ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ - ΜΕΛΕΤΗ ΠΕΡΙΒΑΛΛΟΝΤΙΚΩΝ & ΚΟΙΝΩΝΙΚΩΝ ΕΠΙΠΤΩΣΕΩΝ

Map n°:	*PROJECT OVERVIEW MAP/ ΕΠΟΠΤΙΚΟΣ ΧΑΡΤΗΣ ΕΡΓΟΥ*	
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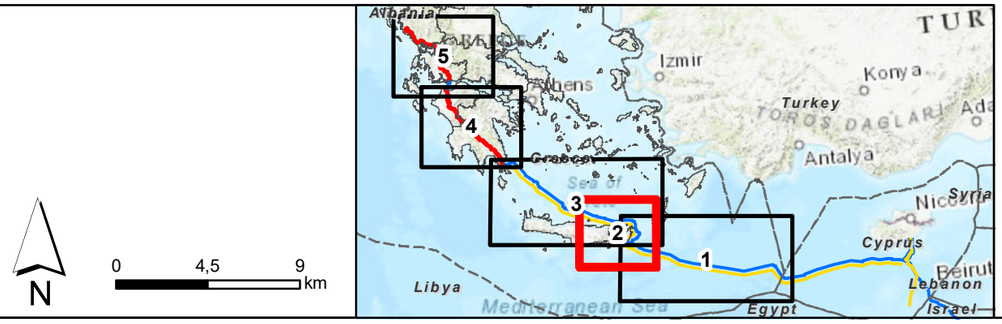
Scale/ Κλίμακα: 1:1.380.000	Project DWG No./ Αρ. Σχ. Έργου: **PERM-GREE-ESIA-DWG-0001 / Section 15.1.1**	Rev/ Αναθ 0
Size/ Μέγεθος: A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή:
		Sheet/ Φύλλο 1 / 5

Document Name: Project_Overview_Map_Sheet1

Key Plan of EastMed Pipeline Project - Greek Section /
Κλείδα του Έργου του Αγωγού EastMed - Ελληνικό Τμήμα

2

Crete - Onshore Section, LF2 & CS2/MS2-CS2/MS2N
Κρήτη - Χερσαίο Τμήμα



N

0 4,5 9 km

REFERENCE DOCUMENTS / DRAWINGS ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ	
DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

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COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

CONSULTANT / ΣΥΜΒΟΥΛΟΣ: Asprofos engineering

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

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ΕΡΓΟ ΑΓΩΓΟΥ EASTMED

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

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Size/ Μέγεθος: A3	Company's DWG No/Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/Αρ. Σχ. Μελετητή:
		Sheet/ Φύλλο 2 / 5

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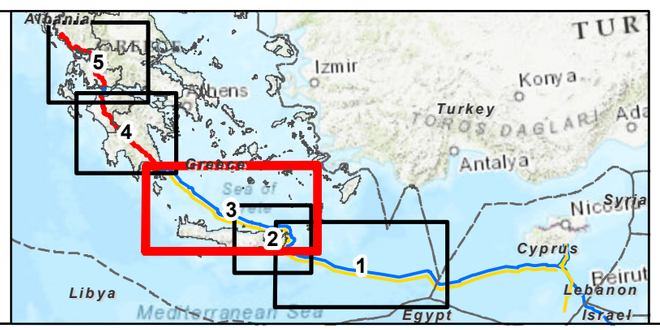
Key Plan of EastMed Pipeline Project - Greek Section / Κλείδα του Έργου του Αγωγού EastMed - Ελληνικό Τμήμα

3

From Crete to Peloponnese - Offshore Section, OSS3/OSS3N
Από Κρήτη προς Πελλοπόνησο- Υποθαλάσσιο Τμήμα

N

0 20 40 km



REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

LEGEND/ ΥΠΟΜΝΗΜΑ

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Contract No: / Αρ. Συμβολαίου: AF117275

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COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

CONSULTANT / ΣΥΜΒΟΥΛΟΣ: Asprofos engineering

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT
ΕΡΓΟ ΑΓΩΓΟΥ EASTMED

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

EASTMED GREEK SECTION - ENVIRONMENTAL & SOCIAL IMPACT ASSESMENT

EASTMED ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ - ΜΕΛΕΤΗ ΠΕΡΙΒΑΛΛΟΝΤΙΚΩΝ & ΚΟΙΝΩΝΙΚΩΝ ΕΠΙΠΤΩΣΕΩΝ

Map n°:	*PROJECT OVERVIEW MAP/ ΕΠΟΠΤΙΚΟΣ ΧΑΡΤΗΣ ΕΡΓΟΥ*	
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Scale/ Κλίμακα: 1:1.300.000	Project DWG No./ Αρ. Σχ. Έργου: **PERM-GREE-ESIA-DWG-0001 / Section 15.1.1**	Rev/ Αναθ 0
Size/ Μέγεθος: A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή:
		Sheet/ Φύλλο 3 / 5

