IGI Poseidon

PROJECT:

EastMed Pipeline Project

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Table of Contents

List of Figures

List of Tables

Abbreviations

Abbreviation	Description
AA	Appropriate Assessment
C/S	Compressor Station
C-M/S	Compressor and fiscal Metering Station
Contractor	The contractor to which the construction shall be awarded. Currently, it is not defined the manner of awarding or the number of engaged contractors.
EC	European Commission
ECP	EastMed Compression Platform
EIA	Environmental Impact Assessment
EKPAA	National Center for Environment and Sustainable Development
ESIA	Environmental and Social Impact Assessment
ETA	Environmental Terms Approval
EU	European Union
FSA	Field Survey Area
ha	Hectares
HDD	Horizontal Directional Drilling
Investigated project	The EastMed consisting of an Onshore and an Offshore section and associated onshore facilities
IP	Interconnection Point
ITA	Inline Tee Assembly
IUCN	International Union for Conservation of Nature
JMD	Joint Ministerial Decision
kHz	kilohertz
km	Kilometers
LFi	Landfall

Abbreviation	Description
m	meters
MD	Ministerial Decision
MEE	Ministry of Environment & Energy
NCC	Nature Conservation Consultants Ltd.
O&M	Dispatching and Operation & Maintenance Building
OFYPEKA	Organization of Natural Environment and Climate Change
Onshore Stations	• Compressor and Metering Stations at Crete, • Compressor Station at Achaia, • Metering/ Pressure Regulating and Heating Station at Megalopoli.
PGM	Permanent Ground Markers
PIER	Preliminary Environmental Identification Requirements
PPS	Pipeline Protection Strip and Safety Zone (PPS)
Project	Construction and Operation of the EastMed Project
Project Owner	IGI Poseidon: a Company equally owned (50-50%) by DEPA International Projects and Edison, incorporated under Greek law
RCM	Reliability Centered Maintenance
SAC	Special Area of Conservation
SDF	Standard Data Form
SPA	Special Protection Area
SPT	System Pressure Test
SSCO	Site Specific Concervation Objective
WS	Working Strip

1 INTRODUCTION

1.1 Legal framework for the conduction of an Appropriate Assessment for the SAC "Elos Kalodiki", GR2120002

According to Greek national legislation Law 4014/2011 an Environmental Impact Assessment is required for technical projects belonging to category A1. In case they interfere with Natura 2000 sites a specialized Appropriate Assessment (AA) has to be conducted concerning the entire Natura 2000 site, which becomes an indispensable part of the projects' ESIA.

The EastMed Pipeline Project has offshore and onshore sections and is directly connecting East Mediterranean resources to mainland Greece via Cyprus and Crete. The project is being developed by IGI Poseidon (Project Owner), a company based in Athens and equally owned (50-50%) by the Greek company DEPA International Projects S.A. and the Italian company Edison S.p.A.

The ESIA has been prepared on behalf of the Project Owner by the company ERM Italia SpA and the engineering company ASPROFOS Engineering S.A. (member of the HELPE Group of Companies) and in collaboration with renowned, experienced and specialised consultants, in accordance with applicable environmental legislation. The AAs of the Project have been carried out by Nature Conservation Consultants Ltd (NCC), subcontractor of ASPROFOS Engineering S.A.

The present AA concerns the Special Area of Conservation "Elos Kalodiki", GR2120002, focusing mainly on the portion directly crossed by the Onshore section of the pipeline (Figure 2-1).

In the framework of the present AA, NCC established an official communication with the Management Body of Amvrakikos Gulf - Lefkada, the responsible Body for the management and protection of the site and requested the most up to date information on habitats, flora and fauna monitoring in the site available from its biodiversity data-bank.

The pipeline crosses at the same location the SPA "Eli Kalodiki, Margariti, Karteri kai Limni Prontani", GR2120006, for which a separate AA has been conducted.

Category of Appropriate Assessment Study for the site, based on the Annexes of Ministerial Decision 170225/2014

The Greek MD 170225/2014 sets two possible categories of AA described in its Annexes 3.2.1. and Annex 3.2.2. In particular:

- An AA falls under the requirements of Annex 3.2.1, when existing biodiversity data for the Natura 2000 site, where the project or portion of the project is proposed to be implemented, are not

recent and/or sufficient, and a detailed biodiversity field survey lasting at least 20 days (for projects of category A1) is required for the collection of biodiversity information.

- An AA falls under the requirements of Annex 3.2.2, when existing biodiversity data for the Natura 2000 site, where the project or portion of the project is proposed to be implemented, are recent, reliable and sufficient biodiversity data are available from official/public sources, such as the Natura 2000 sites national biodiversity monitoring network and no field survey is required.

The present AA for the Special Area of Conservation (SAC) "Elos Kalodiki", GR2120002, **falls under the category set in Annex 3.2.2**, since existing data for the sites are sufficiently detailed to fulfil its requirements.

The study team carried out field surveys in the area where the pipeline will cross the Natura 2000 site. That was done in order to have an in-situ insight view of the habitats of the SAC to be crossed by the pipeline, and directly assess their present status and sensitivity. Although it was not expected to provide more detailed biodiversity data for the site, is was considered as necessary in order to create a recent knowledge of the status before the initiation of the project, and outline, if existing, possible improvements in current planning to minimize impacts on the local biodiversity. Field surveys for avifauna took place during May and December 2021 for a total of 4 days. Field surveys results are presented alongside desktop data and clear reference is given for the data source throughout the AA.

1.2 Assumptions, limitations and exclusions

For the preparation of the AA a number of assumptions have been made:

- The assessment was based on Project design data available to date. Reliable assumptions on the following key elements have been made, on the base of existing bibliography on pipeline construction: (a) total duration, (b) specifications concerning the project within the Study Area.
- The AA is in alignment with the ESIA.
- The present AA focused solely on the normal operative conditions of the project. Consequently, emergency and non-routine events that could potentially affect biodiversity, were not taken into consideration in this AA and will be assessed in the ESIA.
- The decommissioning phase of the project was not taken into account in the present AA, since it is expected to take place in 3-5 decades from today, when all biodiversity parameters will have to be re-evaluated. Therefore, a new AA will be required for the decommissioning phase after the project end of life.

1.3 Analysis of Institutional / Legal Framework

1.3.1 Plans and projects within Natura 2000 sites

The Natura 2000 network is an EU network of protected areas, whose main objective is the protection of vulnerable and endangered species of animals, plants and habitat types in the EU, and it constitutes the widest biodiversity conservation network worldwide. Based on the Birds and Habitats Directives (2009/147/EC and 92/43/EEC, respectively), every member of the Union declares Special Protection Areas (SPA) and Special Areas of Conservation (SAC), in order to protect the endangered biodiversity of Europe.

The connection between human activities and the protection framework of Natura 2000 sites is clarified in Article 6 of the Habitats Directive. More specifically, for every project or plan that is expected to significantly affect an area, it is noted that:

"*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public*".

"*If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted*".

The two Directives have been transposed into the Greek legislation with the following decrees: JMD 37338/1807/2010, JMD 8353/276/2012, JMD 33318/3028/1998, MD 14849/853/2008.

Concerning Article 6 of Directive 92/43/EEC, the L. 4014/2011 and the MD 170225/2014 are defining in detail the implementation of respective provisions. The national legislation includes also the Law 3937/11 "Conservation of biodiversity and other provisions".

Based on the above legal framework, the following are noted:

- The consequences of every project must be examined separately and in accordance with other existing projects or plans in the site,

- The criteria must be based on preserving the integrity of the site, along with keeping in mind the conservation objectives,
- In the case the construction of the project is necessary for overriding public interest, all necessary compensatory measures will be taken.

1.3.2 Natura 2000 network in Greece

The national Natura 2000 network has been updated and extended with the JMD 50743/2017, while the Management Bodies for all the Natura 2000 sites are set by the Laws 4519/2018 and 4685/2020. According to Law 4685/2020 the Organization of Natural Environment and Climate Change (OFYPEKA) was established and operates as the successor of the National Center for Environment and Sustainable Development (EKPAA). Among other things, the purpose of OFYPEKA is the implementation of the policy set by the Ministry of Environment and Energy for the management of Natura 2000 protected areas in Greece.

1.3.3 Environmental authorization of activities and projects

According to Law 4014/2011, the environmental authorisation procedure of project and activities that may affect Natura 2000 sites, the preparation of an Appropriate Assessment is foreseen, constituting an integral part of the Environmental and Social Impact Assessment.

According to the Greek MD 1958/2012 and its subsequent amendments (Greek Decrees MD 20741/2012, MD 65150/1780, MD 173829/2014 and MD 37674/2016) the Projects are classified in two categories: Category A, when they potentially may cause very significant/significant environmental impacts, or in Category B, when they may cause only locally or of no significance environmental impacts.

The content of the Appropriate Assessment was specified by the MD 170225/2014, which includes

- detailed record of natural environment data with emphasis to the protected elements of the Natura 2000 sites and those likely to be affected by the project or activity,
- appropriate assessment and impact assessment,
- mitigation measures for the potential impacts,
- compensatory measures (if needed)
- monitoring program,
- conclusions summary,
- bibliography sources and

- study team.

1.3.4 Classification of the project based on National legislation

The project classification according to National legislation (as amended and in force) is provided in Table 1-1.

Table 1-1 Classification of EastMed according to MD 170225/2014

Legislation	Category	Project Categorization
MD 1958/2011	Group	11 - Transport of energy, fuels and chemical compounds
	No.	1 –Pipelines of national importance or included in European or international networks and associated/ supporting facilities
	Category	A1 – Project and activities that may have very significant impacts on the environment
	Comment	-
STAKOD 08/ NACE Rev.2*	Section	D – Electricity, Gas, Steam and Air Conditioning Supply
	Division	35 – Electricity, gas, steam and air conditioning supply
	Group	35.2 – Manufacture of gas; distribution of gaseous fuels through mains
	Class	35.23
	Description	Trade of gas through mains
JMD 3137/191/Φ.15/2012*	Group	n/a
	Sub-group	n/a
	No.	n/a
	Disturbance class	n/a
* The classification presents the activity most relevant to the Project. The applicable provisions concern also the compressor stations.*It is noted that the compressor stations, having a total capacity >50 MW, fall into the provisions of JMD 36060/1155/E.103 regarding "Establishing a framework of rules, measures and procedures for the integrated prevention and control of environmental pollution from industrial activities, in compliance with the provisions of Directive 2010/75 / EU "On Industrial Emissions (Integrated Pollution Prevention and Control)" of the European Parliament and of the Council of 24 November 2010"*		

Prepared by: (ASPROFOS, 2021)

2 STUDY AREA – FIELD SURVEY AREA

According to the AA specifications (MD 170225/2014) the whole Natura 2000 site, crossed or affected by the project should be defined as Study Area; hence the Study Area for the present AA is the SAC "Elos Kalodiki", GR2120002. As shown in Figure 2-1 the routing of the Onshore pipeline crosses the routing of the Onshore pipeline crosses for a length of 0.14 km a small part of the Natura 2000 site at Kalodiki fen.

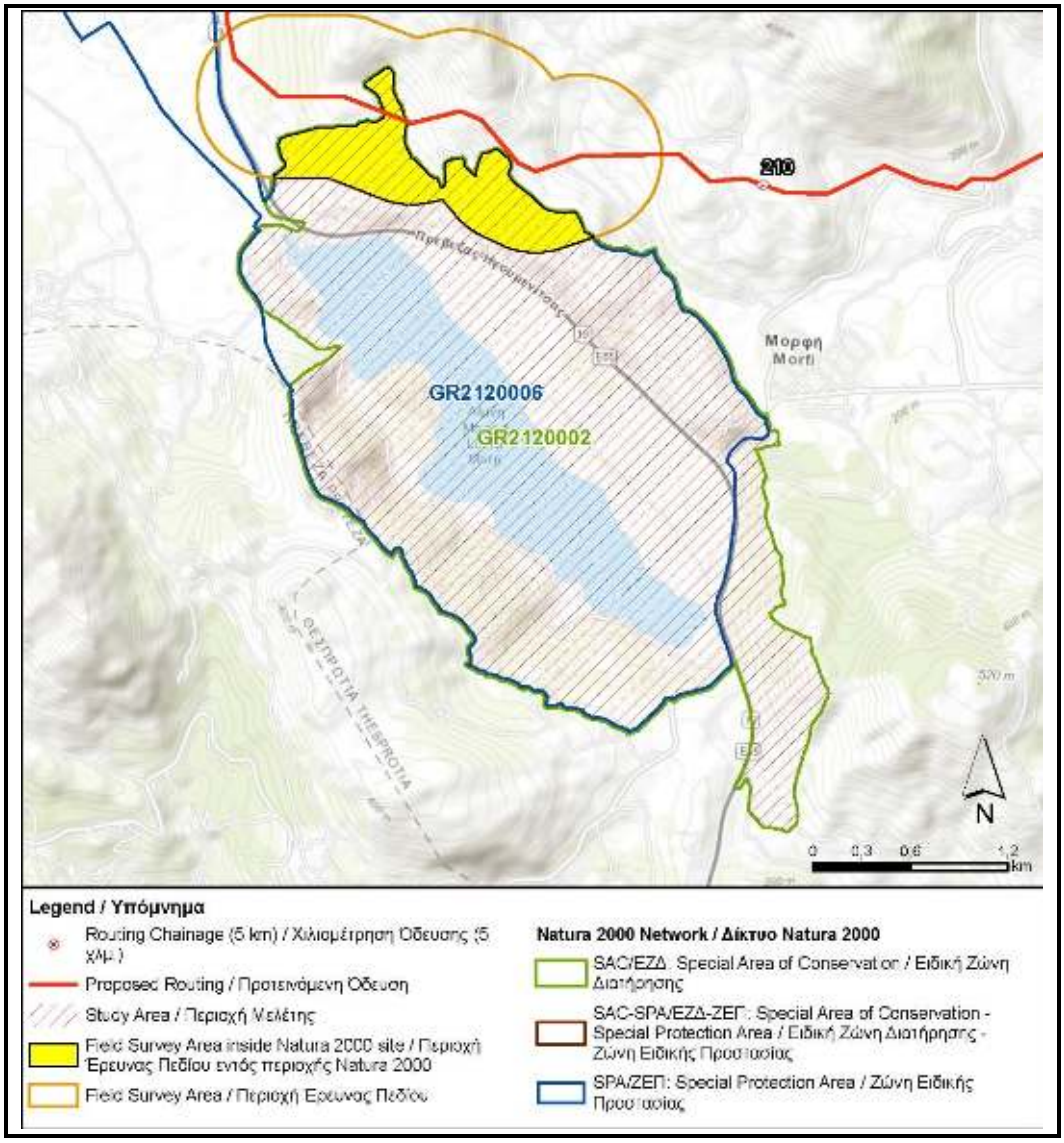
According to the National regulatory specifications (MD 170225/2014), the Field Survey Area (FSA) for linear projects (such as the pipeline) is defined as a buffer zone of at least 500m on either side of the linear infrastructure falling within the Study Area. Consequently, the FSA for the present AA is an area of the FSA for the present AA of 0.14km in length within the Natura 2000 site, strictly considering the intersection between the pipeline and the site (at KP: 212,43 - 212,57 and IP: 2708-2709). However, given that:

- the routing of the pipeline extends outside the Natura 2000 site and at its immediate vicinity; and
- the construction of the project outside the Natura 2000 site may affect the defined buffer zone within the site;

a larger FSA area was considered, that includes also an area outside the Natura 2000 site, of which 67.4ha overlaps with the Natura 2000 site (8.2% of the site's area).

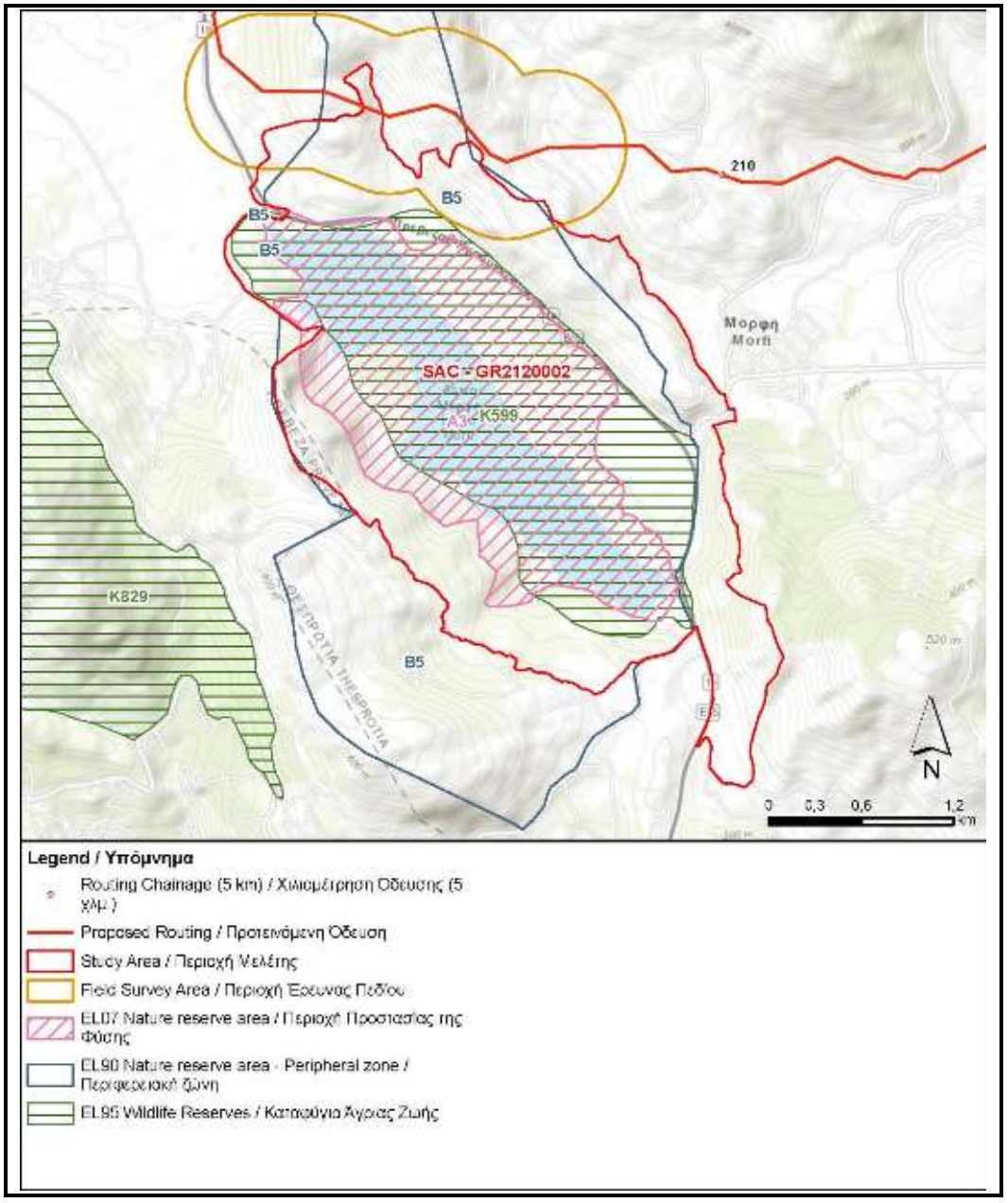
It should also be mentioned that the pipeline crosses other protected areas, which overlap with the Study Area as presented in Section 3.1.1, namely (a) the SPA GR2120006 at IP 2708-2709 and (b) the "Protected area of the rivers Acherontas, Kalamas estuaries and valleys, of Kalodiki fen, as well as their terrestrial, aquatic and marine areas" and one of its zones, namely Zone B5, "Tmima Elous Kalodikiou", at IP 2703-2709. Furthermore, it crosses in close proximity, at a distance about 500m from the Wildlife Reserve "Valtos Kalodikiou" (K599) and the Zone A3 of the protected area mentioned above.

Maps of the Study Area and the Field Survey Area are provided in ANNEX F, in Maps 2 and 4 respectively.



Prepared by: (NCC, 2021)

Figure 2-1 Study Area (red hatch) and Field Survey Area (orange). Pipeline routing in red



Prepared by: (NCC, 2021)

Figure 2-2 Protected areas of the broader area, crossed by the pipeline. Pipeline routing in red

3 CURRENT STATUS OF NATURAL ENVIRONMENT

According to the specifications of MD 170225/ 2014, the characterization of the current status of the natural environment should include the description, recording and analysis of elements of the natural environment of the Study Area, as well as its conservation status.

The present section focuses on the whole SAC ecosystem providing data on existing baseline conditions of the Natura 2000 site. Information on the FSA is provided based on fieldwork collected data.

3.1 Description, Recording and Analysis of the Study Area Natural Environment

The analysis of the current status of the natural environment in the Study Area has been based on data derived from the literature. In particular, for the purpose of the present document, a literature review of published references and a desktop review of data available from existing databases were carried out for the Study Area.

The main bibliographic sources of information used include:

- The Standard Data Form of SAC Area GR2120002 (2020).
- Results of the project “Monitoring of species and habitat types” (OIKOM, 2015)
- The Special Environmental Study of the delta and gorge of Kalama and Kalodiki wetland (Ministry of Environment, 2000)
- The most recent reports on the implementation of Directives 92/43/EEC and 2009/147/EC, including habitat mapping.

In addition, the results of the following studies were considered:

- Action Plans for species at National and European level.
- The most recent Red Data Books (National, European, International).

A total of 4 fieldwork days were conducted for the AA during May and December 2021.

3.1.1 Short description of the Study Area

The Study Area is the Special Area of Conservation "Elos Kalodiki", GR2120002, which is located within the administrative limits of the Region of Epirus covering an area of 823.58 hectares. The area is managed by the Management Body of Kalamas – Acherontas - Kerkyra. The Study Area overlaps with

the Special Protection Area GR2120006 “Eli Kalodiki, Margariti, Karteri kai Limni Prontani” and includes the Wildlife Reserve "Valtos Kalodikiou”. Furthermore, it is part of the “Protected area of the rivers Acherontas, Kalamas estuaries and valleys, of Kalodiki fen, as well as their terrestrial, aquatic and marine areas” and overlaps with its Zones A3 and B5.

The Kalodiki fen is an area of great importance in comparison with the other wetlands of W Greece, and constitutes a unique peatland formation. A forested area is located on the islet of the Kalodiki marsh, while the slopes around the marsh are covered by maquis shrubs.

The *Ranunculus trichophyllus* plant association covers extensive areas which maintain water early in spring. The climax plant association of *Nymphaetum albae* is characterized by the dominance of *Nymphaea alba* and is accompanied by other less frequent plant species. Both of these associations belong to the class *Potamogenetea pectinati*. The *Phragmitetum australis*, *Caricetum pseudocyperi, Cladietum marisci*, and *Scirpetum lacustris* associations belong to the class *Phragmitetea* which covers the majority of this wetland vegetation cover. The zone surrounding the wetland is also quite characteristic: *Vitex agnus-castus* forms dense thickets along the shore-line of the lake which are interrupted by wet meadows, dominated by *Agrostis stolonifera*. *Quercus coccifera* and *Phillyrea latifolia* scrubs dominate the hills around the lake, while relicts of *Salix alba* stands are still found as scattered islands in the landscape. The halophytic plant associations appear to be quite variable. In these associations plants of great scientific interest and aesthetic value have been observed.

The wetland of Kalodiki is an old, well-conserved lake with a noteworthy fauna. It hosts species such as *Lutra lutra*, several reptile species, as well as the endemic fish species *Pelasgus thesproticus*.

The map of the Study Area is provided in ANNEX F, in Map 2.

3.1.2 Detailed description of the Study Area

3.1.2.1 Habitat types and Flora

According to the official habitat mapping, the Natura 2000 site hosts 4 habitat types of Annex I of Directive 92/43/EEC, one of which is a priority habitat (7210*), as well as two habitat types of Greek interest. It is characterized by the presence of Greek kermes oak, areas with phrygana and agricultural land, while the wetland is a calcareous fen. Table 3-1 provides the spatial extension of each habitat identified in the Study Area, as well as their percentage with respect to the whole area of the site, as provided by the habitat map of the site (Ministry of Environment and Energy 2018).

No important flora species are included in the SDF of the site.