Document Name: Project_Overview_Map_Sheet1

EXHELLENIC PETROLEUM S.A/Onshore EastMed ESIA - Documents\03. GIS\MAPS\ESIA\ESIA MAPS\Native File & Project_Overview_Map_Sheet1.mxd

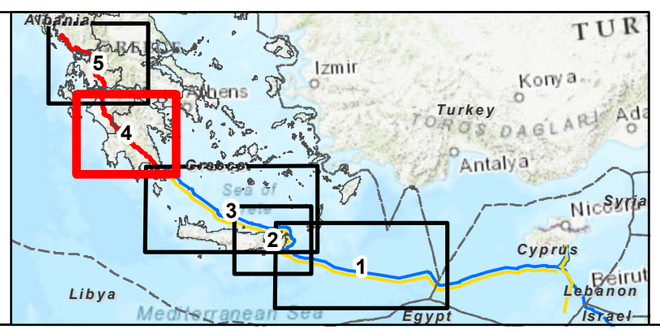
Key Plan of EastMed Pipeline Project - Greek Section /
Κλείδα του Έργου του Αγωγού EastMed - Ελληνικό Τμήμα

4

Peloponnese - Onshore Section, CCS1 & Megalopoli Branch
Πελοπόννησος - Χερσαίο Τμήμα

N

0 10 20 km



REFERENCE DOCUMENTS / DRAWINGS ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ	
DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components/ Στοιχεία του Έργου

- Proposed Onshore Routing/ Προτεινόμενη Χερσαία Όδευση
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- Region Border / Όριο Περιφέρειας
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  Source: https://www.marineregions.org/
- Starting Point of Greek Offshore Section of EastMed / Σημείο Αρχής του Ελληνικού Υποθαλλάσιου τμήματος του EastMed

Protected Areas/ Προστατευόμενες Περιοχές

- National Park / Εθνικό Πάρκο
- Natura 2000

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
0	13/4/2022	ISSUED FOR REVIEW	GIE	HOD	SPP