Table 3-1 Habitat types found at the site

Code	Description of habitat type	Area (ha)	Percentage (%)	Classification
Habitat types included in the SDF				
5420	*Sarcopoterium spinosum* phryganas	152.37	18.50%	HD: Annex I
7210*	Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	147.12	17.86%	HD: Annex I
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	34.15	4.15%	HD: Annex I
92A0	*Salix alba* and *Populus alba* galleries	7.18	0.87%	HD: Annex I
Other habitat types				
934A	Greek kermes oak forests	270.33	32.82%	Of national importance
1057	Permanently irrigated land - mixed	123.78	15.03%	
72A0	Reed beds	47.53	5.77%	Of national importance
1069	Olive groves – mixed	16.38	1.99%	
1056	Permanently irrigated land	7.38	0.90%	
1024	Provincial roads	5.94	0.72%	
1067	Fruit trees and berry plantations – mixed	3.84	0.47%	
1068	Olive groves – pure	3.47	0.42%	
1032	Construction sites	3.13	0.38%	
1021	Concentration of agricultural/processing units	0.57	0.07%	
1062	Abandoned cultivation	0.40	0.05%	

Note: HD: Habitat Directive (source: SDF and official mapping)

Prepared by: NCC, 2021.

The FSA is characterized mainly by the presence of phrygana crossing the habitat 5420, which is included in Annex I of the Habitats Directive (Table 3-2), as well as of agricultural land. At the part of the FSA outside the Study Area phrygana dominate. The WS and the PPS are crossing the habitat 5420 and the affected area is expected to be 0.39ha (0.17%) and 0.11ha (0.05%) respectively.

The main habitat types present within the FSA are presented briefly below.

Greek kermes oak forests (code 934A)

The Greek habitat type 934A includes tree formations dominated by kermes oak (*Quercus coccifera)*.

Sarcopoterium spinosum phryganas (code 5420)

Phrygana are dominated by low, thorny formations from hemispherical shrubs of the coastal thermo-Mediterranean zone, more widespread and varied than the formations of the Western Mediterranean.

Table 3-2 Area (in ha) and Percentage (%) of the habitat types per Area of Interest

Code	Habitat type	Study Area	FSA	FSA%	WS	WS%	PPS	PPS%
Habitat types included in the SDF								
5420[1]	*Sarcopoterium spinosum* phryganas	232.14	55.40	23.86%	0.39	0.17%	0.11	0.05%
Other habitat types								
934A[2]	Greek kermes oak forests	253.30	6.03	2.38%				
1057	Permanently irrigated land - mixed	123.78	5.94	4.80%				

Notes: FSA: Field Survey Area, WS: the Working Strip as planned by the project, PPS: the Pipeline Protection Strip (4 m on each side of the pipeline axis). Percentages refer to cover compared to the total area of the habitat types in the Study Area. [1]: habitats listed in Annex I of Directive 92/43/EEC, [2]: habitats of national importance

Prepared by: (NCC, 2021)

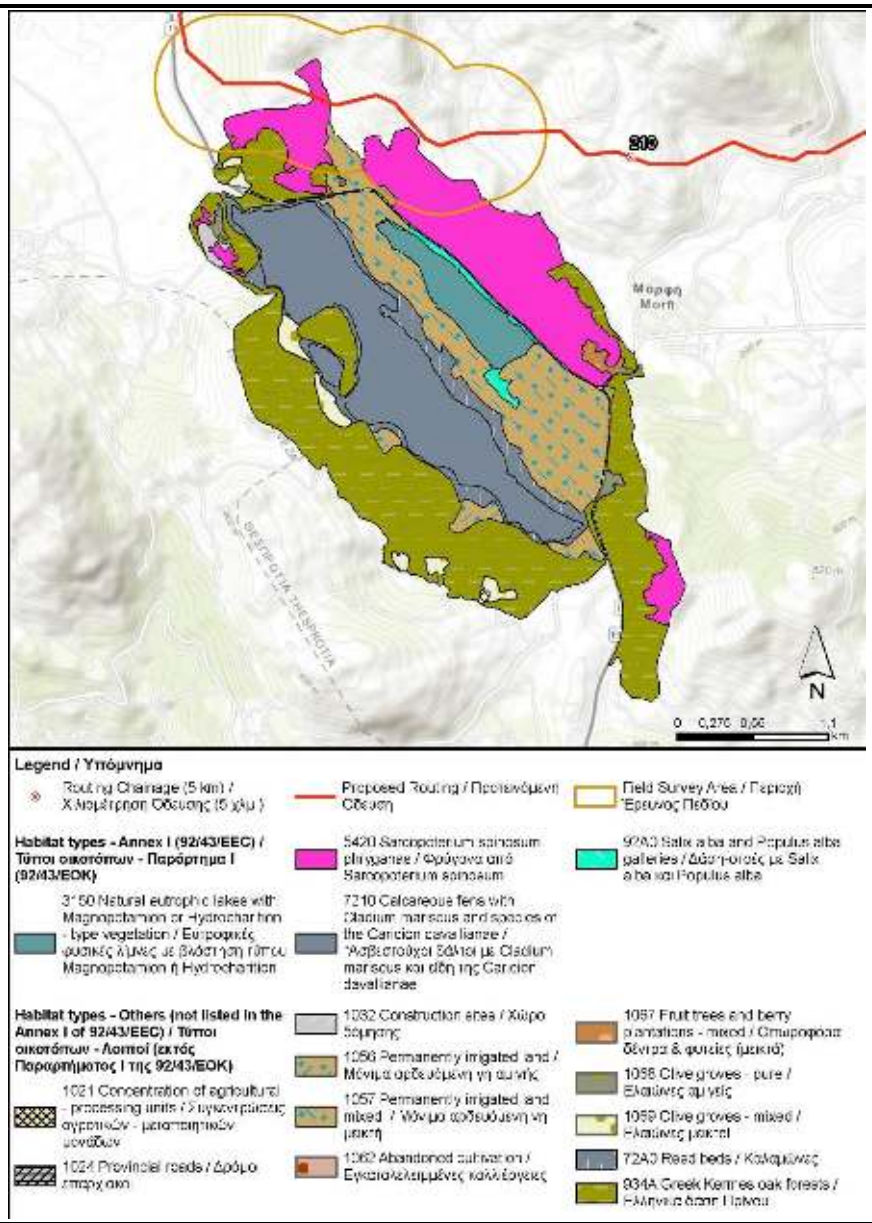
Reference: (NCC, 2021)

Figure 3-1 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (7210*)

Reference: (NCC, 2021)

Figure 3-2 *Sarcopoterium spinosum* phryganas (5420)

The mapping of habitat types for the Study Area and the FSA is provided in ANNEX F.



Prepared by: (NCC, 2021)

Figure 3-3 Habitat type coverage at the Study Area

3.1.2.2 Fauna

The wetland of Kalodiki is an old, well-conserved lake with a noteworthy fauna. The species for which the site has been designated are 9, namely one mammal (*Lutra lutra*), 6 reptile (*Elaphe quatuorlineata, Zamenis situla, Emys orbicularis, Mauremys rivulata, Testudo hermanni, Testudo*

marginata), 1 fish (*Pelasgus thesproticus*) and one amphibian species (*Triturus macedonicus*). The species are residents in the site. Four species are common at the site, while the species *Zamenis situla, Lutra lutra, Mauremys rivulata, Pelasgus thesproticus* and *Triturus macedonicus*are rare. Furthermore, ANNEX A of the present AA presents the sensitive species and of special ecological value of the SAC included in the SDF of the site, as well as their presence in the site, population and conservation assessment.

Of the species included in the SDF, all are protected under the Habitats Directive and are included in Annex II, while 8 of them are also included in Annex IV. In total 5 species have been characterized as Near Threatened worldwide (IUCN), while at national level 4 are characterized as Endangered, Near Threatened or Vulnerable, while one is endemic. ANNEX B of the present AA provides information concerning the threat status of the species included in the SDF of the Study Area based on the most up to data bibliographic sources.

ANNEX A of the present AA provides also information concerning the "other species" of interest included in the SDF.

Concerning the FSA, the information provided by OIKOM (2015) was utilized, as it was assessed to be sufficient for this study. For all species included in the SDF, except of fish species and *Lutra lutra*, distribution range data are available in 10X10km grid. The species of the SDF that are expected within the FSA, based on their ecological requirements are *Zamenis situla, Testudo marginata, Elaphe quatuorlineata* and *Testudo hermanni.*

According to Konstantinidis et al. (2018), several fish species are present in Kalodiki wetland, among which also the *Pelasgus thesproticus*. However, the FSA does not cross the wetland area of the site. The same applies for *Lutra lutra*, although present in the Study Area, there is no suitable habitat for the species in the FSA.

In Table 3-3 the species presence in the FSA as provided by the study of OIKOM (2015) is presented.

Other species of interest with distribution within the FSA, according to OIKOM (2015) and based on their ecological requirements are several reptile species of Annex II and IV of the Habitats Directive, as well as *Canis lupus*.

Table 3-3 Species of interest expected in the FSA (OIKOM, 2015)

IP	Species of interest
2703-2710	*Zamenis situla, Testudo marginata, Elaphe quatuorlineata, Testudo hermanni, Ablepharus kitaibelli, Algyroides nigropunctatus, Coluber najadum, Coluber caspius, Hierophis gemonensis, Lacerta trilineata, Lacerta viridis, Ophisaurus apodus, Podarcis erhardii, Podarcis taurica* *Canis lupus*

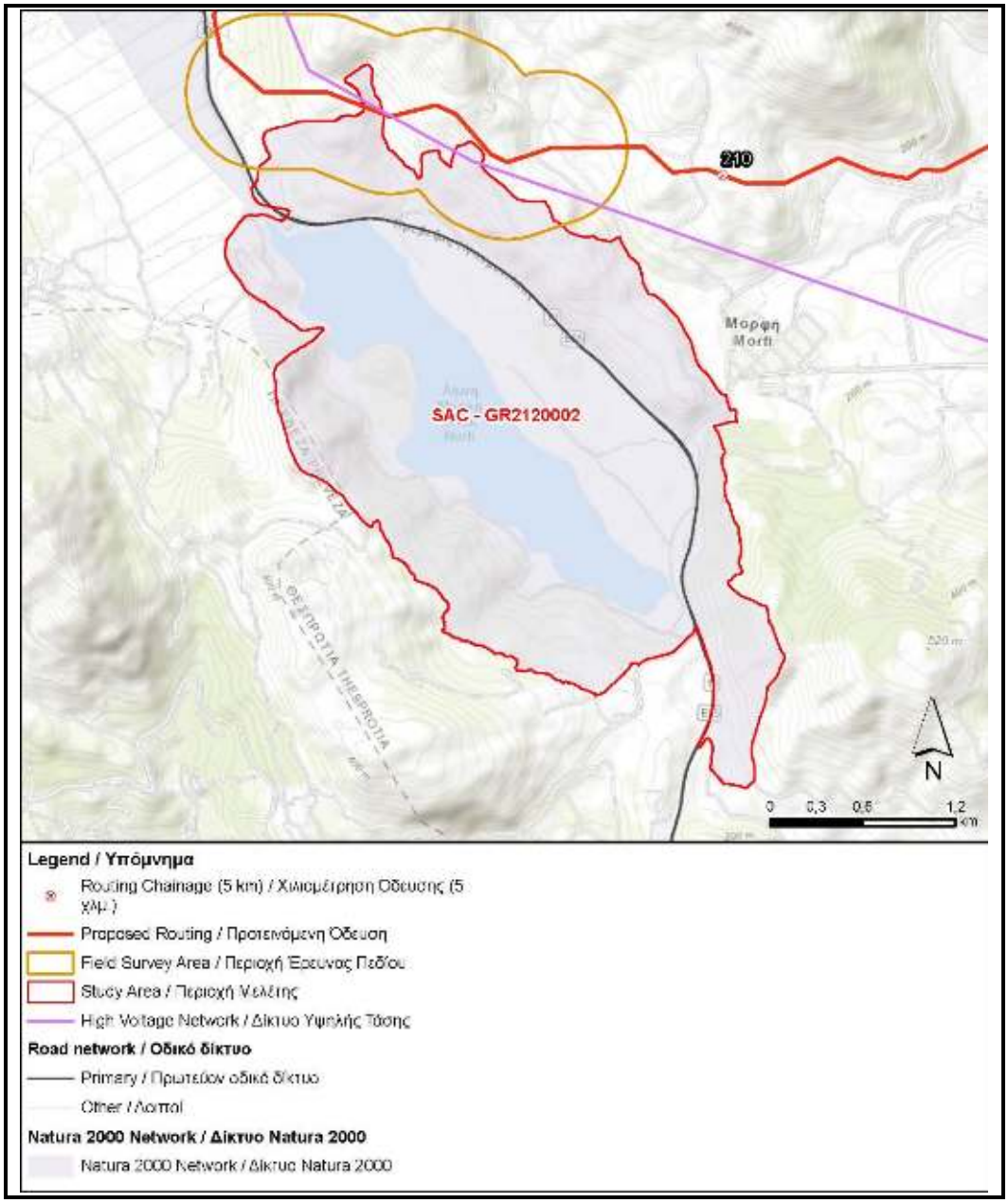
Prepared by: (NCC, 2021)

3.2 Other projects – potential cumulative impacts

The following broad categories of types of third-party projects that, if occurring, would be likely to have direct or indirect synergy with EastMed Pipeline Project include (a) other linear projects, namely pipelines, roads, power lines, (b) other energy projects and (c) other major projects.

The existence or planning of third-party projects that may act cumulatively with the current project was investigated within the Natura 2000 site.

To this context, the site is crossed by the European Route (E55), the local dirt road network, as well as a high voltage power line.



Prepared by: (NCC, 2021)

Figure 3-4 Main other project at the Study Area

3.3 Status of natural environment

3.3.1 Conservation objectives of habitats/species

The Conservation objectives have been specified through the project "Assessment of the conservation status of species and habitat types in Greece". The overall conservation objectives proposed for each habitat type of Annex I of Directive 92/43/EEC and for each species of Annex II of Directive 92/43/EEC are directly relevant to the assessment of the Degree of Conservation at the Natura 2000 site as impressed in the Natura 2000 descriptive database of the country. Therefore:

- For each Habitat type listed in Annex I of Directive 92/43/EEC (with a significant presence in the Natura 2000 site) for which the Degree of Conservation has been assessed as A, the Overall Conservation Objective is proposed to be the maintenance of the Degree of Conservation A,
- Similarly for each species of fauna and flora of Annex II of Directive 92/43/EEC for which the Degree of Conservation has been assessed as A, the Overall Conservation Objective is proposed to be the assurance of Degree of Conservation A.
- For each Habitat type of Annex I of Directive 92/43/EEC (with a significant presence in the Natura 2000 site) for which the Degree of Conservation has been evaluated as B, the Overall Conservation Objective is proposed to be the maintenance of the Degree of Conservation B in the short term, in 2 six-year periods, and the achievement of Degree of Conservation A in the long term, ie 4 six-year periods (in line with EU standards for "long-term"/"short-term" concepts of the national reference reports of Article 17 of the Habitats Directive).
- Similarly, for each species of fauna and flora of Annex II of Directive 92/43/EEC for which the Degree of Conservation has been evaluated as B, the Overall Conservation Objective is proposed to be the maintenance of Degree of Conservation B in the short term and the achievement of Degree of Conservation A in the long term.
- For each habitat type of Annex I of Directive 92/43/EEC (with a significant presence in the Natura 2000 site) for which the Degree of Conservation has been assessed as C, the Overall Conservation Objective is proposed to be the achievement of Conservation Status B in the short term.
- Similarly, for each species of fauna and flora in Annex II of Directive 92/43/EEC for which the Degree of Conservation has been assessed as C, the Overall Conservation Objective is proposed to be the achievement of Degree of Conservation B in the short term.

For the Habitat types of Annex I of Directive 92/43/EEC, for species listed in Annex II of Directive 92/43/EEC for which the Degree of Conservation has been identified as unknown, a prerequisite for setting conservation objectives is to collect more data through research and monitoring programs.

The specific Conservation Objectives are provided in ANNEX C.

3.3.2 Conservation status of habitats, flora and fauna species

According to the SDF of the SAC, the area hosts high percentage (15-100%) of the total national area covered by the habitat type 7210. The representativity of the natural habitats in the site is non-significant to excellent, with the representativity of the habitat types 5420 (the only of interest in the FSA) being non-significant and of 92A0 being significant. Their conservation status varies from excellent to average or reduced, with 3150 beeing excellent. The overall value of the site for the conservation of the habitats is indicated as excellent for the habitat type 7210. Information on overall value is not available for 5420.

Concerning the species included in the SDF, the SAC hosts a not significant percentage (2-15%) of the total national population of any species. The conservation status of all species is good. The only isolated species are *Lutra lutra* and *Pelasgus thesproticus.* The overall value of the site for the conservation of the species is assessed as significant, except for *Lutra lutra* which is good.

Detailed information is provided in ANNEX A.

3.3.3 Threats/Pressures

According to the SDF of the SAC, the majority of threats/pressures the site faces are of medium to high magnitude. Threats of high magnitude both within and outside the site include grazing, cultivation, fire and fire suppression, erosion, as well as hunting, trapping, poisoning and poaching. Of high magnitude is also the antagonism with domestic animals.

Of medium magnitude are agricultural intensification, fertilization, intensive grazing, animal breeding, as well as discontinuous urbanisation, existence of roads and the death or injury by collision and genetic pollution.

Threats of low magnitude are grazing and disposal of household and recreational facility waste.

3.3.4 Ecological functions

The Study Area consists one of the most important wetland ecosystems in Northwestern Greece, with high ecological value. The site holds important habitats with formations of halophytic plant associations of great scientific interest and aesthetic value. These habitats further support a noteworthy fauna species as many important reptile, amphibian and mammal species are present in the area.

3.3.5 Site development trends

Site development trends refer to the evolution trends of the site's natural environmental elements which are present and recorded within the Study Area under the assumption that no construction for the project would take place in the region. For the area of interest, ie the SAC GR2120002 human activities (e.g. land uses, human exploitation) have been gently merged and compounded in the site, while other natural elements of the biotic and abiotic environment (eg morphology, climate, topology, species, habitats, vegetation cover, etc.), have in combination formed the existing dynamics of the site. These natural environmental elements have shaped current development trends, which seem to be stable and unaffected to existing plans and projects.

4 PROJECT OVERVIEW

4.1 Introduction

This section provides an overview of the proposed project and its associated components, as well as it further outlines the project's constructional and operational requirements.

Apart from this general project description, Section 4.5 provides a more detailed description of the project interfaces with the specific Natura 2000 site.

The EastMed Pipeline Project aims to transport gas directly from the eastern Mediterranean fields to the European Natural Gas System via Greece.

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):

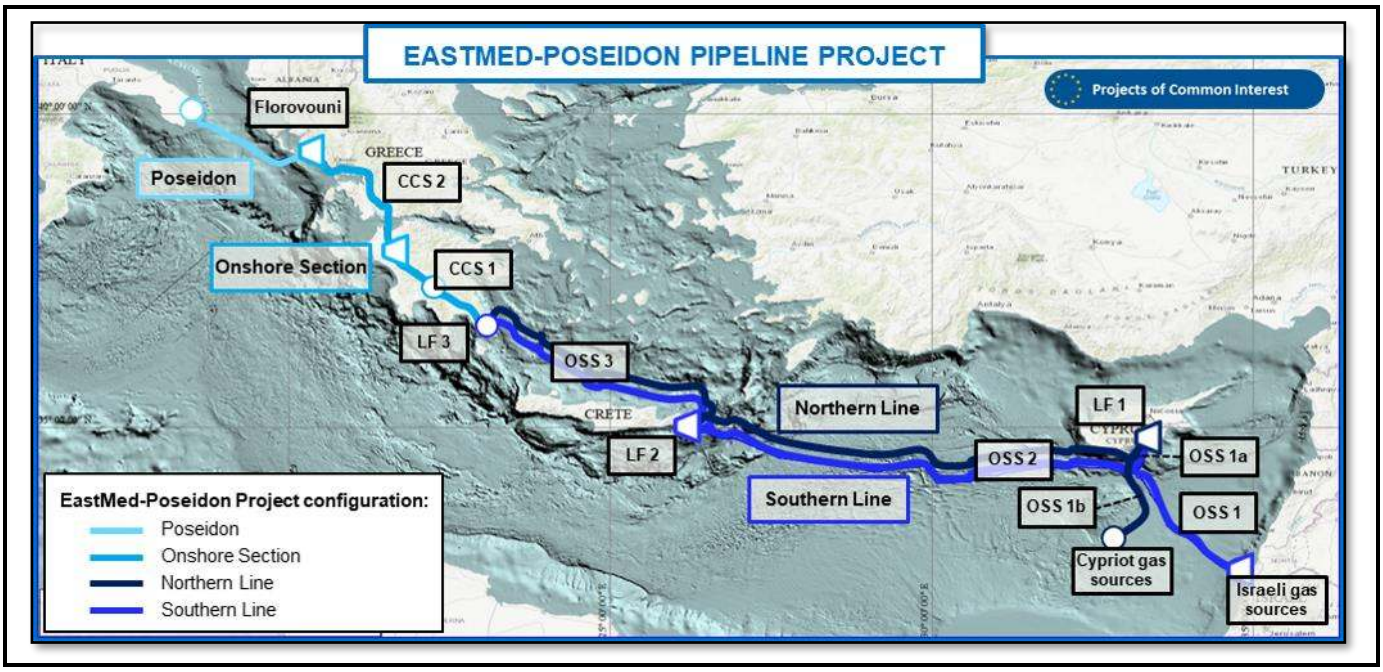
- Delivers dry gas originating from one or more of the Cypriot offshore gas discoveries to the compression and metering stations in Cyprus (CS1/MS1) first, through OSS1b and then in Crete (CS2/MS2N), through OSS2N and from there to the mainland Greece and Poseidon Pipeline Project, as referred in the 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 4-1 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].

A more comprehensive visualization of the crossing with the Natura 2000 sites is provided in Map 1 of ANNEX F.



Prepared by: (EastMed, 2020)

Figure 4-1 EastMed Onshore and Offshore sections - overview

[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.

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 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.

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).

4.2 Pipeline Construction and Pre-commissioning

4.2.1 Construction Overview

The basic method of constructing gas onshore pipelines is generally known as the spread technique, which is an "open cut" method and is widely used throughout the world. A typical sequence for onshore pipeline construction is illustrated in Figure 4-2.

Prepared by: (ASPROFOS, 2021)

Figure 4-2 Typical Pipeline Construction Sequence

This method can be broken down into several phases:

- Route survey and layout;
- Working strip preparation (clearing, grading, topsoil stripping);
- Trench excavation;
- Pipeline handling, Hauling and stringing;
- Pipeline bending;
- Pipeline welding and weld testing, applying field joint coating;
- Pipeline laying;
- Backfilling;
- Hydrotest and

- Reinstatement.

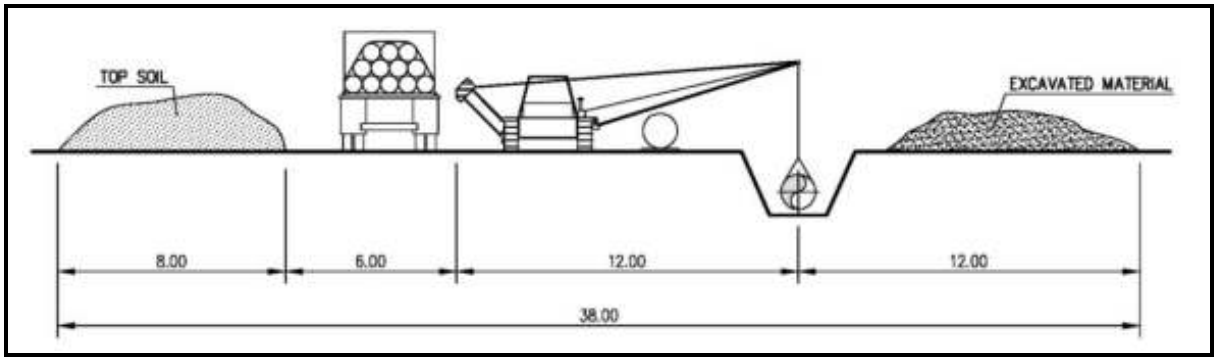
A survey control system in the form of permanent ground markers (PGM) will be installed. A subcontractor will tie all survey works into this control system and confirm the accuracy of the PGM control system.

The work includes removal of all trees, bushes, hedges and other obstacles from the construction working strip. A restricted working strip shall apply where there are physical constraints or where contractor chooses to reduce the working strip to benefit particular operations. A larger working strip may be necessary where a particular operation may benefit from additional space. The working strip should be set up before work commences.