Contract No: / Αρ. Συμβολαίου: AF117275

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

CONSULTANT / ΣΥΜΒΟΥΛΟΣ: Asprofos engineering

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT
ΕΡΓΟ ΑΓΩΓΟΥ EASTMED

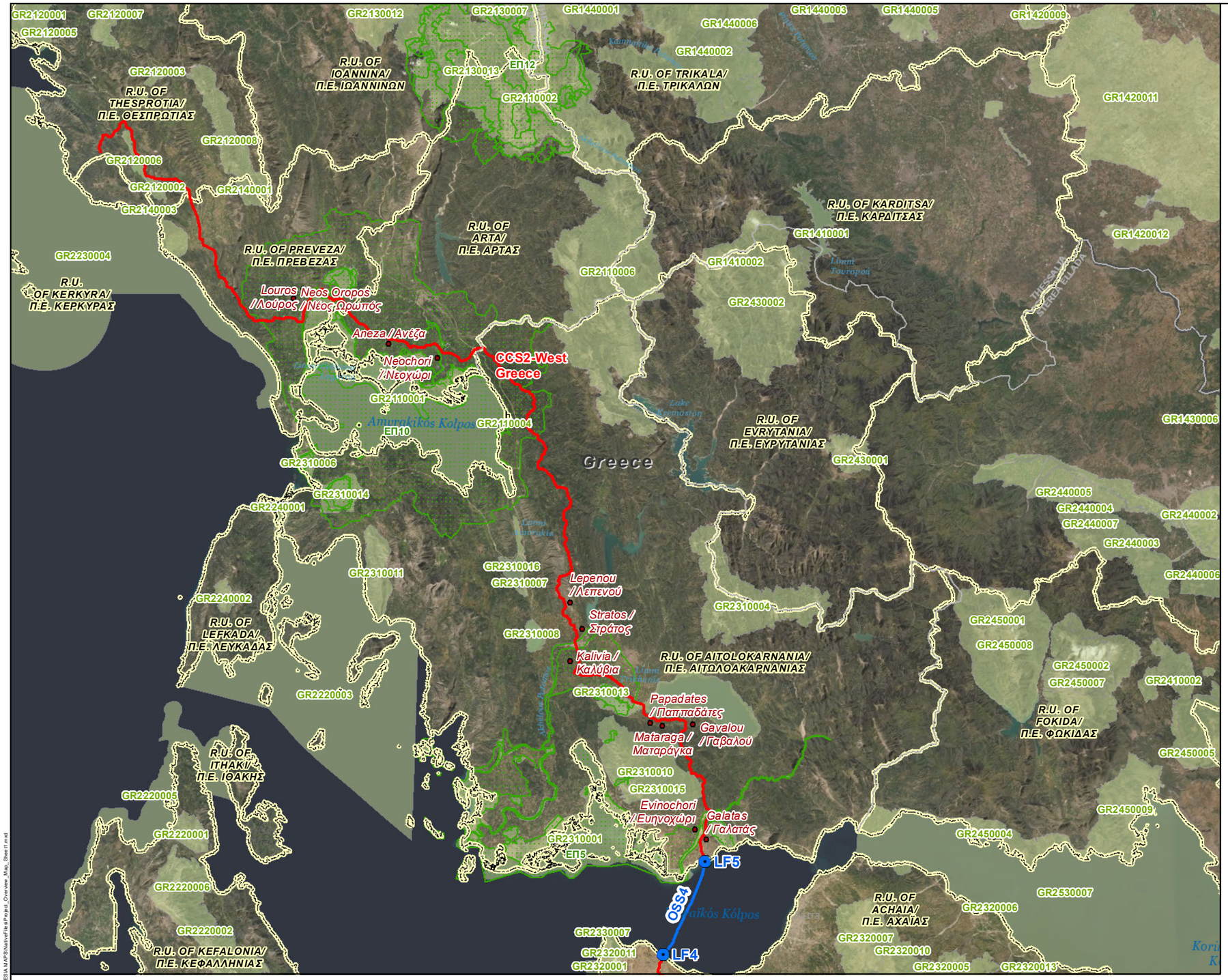
DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

EASTMED GREEK SECTION - ENVIRONMENTAL & SOCIAL IMPACT ASSESMENT

EASTMED ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ - ΜΕΛΕΤΗ ΠΕΡΙΒΑΛΛΟΝΤΙΚΩΝ & ΚΟΙΝΩΝΙΚΩΝ ΕΠΙΠΤΩΣΕΩΝ

Map n°:	*PROJECT OVERVIEW MAP/ ΕΠΟΠΤΙΚΟΣ ΧΑΡΤΗΣ ΕΡΓΟΥ*	
15.1.1		
Scale/ Κλίμακα: 1:800.000	Project DWG No./ Αρ. Σχ. Έργου: **PERM-GREE-ESIA-DWG-0001 / Section 15.1.1**	Rev/ Αναθ: 0
Size/ Μέγεθος: A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή:
		Sheet/ Φύλλο: 4 / 5

Document Name: Project_Overview_Map_Sheet1



Key Plan of EastMed Pipeline Project - Greek Section /
Κλείδα του Έργου του Αγωγού EastMed - Ελληνικό Τμήμα

5

West Greece & Ipirus - Onshore Section & Patraikos Gulf - Offshore Section, CCS2 & OSS4
Δυτική Ελλάδα & Ήπειρος - Χερσαίο Τμήμα & Πατραϊκός Κόλπος - Υποθαλάσσιο Τμήμα

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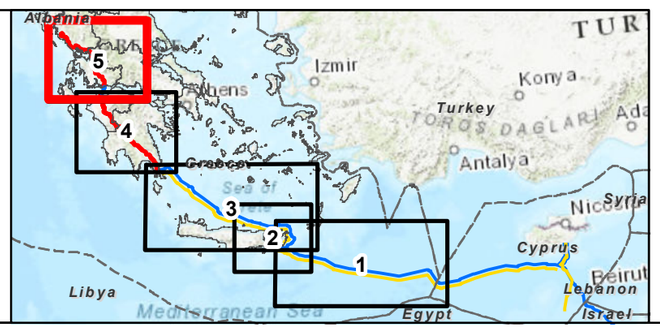

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENTTITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

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		Sheet/ Φύλλο: 5 / 5

Document Name: Project_Overview_Map_Sheet1

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