4.2.2 Onshore Construction Methods

4.2.2.1 Marking and Clearance of Working Strip

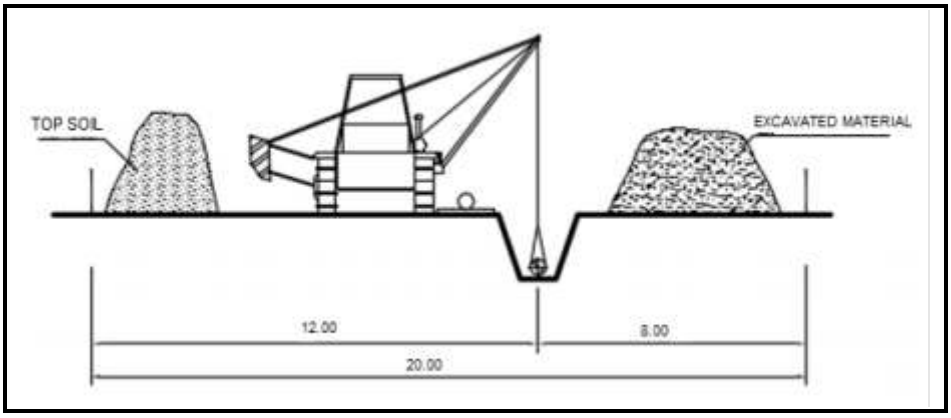
The working strip is the temporary corridor along the pipeline where construction takes place. It must be wide enough to allow all activities to be carried out safely whilst providing sufficient room to store topsoil and trench material separately and keeping crop loss to the farmer to a minimum. The 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: (Design Basis Memorandum – Pipeline and Facilities)

Figure 4-3 Regular Working Strip in Open Country for Pipeline ND 48" and 46"

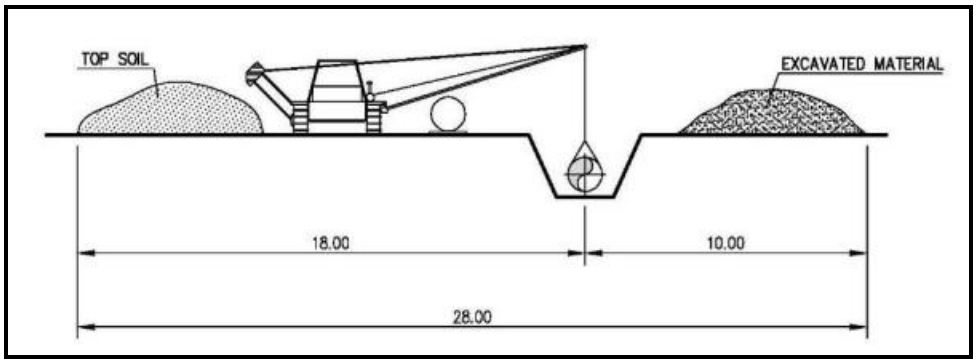
The width of the working strip in open country for pipeline of ND 16'' will be 20 m.



Source: (Design Basis Memorandum – Pipeline and Facilities)

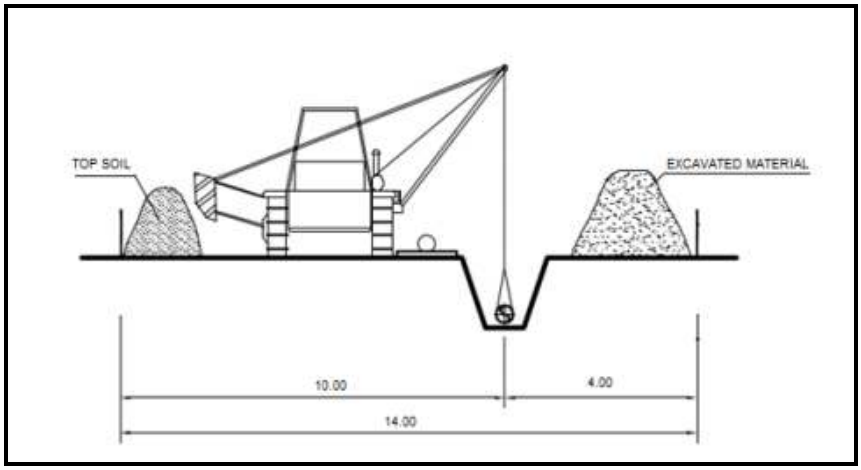
Figure 4-4 Regular Working Strip in Open Country for Pipeline ND 16”

The width of the spread zone along areas planted with permanent crops (e.g., vineyards, olive trees, etc.) for pipeline with ND 48’’ and 46’’ will be reduced to 28 m and for pipeline with ND 16’’ will be reduced to 14 m in order to minimise impacts on the plantations.



Source: (Design Basis Memorandum – Pipeline and Facilities)

Figure 4-5 Reduced Working Strip (with Topsoil Stripping) for Pipeline ND 48” and 46”

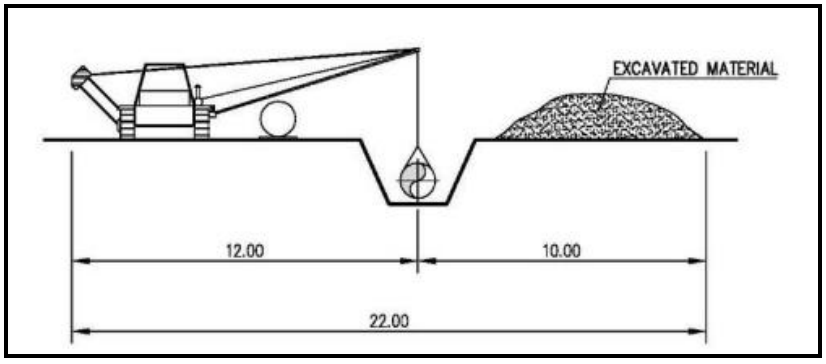


Source: (Design Basis Memorandum – Pipeline and Facilities)

Figure 4-6 Reduced Working Strip (with Topsoil Stripping) for Pipeline ND 16”

The width of the working strip for construction of pipelines with ND 48” and 46” inches can be reduced to 22 m in forest and mountainous areas where there is usually no need for top soil storage and to 28 m in areas with permanent plantations (with topsoil stripping).

For pipelines with ND 16’’ the regular working strip (in open country and agricultural areas planted with annual crops) is 20 m which is reduced to 14 m in areas planted by permanent plantations and without topsoil stripping (forest areas).



Source: (Design Basis Memorandum – Pipeline and Facilities)

Figure 4-7 Reduced Working Strip (without Topsoil Stripping) for Pipeline ND 48” and 46”

The areas where this reduced working strip will be applied will be carefully defined in order to reduce the impacts of the pipeline construction along these areas as much as possible, as well as to minimise impacts on the construction progress (e.g., delays) and to ensure that all activities along the reduced zone will be safely executed.

Furthermore, the width of the working strip will be increased when a trenchless construction method is applied at crossings of major infrastructure or rivers in order to accommodate relevant equipment for construction works (e.g., horizontal directional drilling (HDD), direct pipe, microtunnel, boring method).

Table 4-1 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

4.2.2.2 Topsoil Stripping

Topsoil will be removed by means of suitable earth moving equipment (such as excavators and loaders) from the entire surface of the area, with the only exception being the areas designated for topsoil storage. The average depth of the topsoil strip to be removed is 0.2 m but this will be adapted to local soil conditions. The topsoil removed will be stockpiled within the area for temporary storage until site reinstatement.

4.2.2.3 Grading

As described above the working strip must provide sufficient working space for pipeline fabrication and for simultaneous vehicle movements. Therefore, the delineated strip will be graded by specified equipment such as bulldozers and graders to the required width.

4.2.2.4 Trenching

The pipeline will be buried underground within a trench for its entire length and protected against corrosion by a cathodic protection system. The required trenching works will be mainly undertaken by excavators or jack-hammers. The standard soil covers of the buried onshore pipeline (measured from top of pipe) shall be at least 1 m.

4.2.2.5 Blasting

The use of explosives might be considered necessary at the following Natura 2000 areas. They could speed up the construction, decreasing construction duration and consequently nuisance to sensitive receptors.

Table 4-2 Indicative locations where explosives might be used during construction within protected areas

Pipeline Segment	From KP	To KP	Length (m)	Engaged Natura 2000 site
CCS1	21.348	21.845	497	SPA - GR2540007
CCS2	211.308	213.142	1,834	SPA – GR2120006 SAC – GR2120002

Prepared by: (ASPROFOS, 2021). Based on ESIA baseline soil classification

4.2.2.6 Backfill

The assembling of the pipeline will be carried out in a standard way with a construction spread that moves along the pipeline corridor. Most of the excavated soil will be used to backfill the pipeline trench. Excess soil will likely be spread out and contoured along the route in agreement with competent authorities and landowners/ users and according to further engineering studies.

4.2.2.7 Clean Up and Restoration

The clean up and restoration will be carried out in a specified way with a construction spread that moves along the pipeline corridor.

The removed topsoil will be placed back on the working strip so as the area to be restored as closely as possible to its original condition. Land will be stabilized where necessary and progressively restored with native vegetation, where possible. All machinery, equipment, tools, etc will be removed.

4.2.2.8 Indicative Schedule

The estimated total duration of the Onshore pipeline construction activities is 36 months.

On top of that, duration of the construction depends on the difficulties imposed by the baseline conditions, e.g., morphology, geotechnical issues, land uses, etc. Based on experience from other similar projects in dimensions constructed in Greece (i.e., with similar baseline conditions) the indicative construction rates (in terms of project progress, per construction activity) are:

- 400 m/day, in agricultural areas (in plain areas, 600 m/ day may be achieved)
- 200 m/day, in hilly or intense relief areas, of tree crops or natural vegetation
- 100 m/day, in mountainous areas, more often than not covered with natural vegetation (in rocky areas, 75 m/day or even smaller may be constructed).

4.2.3 Pressure Testing during Construction (Hydrotesting)

The condition of the pipeline at the start of pre-commissioning is determined by performing a system pressure test (SPT). SPT options include:

- Conventional SPT using water (e.g., hydrotesting); and
- Replacement of the SPT with other means that ensure that the overall safety level of the pipeline system for which the test is to be replaced is equal to or better than that of an equivalent system that implements the SPT- this option is applicable only to the offshore pipeline sections and under specific conditions.

The above ground facilities of the project (e.g., compressor, metering, pressure regulating, heating stations) are not subject to this procedure since these facilities include equipment that has been pre-tested during its manufacturing.

4.2.3.1 Hydrotest Concept

Hydrotesting (or hydrostatic testing) is the most common method for testing pipeline integrity and checking for any potential leaks prior to commissioning. The test involves placing water inside the pipeline at a certain pressure for a certain time to confirm pipeline strength and tightness.

The activities to be carried out before and after the hydrotest are repeated here:

- Before hydrotest:
  - Flooding and cleaning,
  - Gauging;
- During hydrotest:

- Leak detection;

- After hydrotest:
  - Dewatering,
  - Drying,
  - Purging.

Pressurisation is achieved during a hydrotest by pumping water into the pipeline section being tested. According to DNV-OS-F101, the system pressure test should be 1.15 times the design pressure with a hold period of 24 hrs. Pressurisation is then carried out with a high pressure pump.

After the pipeline has been filled and pressurised, and all the necessary parameters have been measured, the pipeline is dewatered and dried.

- Flooding, Cleaning and Gauging. After the pipeline is initially flooded, it will be cleaned and gauged. Typically, cleaning and gauging are performed as a single operation together with flooding. Cleaning involves sending a series of pigs through the pipe section to remove any debris (typically weld slag and pipe mill scale, where the latter is expected only in a very limited amount due to the internal coating) from inside the pipeline. One pig bounds the air and water, and another series of pigs can be used to clean the internal pipe-wall. Clean water is pumped in front of the pig train to moisten the debris. Pipeline internal gauging is used to ensure the inner diameter of the pipeline is free from obstructions and excessive ovality. A gauging pig is equipped with a device to determine its location in case it does not reach the pig receiver. If a gauging pig becomes stuck in the pipeline it is freed, the pipe defect is located and eliminated, and the gauging operation is repeated. An alternative gauging method could be used that will pinpoint any defect. Gauging can be performed with an electronic calliper tool for this purpose, optionally combined with a geometry pig to confirm the pipeline geometry as built. The gauging and geometry pigs may be run in the same train as the flooding and flushing pigs; pig speed for this operation should be between 0.3 m/s and 1 m/s. The pipeline system configuration should be designed to allow for pigging in forward or reverse direction. This is achieved by barred tees, lock-open check valves, eliminating non-piggable wye pieces, and designing the pig receivers so that they can also be used as launchers. This philosophy provides benefits during pre-commissioning and possible future repair scenarios;
- Dewatering. The recommended method for dewatering is to use compressed air. This method uses compressed air to drive a pig train through the pipeline while displacing the hydrotest water. The pig train consists of multiple compartments separated by pigs. Some are filled with fresh water to flush the salt from the pipe wall, and some are filled with air. The air is oil free and dry

with a dewpoint of at least -65°C at atmospheric pressure and an oil content no greater than 0.01 ppmW;

- Drying and Purging. The dewatering pig train leaves a small film of water, approximately 0.05 mm thick, in the pipe. The absence of water in the pipeline is necessary in order to prevent the possible formation of methane hydrate. The drying method is air drying which usually employs swabbing pigs to help spread out the water so that it has a larger surface area in order to be more easily collected; and
- Discharge/Disposal Options. Following successful testing, the used water is discharged back into a receiving water body after having passed a sedimentation pool, through which the water will flow very slowly. These pools are sized to provide a retention time of 5 minutes, which is considered enough time to allow the solid particles to be cleaned out of the pipe, to settle and remain in the bottom of the pond. The discharge rate after finalisation of hydrotests will follow the same rules as applicable for abstraction. Hence the same water bodies will be taken into consideration for discharge. Environmental effects are expected to be minimal or negligible when discharge rates are under 10% of the receiving river flow. Discharged water will be free of any chemicals, or, if it is necessary to add any chemical substances (especially at the offshore sections), they will be from the PLONOR list. The contractor for hydrotesting will obtain written approvals from the local authorities and landowner(s) where the hydrotest water will be discharged; water will not be returned to any watercourse without permission of the appropriate local authorities.

4.2.3.2 Pre-Commissioning with SPT Replacement (only applicable to offshore sections under specific conditions)

The aim of the REPLACE methodology is to provide a robust basis for replacing the SPT with other means that ensure that the overall safety level of the pipeline system for which the test is to be replaced is equal to or better than that of an equivalent system that implements the SPT.

Consideration of SPT replacement starts early in the design timeline and continues through the offshore pipeline installation phase. The methodology describes the REPLACE activities to be undertaken in each phase of the project.

4.2.3.2.1 REPLACE plan

The REPLACE plan describes the actions required to ensure that all prerequisites, requisites and additional safeguards identified in the FMECA are implemented and documented to demonstrate

compliance to stakeholders and authorities. The REPLACE plan is maintained throughout the Project lifecycle and is updated as the technical definition and execution plans develop.

Should the SPT be replaced (i.e., from REPLACE option), the pre-commissioning procedure changes. Certain steps can be omitted, and additional safeguards will be taken on board. In that case, the typical pre-commissioning procedure consists of the following (sequential) activities:

- Pressurising. The pipeline will be pressurised using dry air to create back pressure ahead of the cleaning and gauging pig train, which will be introduced in the system in the next step. Back pressure is necessary to ensure the pig-train speed can be controlled on steep slopes. The required back pressure will be assessed in detailed design. The size of the compressor spread determines the time needed for the pressurisation phase. Upon completion of the pressurising step, the pipeline is filled with dry air at elevated pressure;
- Cleaning and gauging. Cleaning and gauging activities are, ideally, conducted using a single pig run—a second run may be necessary if too much debris is found in the pig train's last slug after the first run. The pig train will consist of a series of pigs with clearing and gauging (CG) functionalities. The series of pigs will be separated by slugs of monoethylene glycol (MEG), not by slugs of water. MEG is hygroscopic and will absorb condensed water in the pipeline. For this reason, MEG inhibits against hydrates and is a so-called "hydrate-control fluid". The pig train will be propelled by a large slug of nitrogen (with a high purity of, for instance, 95%) of several tens of kilometres followed by ultra-dry air. Now the pipeline is chemically conditioned and a drying step is no longer needed. Upon completion of the pig run, the system is filled with dry air at elevated pressure;
- Depressurisation. After successful receipt of all pigs (see the above CG step), the pipeline system will be depressurised by venting to atmospheric pressure from both ends of the pipeline. Upon completion of the depressurisation, the system is filled with dry air at ambient pressure; and
- Nitrogen purging. Next, the system will be purged with a nitrogen-rich gas mixture of very high purity (e.g., 98%) to avoid an explosive gas–air interface. The mixture is pumped into the pipeline at low pressure to displace the air contents. Once the oxygen level measured at the outlet is sufficiently low, nitrogen purging is halted. Upon completion of nitrogen purging, the pipeline system is filled with inert gas, slightly above ambient pressure. This means that pre-commissioning has been completed and the system is ready to receive hydrocarbon gas.

This REPLACE Methodology was successfully used in TurkStream and Nord Stream 2 Pipeline projects, removes the need for seawater and the risk associated with lateral buckling concerning the conventional method. This procedure can be amended if necessary, depending on specific project requirements.

4.2.3.3 EastMed System Pressure Test Response

Each offshore pipeline, comprising the Greek section of the EastMed Pipeline Project has been assessed individually in accordance with the REPLACE methodology.

Based on the System Pressure Test Replacement Study (E780-00225-Ev32A-TDR-00055, Rev.02), it has been concluded that, for OSS2, OSS2N, OSS3 and OSS3N project components, it is beneficial not to pressure test the system applying the conventional hydrotesting SPT because of the risk associated with lateral buckling. For the remaining Project components, conventional SPT is applied.

Hydrotest sections will have a length up to 9 km each. It is estimated that approximately 50 hydrotests will be carried out for CCS1, 38 for CCS2 and 2 for Megalopoli Branch.

Each hydrotest will be completed in 7-10 days.

Pre-commissioning of the offshore OSS4 section is expected to require a total of 11 days. Similarly, the pre-commissioning of the other offshore project components is expected to require a total of 57 to 84 days. Pre-commissioning will be finished before commissioning activities.

4.2.3.4 Water Abstraction Sources for Conventional SPT

As far as the onshore pipeline segment, inland water sources with larger amounts of water flow have been considered for water abstraction and discharge. Water reservoirs will not be used as a source for testing water. For the offshore and nearshore segments, the most likely option is the use of sea water.

Table 4-3 shows the potential water sources identified along the pipeline route and the volumes required for hydrotesting for each main section.

The timing for hydrostatic testing activities will consider the seasonal changes of river flows and the reduced flows during the summer months.

The quantity of water used for hydrotest, considering the complete onshore section, is approximately 600,490 m^3. This volume of water is the maximum that could be used. However, it is best international practice to transfer water between hydraulic test sections and re-use it as much as possible so the final volume is expected to be much smaller.

The contractor for the hydrotest will obtain written approvals from local authorities and landowner(s) or users regarding hydrotest water abstraction and disposal.

Table 4-3 Water Requirements for Hydrotest Sections

Pipeline Spread		Water Source	Approx. Volume Required (m^3)	Pipeline Section
From KP	To KP			
				Short Onshore Section at Crete
0	50	Evrotas	54,900	CCS1
50	100	Evrotas	54,900	CCS1
100	130	Evrotas	32,940	CCS1
130	150	Alfeios	21,960	CCS1
150	200	Alfeios	54,900	CCS1
200	250	Pineiakos Ladonas	54,900	CCS1
250	300	Pineiakos Ladonas - Pineios	50,500	CCS1
			18,451	OSS4
0	35	Evinos	38,430	CCS2
35	55	Water Canal of Trichonida	21,960	CCS2
55	70	Acheloos	16,470	CCS2
70	135	Arachthos & Louros	71,370	CCS2
135	200	Louros	71,370	CCS2
200	233	Louros & Acherontas	36,234	CCS2
0	4	Alfeios	492	Megalopolis Branch
4	9.8	Alfeios	713.4	Megalopolis Branch

Source: (IGI Poseidon, 2021)

As the conventional SPT approach involves the use of water (either inland or sea), it should be noted that inland water providing the compliance of its physicochemical characteristics with what was described earlier does not pose any risk to pipeline integrity. The water used needs to be free of contaminants and not aggressive (pH between 5 and 8), and no additives, corrosion inhibitors or chemicals are envisaged to be used.

This is not the case with sea water due to its corrosive behavior. The following options exist regarding seawater composition for hydrotesting purposes:

Filtered seawater (50 micron) + UV sterilisation. Use of chemicals is not envisaged considering that the water residence time should be fewer than 30 days. If the use of chemicals or other additives is deemed unavoidable, these substances will be included in the PLONOR list. The PLONOR list is a list of substances that are deemed to pose little or NO risk (PLONOR) to the environment. The list has been developed by the OSPAR committee (known as Oslo – Paris committee) for protection of the marine environment. All chemicals or mixtures on the PLONOR list are allowed to be discharged into the sea in accordance with international industry standards.

4.2.3.4.1 Discharge and Disposal of SPT Mediums

Conventional SPT includes discharge and disposal of large quantities of hydrotesting water.

Water for the onshore sections will be discharged back into a receiving water body after having passed a sedimentation pool, through which the water will flow very slowly. These pools are sized to provide a retention time of 5 minutes, which is considered enough time to allow cleaning the solid particles out of the pipe to settle and remain in the bottom of the pond. The discharge rate after finalisation of hydrotests follow the same rules as applicable for abstraction. Hence the same water bodies will be taken into consideration for discharge. Environmental effects are expected to be minimal or negligible when discharge rates are under 10% of the receiving river flow. Discharged water will be free of any chemicals.

In any case:

- The discharge is performed in a controlled manner according to local environmental approvals. An assessment of the likely dispersion rate and extent should be evaluated as part of the pre-commissioning design activities during the EPIC stage of the project; and
- Prior to discharging the hydrotest fluids, samples are collected and analysed on-site to ensure compliance with permits and other regulations before being discharged to the open sea.
- The discharge point will be selected based on:
- Results of dispersion analysis;
- Application of diffuser; and
- Assurance of efficient dispersion into environment.

Continuous discharge is considered possible by developing a discharge plan taking into account the spread capacity of the entire discharge system.

4.3 Operation maintenance

Detailed operating procedures for the pipeline system will be developed. These procedures will precede the operation of the pipeline. A system for collecting information from third party activities will be operational.

The pipeline is monitored and controlled from the control room. The monitoring system is SCADA (System Control and Data Acquisition). During operation, leak detection is performed through continuous measurements of pressure and flow rate at the inlet and outlet of the stations and the pipeline. If a leak is detected, the deactivation system is activated. In order to be able to carry out an internal inspection, scrapper stations will be installed.

4.3.1 Maintenance

4.3.1.1 Pipeline Maintenance

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

Pipeline inspection and maintenance work during operation include the following parameters:

- Pipeline monitoring
- Supervision of the alignment possibly with road vehicles
- Inspections of special intersections
- Monitoring the population and activities of third parties adjacent to the pipeline
- Installation of the cathodic protection system
- Control and monitoring investigations
- Functional inspections and accreditation of the installation and equipment
- Maintenance of installation and equipment at predetermined intervals

The pipeline will be cleaned on a regular basis to confirm the geometry of the pipeline as well as after possible damage or after seismic phenomena.

4.3.1.2 Maintenance of Compressor Stations and Metering Stations

The maintenance strategy is based on the preventive maintenance, the program defined in the Maintenance Plan and the inspection / testing program. In the subsequent operation, the maintenance program follows the Reliability Centered Maintenance (RCM) principle where maintenance activities are based on the recorded reliability and fault database of the plant equipment.

No significant gas leaks occur during the maintenance of the metering stations.

4.4 Decommissioning of the Project

The expected service lifetime of the two pipeline systems is 50 years. It may be possible that life expectancy of the Project is increased as technology further develops during its operation. Nevertheless, it is expected that at some point the pipelines and the facilities will be decommissioned.

Any decommissioning activities will be subject to permitting requirements applicable at that time and subject to consultation with affected owners and stakeholders of affected properties and structures. A plan covering all relevant items will be prepared and approved before any decommissioning works. The plan will also include an assessment of the environmental impacts of the proposed decommissioning technique and proper mitigation measures.

The Project is designed for a lifetime up to 50 years. Project components may be modified and upgraded over the years, and various measures may be taken to increase the life expectancy of the Project. However, at some time in the future the maintenance of the project will become economically unfavourable and the technology obsolete; consequently, the Project will be demobilised.

The plant and equipment will be dismantled or cut into manageable sections, wiring and electronic boxes removed and handled in accordance with national legislation. Steel sections will be carted away for reuse or reprocessing. Building structures, including pits and culverts, and paved surfaces on the site are demolished, and the used building materials are transported to an approved waste disposal site if they cannot be recycled.

Finally, the area is reinstated by contouring the site to its original slope and undulation, and any scrub and vegetation are planted. The reinstatement will be planned and drafted in co-operation with the relevant authorities, whose approval shall be in hand prior to commencement of any fieldwork. A few years thereafter, the site should appear to be mingling in with the general landscape, and any traces from Project operations would not be detectable.

More specifically, a detailed plan for the decommissioning phase will be submitted to competent authorities for approval in advance of the planned date of end of operation activities, providing details of all necessary activities, in compliance with international best available dismantling practices and technologies available at the time of the execution of the plan.

The current approach foresees that the decommissioning procedure will consist of removal of the pipeline. In specific sections where the removal operation would not be technically feasible or would cause a more adverse impact on the natural or socioeconomic environment than the abandonment underground, the pipeline will be left buried (e.g., OSS4 or other sections of the onshore components of the Project). Nevertheless, regarding the offshore sections, it is expected that at some point the offshore pipeline should be decommissioned. At that point activities will be undertaken in accordance with prevailing legislation, in liaison with the relevant regulatory authorities and taking into account international best practices. This can be expected, for instance, in trenchless crossing sections. In these cases, the section will be made inert by filling up the pipe with appropriate concrete conglomerates or mixtures (in order to prevent collapse of empty pipeline), provided that the section is welded with caps.

Pipeline decommissioning, like the commissioning of a new pipeline, will be performed through a number of sequential phases that will allow occupation of limited areas at a time, progressively forwarding through the route. The impacts are expected to be similar to the ones evaluated for the construction phase (in a reverse chronological order).

In line with the principles concerning the permanent above-ground facilities, the decommissioning procedure will consist of removal of the structures and reinstatement of the area in a reasonable time frame in order to the return to the previous conditions of the area where this is possible. Of course, the first priority is to reuse materials; some components, though, cannot be reused and they are recycled to the extent possible. Other components are managed as excavation, demolition, construction waste.

4.5 Description of the project interferences with the Natura 2000 site

The current Appropriate Assessment concerns the part of the project that overlaps with the Study Area (Natura 2000 site: GR2120002). The total length of the project crossing the Study Area is 0.14km at the section IP 2708-2709 (KP: 212.43 – 212.57). The Study Area is crossed at an area with phrygana north of Kalodiki wetland.

During construction

- The working strip inside the Study Area will be of 28m width, while outside and in close vicinity it will vary between 28-38m.
- It is estimated that a few weeks will be required for the completion of the construction works in the area.
- Blasting might be used at KP 211.308-213.142.
- It should be noted that no construction activities will take place during night.
- Regarding precommisioning activities, for the System Pressure Test, no water abstraction and discharge will take place in the specific Natura 2000 site.

During operation/maintenance

- An 8m wide pipeline protection strip will be maintained along the pipeline.

Table 4-4 Pipeline Working Strips

Project phase	Working Strip	Width (m)
Construction and pre-commissioning	General working strip	38
	Working strip with construction/environmental constraints	28
Operation and maintenance	Pipeline protection strip	8

Reference: (ESIA Project Description)

5 APPROPRIATE ASSESSMENT

According to the requirements of Article 6 of the Directive 92/43/EEC, the guidelines of the European Commission for the Appropriate Assessment and the MD 170225/2014 a series of procedural and substantive safeguards are set out, that must be applied to plans and projects that are likely to significantly affect a Natura 2000 site. In this framework the procedure of the AA is designed to:

- Fully assess the impacts of plans and projects that are likely to have a significant effect on a Natura 2000 site.
- Ascertain whether an adverse effect on the integrity of the site can be ruled out. If such is not the case, the plan or project can only be approved if mitigation measures or planning conditions can be introduced that remove or minimize the adverse effects on the site so that its integrity is not affected.
- Provide a mechanism for approving - in exceptional circumstances - plans or projects for which it cannot be ascertained that they will not adversely affect a Natura 2000 site even after the introduction of mitigation measures, when these plans of projects in the absence of alternative solutions are judged to be of overriding public interest.

5.1 Appropriate Assessment Methodology

This section describes the appropriate assessment methodology that will be applied so as to assess in an appropriate manner the potential significant impacts that may be determined by the project to the qualifying features and integrity of Natura 2000 sites. To this aim the methodology was based on the provisions and criteria of MD 170225/2014 with slight modifications so as to fullfill the purpose of the assessment and be in line with the directions derived from the methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

The significance of the potential impacts has been assessed considering the following characteristics:

- Duration,
- Spatial extent of the impact,
- Frequency of occurrence or timing with significant ecological periods,
- Intensity of the expected impact on ecological functions of habitats, species and ecosystems,
- Reversibility, either naturally or through implementation of measures to prevent and mitigate impacts.

Furthermore, the vulnerability/sensitivity of the habitat or species (receptor) to changes caused by the project and its capability to recover are taken into account, always considering how tolerant and

fragile the habitat or species is and the value, in terms of environmental conservation and ecology, of the receptor affected including species, populations, communities, habitats and ecosystems.

The significance of the impact was assessed in two steps: (a) taking into consideration the value and sensitivity of habitats and species, and the intensity of the impact on them; and (b) incorporating the frequency of occurrence or timing with important ecological periods.

In cases where a site supports habitats or species for which the potential impact differs, the scoring system uses a "weakest link" approach. This means that scores are based on the "worst" case.

Table 5-1 Assessment of impact Intensity towards the recipient of Habitats/Species of interest

Impact Intensity	Recipient: Habitats/Species of interest
High	• The project (either alone or in combination with other projects) may adversely affect the integrity of a habitat, by substantially changing in the long term its ecological features, structures and functions, across all or most of the area, that enable it to sustain the habitat, complex of habitats and/or the population levels of species that makes it important. • Affects an entire population or species in sufficient magnitude to cause a decline in abundance and/or change in distribution beyond which natural recruitment (reproduction, immigration from unaffected areas) will not return that population or species, or any other population or species depending on it, to its former level within several generations*. A large magnitude impact affecting the species may also adversely affect the integrity of the site, habitat or ecosystem. A secondary impact of large magnitude may also affect a subsistence or commercial resource use (e.g. fisheries) to the degree that the well-being of the user is affected over a long term.
Medium	• The habitat's integrity will not be adversely affected in the long term, but the effect is likely to be significant in the short or medium term to some, if not all, of its ecological features, structures and functions. The habitat may be able to recover, through natural regeneration and restoration, to its state at the time of the baseline study. • Affects a portion of a population and may bring about a change in abundance and / or distribution over one or more generations*, but does not threaten the integrity of that population or any population dependent on it. A medium magnitude impact may also affect the ecological functioning of a site, habitat or ecosystem but without adversely affecting its overall integrity. The size of the consequence is also important. A medium magnitude impact multiplied over a wide area will be regarded as large. A short term effect upon the well-being of resource users may also constitute a secondary medium impact.
Low	• Neither of the above applies, but some minor impacts of limited extent, or to some elements of the habitat, are predicted but the habitat will readily recover through natural regeneration. • Affects a specific group of localized individuals within a population over a short time period (one generation* or less), but does not affect other trophic levels or the population itself.

*Note: Generations of the animal/plant species under consideration.

Prepared by: (NCC, 2021)

Table 5-2 Assessment of impact Intensity towards value and sensitivity of resource/recipient, frequency of occurrence and reversibility.

Impact Intensity	Value and sensitivity of resource/recipient	Frequency	Reversibility
High	The receptor has little capacity to balance the changes without substantially altering its current state or is important at national or international level. For the classification the value of the species habitat affected is also taken into consideration.	The activity is continuous or/and takes place during critical life-stages or seasons for wildlife, e.g. bird nesting season.	The implementation of mitigation measures will reverse the effect by 100%.
Medium	The receptor has moderate ability to balance changes without significantly altering its current state or is of high importance. For the classification the value of the species habitat affected is also taken into consideration.	The activity is expected to be carried out for long periods of time during construction and will continue during operation or/and takes place during early or late breeding stages.	The implementation of mitigation measures will reverse the effect only partially and over 50%.
Low	The receptor is tolerant to change without harming its features, is of low or local importance. For the classification the value of the species habitat affected is also taken into consideration.	The activity will occur sporadically at irregular intervals or/and outside critical life-stages or seasons for wildlife.	The implementation of mitigation measures will reverse the effect only partially and up to 50%.
Negligible		The activity will occur once and outside critical life-stages or seasons for wildlife.	
Irreversible			There is no reasonable chance of action being taken to reverse it.

Prepared by: (NCC, 2021)

Table 5-3 Assessment of the impact's magnitude towards the value of the resource and the intensity of the impact

Magnitude		Intensity		
		Low	Medium	High
Value/ sensitivity of receptor	Low	Negligible	Low	Medium
	Medium	Low	Medium	High
	High	Medium	High	High

Prepared by: (NCC, 2021)

Table 5-4 Assessment of the overall significance of the impact, with the frequency taken into account

Overall significance of impact		Impact's magnitude with regard to the value of the receptor and intensity			
		Negligible	Low	Medium	High
Frequency	Negligible	Negligible	Negligible	Negligible	Low
	Low	Negligible	Negligible	Low	Medium
	Medium	Low	Low	Medium	High
	High	Low	Low	High	High

Prepared by: (NCC, 2021)

An assessment of the residual impact (impact that can not be mitigated and thus irreversible) has also taken into account the reversibility that may arise from the implementation of measures to prevent or mitigate the impacts of the project on habitats and species.

Table 5-5 Assessment of the residual impact, with the reversibility of the impact taken into account

Residual impact		Overall significance of impact			
		Negligible	Low	Medium	High
Reversibility	High	Negligible	Negligible	Low	Low
	Medium	Negligible	Negligible	Low	Medium
	Low	Negligible	Low	Medium	High
	Irreversible	Negligible	Medium	High	Critical

Prepared by: (NCC, 2021)

Table 5-6 Impact significance definitions

Significance	Definition
Critical	Unacceptable. It is not subject to mitigation, alternatives should be identified.

Significance	Definition
High	Significant. Impacts with a "High" significance are likely to disrupt the function and value of the resource/receptor, and may have broader systemic consequences (e.g. ecosystem or social well-being). These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
Medium	Significant. Impacts with a "Moderate" significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of the resource or receptor, although the overall function and value of the resource or receptor is not disrupted. These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
Low	Detectable but not significant. Impacts with a "Low" significance are expected to be noticeable changes to baseline conditions, beyond natural variation, but are not expected to cause hardship, degradation, or impair the function and value of the resource or receptor. However, these impacts warrant the attention of decision-makers, and should be avoided or mitigated where practicable.
Negligible	Not Significant. Any impacts are expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.

Prepared by: (NCC, 2021)

5.2 Assessment of Impacts

The present impact assessment evaluated impacts, taking into consideration the implementation of adequate mitigation measures and environmental planning aimed at reducing and where possible preventing environmental impacts as presented in Section 6. Final residual impact is also estimated. A typical example is the selection of the trenchless underground passage of the pipeline at some Natura 2000 sites in order to minimize impact on sensitive habitats and species. Mitigations measures are therefore presented alongside the assessment and presented in detail in Section 6.

In this framework, the potential impacts concerning the construction and operation of the project were assessed with regards to the technical characteristics, the special natural characteristics and the current environmental conditions of the site, with emphasis on the protected elements, the ecological integrity of the Study Area and the overall consistency of the Natura 2000 network.

For the section of the project under assessment, given the characterization of the area of interest as SAC for the Natura 2000 network, the following evaluation indicators were used:

(a) loss and fragmentation of habitat type coverage,

(b) loss and fragmentation of species of interest habitat,

(c) disturbance/displacement of species of interest, as well as

(d) direct loss of individuals of species of interest.

The examination of the above indicators can provide information on the impact of the project and on whether the project may:

- Cause delay or disrupt the progress in meeting the conservation objectives of the Natura area concerned;
- Reduce the size of the species population or affect the conservation status of their habitats or fragment them or affect the balance between species or affect their degree of isolation;
- Cause changes to vital parameters within the Natura 2000 site;
- Interact with anticipated or expected physical changes.

as required by the MD 170225/2014.

The chapter includes an initial screening of species and habitat types, followed by the estimation of the impacts of the project on the selected species related to (a) the pipeline construction and pre-commissioning, (b) the pipeline operation, (c) cumulative impacts, while possible impacts to other important species are also presented. Finaly, the alternative scenarios are examined.

5.2.1 Species / habitat type screening

In respect to habitat types, the habitat that were taken into consideration for the appropriate assessment is *Sarcopoterium spinosum* phryganas (5420) included in the FSA. The rest of the EU habitats within the Study Area are not taken into consideration, as due to the nature of the project activities and its location they are not expected to be at risk of affection, direct or indirect. It should mentioned that the pipeline routing is marginal to the lake and the wetland.

In respect to the fauna species a screening was carried out concerning the species included in Table 3.2. of the SDF that could be potentially be affected by the project, based on field observations and bibliographic data. The species for which the Natura 2000 site has been designated and could potentially be affected by the project were selected. The rest of the species are directly related to wetland habitats and are not expected within the FSA.

Their ecological requirements are presented in ANNEX D.

Table 5-7 Species of interest expected or observed within the FSA

Group	Code	Species	Presence	Annex of Habitats Directive / IUCN / Greek Red List
R	1279	*Elaphe quatuorlineata*	p	II; IV|NT|LC
R	6095	*Zamenis situla*	p	II; IV|-|LC
R	1217	*Testudo hermanni*	p	II; IV|NT|VU
R	1218	*Testudo marginata*	p	II; IV|LC|LC
M	1355	*Lutra lutra*	p	II; IV|NT|EN

Note: p: permanent (Source: SDF), II, IV: Annexes of Habitats Directive, LC: Least Concern, VU: Vulnerable, NT: Near Threatened, EN: Endangered

Prepared by: (NCC, 2021)

Furthermore, the sensitivities of the species of concern, namely species of the Annexes II and IV of the Habitats Directive that are not among the qualifying features for the site, but were considered likely be present in the area or were observed during fieldwork, are taken into consideration for the proposal of good practices also for their protection and are presented in Table 5-8.

Table 5-8 Other species expected or observed within the FSA

Group	Code	Species	Presence	Annex of Habitats Directive / IUCN / Greek Red List
Other important Annex IV (92/43/EEC) species of the Study Area - Reported in chapter 3.3 of the site's SDF				
R	1276	*Ablepharus kitaibelii*	p	IV|LC|LC
R	1263	*Lacerta viridis*	p	IV|LC|LC
R	1251	*Lacerta trilineata*	p	IV|LC|LC
R	1256	*Podarcis muralis*	p	IV|LC|LC
R	1248	*Podarcis taurica*	p	IV|LC|LC
R	1238	*Podarcis erhardii*	p	IV|LC|LC
R	6138	*Coluber caspius*	p	IV|LC|LC
R	1269	*Ophisaurus apodus*	p	IV|LC|LC
R	5669	*Hierophis gemonensis*	p	IV|LC|LC

Group	Code	Species	Presence	Annex of Habitats Directive / IUCN / Greek Red List
R	6092	*Platyceps najadum*	p	IV|LC|LC
R	1243	*Algyroides nigropunctatus*	p	IV|LC|LC
M	1352	*Canis lupus*		II; IV|LC|VU

Note: p: permanent (source: SDF), II, IV: Annexes of Habitats Directive, LC: Least Concern, VU: Vulnerable
Prepared by: (NCC, 2021)

5.2.2 Pipeline Construction and Pre-commissioning

The project will cross the Study Area at its northern part with open trenching. The construction is expected not to exceed a few weeks at the Natura 2000 site and its adjacent area.

During the preliminary design phase special care was taken in order to minimize the overlap of the project with the Study Area in an attempt to minimize any potential impact of the project to the site and the Natura 2000 network in general. The potential impacts have been assessed taking into consideration measures adopted during preliminary design phase and the pre-condition that the construction works within and in the vicinity of the Study Area will take place outside the species breeding period March-July, following the provisions of the EU Habitats Directive and the national legislation.

Habitat type coverage loss, deterioration, fragmentation: **Negligible**

The pipeline will cross the Study Area at a small area covered of phrygana of the habitat type 5420. The total area that will be affected by the working strip is 0.39ha, corresponding to 0.17% of the habitat type coverage at the site. As the habitat type is characterized by shrub vegetation, the habitat type will not regain its former form at the 8m pipeline protection zone, which corresponds to 0.11ha and 0.05% of the habitat type of the site. Furthermore, habitats may be affected by any potential deposition of garbage or aggregates. However, the construction environmental management plan will establish all necessary action to prevent abandonement and adopt appropriate disposal.

Table 5-9 General impact characteristics for habitats and flora

Receptor	Nature	Extent	Duration
5420	Negative. Destruction and deterioration due to garbage.	Local	Short-term. The impact is expected only during the construction period. Long-term. At the pipeline protection zone.

Prepared by: (NCC, 2021)

The value of the receptor is high as it concerns habitat type listed in Annex I of the Habitats Directive. The intensity is low, while the frequency is estimated to be low and as a result the overall impact low.

As appropriate mitigation measures can be applied in order to avoid and mitigate those impacts, the reversibility of the impact is medium and the residual impact negligible.

No information on the conservation status of the habitat type 5420 is provided by the SDF and as a result no Conservation objectives have been set and no estimation on the impact of the project can be provided. However, the affected area is very small.

Habitat loss, deterioration, fragmentation: **Negligible**

Species of interest with distribution within the FSA and expected to be present at the habitats, are reptiles. The area with phrygana that the pipeline will cross will be disturbed to a limited extent, as the clearing of the working strip will be carried out and a zone of 8m width clear of deep rootvegetation will be maintained along the pipeline. Habitats directly affected by the project are mainly outside the Study Area and only a very small area of phrygana inside the Study Area will be affected (0.11ha) in the long-term.

A small part of the species habitat is expected to be lost during construction. Although the habitat will loose its shrub vegetation characteristics, the reptiles are not expected to be affected negatively by that, as they will be favoured by the long-term maintenance of a vegetation free zone where they can thermoregulate.

Table 5-10 General impact characteristics for fauna species habitat loss

Receptor	Nature	Extent	Duration
Elaphe quatuorlineata, Zamenis situla, Testudo hermanni, Testudo marginata	Negative. Loss of habitat and fragmentation	Local	Short-term. The impact is expected only during the construction period.

Prepared by: (NCC, 2021)

The value of the receptor is high as it hosts Annex I species of the Habitats Directive. The intensity is low, while the frequency is estimated to be low and as a result the overall impact is low.

As appropriate mitigation measures can be applied (see Section 6) in order to avoid and prevent those impacts, the reversibility of the impact is medium and the residual impact is negligible.

The Conservation Objectives for the species *Elaphe quatuorlineata* and *Zamenis situla* is the achievement of Degree of Conservation B in the short term. The SSCOs for the *Testudo hermanni* and *Testudo marginata* is to maintain the suitable habitat in percentage >50% at 14 and 11 cells 1x1km in the Natura 2000 site. Furthermore, the Conservation objectives for the quality of the *Testudo hermanni* and *Testudo marginata* habitat is to maintain the Degree of Conservation B in the short term, in 2 six-year periods, and the achievement of Degree of Conservation A in the long term and is not expected to be affected by the project. It is estimated that the project will not affect the objective, as the species have a broad distribution in the area and the reduction of their habitat will be temporal.

In general, the Conservation Objectives concerning the species' habitat quality and coverage are not expected to be affected by the project.

Loss of Individuals: **Negligible**

During construction, increase of vehicle traffic is expected in the area and as a result individuals of reptile and mammal species that are moving in the area may become victims of roadkill. The increase in traffic is estimated to be about 200 vehicle movements per day.

Concerning reptiles, species that potentially hibernate at the working strip may be accidentally killed during construction works. Open trenches may act as traps mainly for reptiles and amphibians.

Reptiles are active specific period of the year, which in its main part coincides with the breeding period that was excluded for construction. Furthermore, they may hibernate underground at locations.

Concerning *Lutra lutra*, as the local roads are near to the Kalodiki wetland, the probability of roadkill could increase, although the construction zone habitat is not suitable for the species which is mainly active during night hours, when no construction works will take place.

Table 5-11 General impact characteristics for loss of individuals - fauna

Receptor	Nature	Extent	Duration
Lutra lutra *Elaphe quatuorlineata, Zamenis situla, Testudo hermanni, Testudo marginata*	Negative. Potential loss of individuals	Local, at the broader area of the working strip and the surrounding area	Short-term. The impact is expected only during the

Receptor	Nature	Extent	Duration
			construction period. (few weeks)

Prepared by: (NCC, 2021)

The value of the receptor is high, as it concerns species included in Annexes II and IV of the Habitats Directive. The intensity of the impact is low, as it could potentially affect only localized individuals within a population over a short time period and the frequency is also low, as the construction period will last a few weeks outside the sensitive period. Based on the above the impact is estimated to be low.

As appropriate mitigation measures (see Chapter 6) can be applied in order to prevent roadkills, intentional and unintentional killing, the reversibility of the impact is medium and the residual impact negligible.

The SSCOs for the *Testudo hermanni* and *Testudo marginata* is a mean density population of areas with suitable habitat to be greater or equal to 4 ind./ha and 5ind./ha respectively. Furthermore, the species has to be recorded in 16 and 14 1x1km cells, respectively, in the Natura 2000 site. It is estimated that the project will not affect the objective, as necessary mitigation measures will be taken in order to avoid loss of individuals and also the species have broad distribution in the area.

The SSCOs for the species *Lutra lutra* is to have a mean density of 1 ind./35km^2, presence of the species in each 5X5km cell and permanent presence in at least one 5x5km cell within the Natura 2000 site.

In general, the Conservation Status and the Conservation Objectives concerning the population density and distribution of the species are not expected to be affected.

Disturbance: **Low**

Disturbance is mainly related to mammal species, which may be affected by increased human presence, vehicle movement and construction work carried out.

At KP 211.3-213.1 blasting will take place, the area is at a distance of 0.7km from Kalodiki wetland. *Lutra lutra* is expected at the Kalodiki wetland and may be disturbed by blasting. However, it is estimated that the disturbance will be of a few days and will concern a shorter period of time compared to rock excavation with hammers and other mechanical means.

Furthermore, as it is mainly nocturnal and feeds during dawn, dusk and night, light pollution at the working strip will induce disturbance.

Table 5-12 General impact characteristics for disturbance - fauna

Receptor	Nature	Extent	Duration
Lutra lutra	Negative. Animals may be disturbed.	Local, at the broader area of the working strip.	Short-term. The impact is expected only during the construction period.

Prepared by: (NCC, 2021)

The value of the receptor is high, the intensity of the impact is high, as it could potentially affect the whole population over a short time period and the frequency is also low, as the construction period will last a few weeks. Based on the above the impact is estimated to be medium.

As appropriate mitigation measures can be applied in order to prevent disturbance, mainly during night and with the use of modern explosives and blasting methods, the reversibility of the impact is medium and the residual impact low.

The Conservation Objectives for *Lutra lutra*, as presented above are not expected to be affected.

Changes in the general ecosystem of the Study Area: **Not applicable**

The project is crossing the Study Area at its northern edge. It is expected that the project will not cause changes to the vital defining aspects that determine how the site functions as a habitat or ecosystem. The above in combination with the negligible impact to species and habitats leads to the estimation that no change to the dynamics of the relationships that define the structure and/or function of the site are expected. Furthermore, the project does not interfere with predicted or expected natural changes to the site. The project is not expected to change the balance between key species or reduce the diversity of the site. In any case special attention should be taken during the construction works to avoid any disruption of the rainwater runoff to the wetland by the working strip.

5.2.3 Operation and Maintenance

During operation and maintenance the pipeline will be maintained and operation will not include any regular human or vehicle presence, apart from what is necessary for the safe operation of the pipeline.. As the site will be crossed underground, no impact is expected during operation and maintenance of the pipeline.

Habitat type loss, deterioration, fragmentation: **Negligible**.

As the habitat type is characterized by woody vegetation, the habitat type will regain its former form except of the pipeline protection zone, which corresponds to 0.11ha and 0.05% of the habitat type of the site.

Species habitat loss, deterioration, fragmentation: **Not applicable**.

No loss, deterioration, fragmentation of species habitat is expected during operation.

Loss of Individuals: **Not applicable**.

No loss of individuals is expected during operation.

Disturbance: **Not applicable.**

No disturbance is expected during operation.

Table 5-13 Assessment of impacts

Phase	Threat	Receptor	Nature	Extend	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
Construction	Habitat type coverage loss, deterioration, fragmentation	5420	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
	Species habitat loss, deterioration, fragmentation	Cons.objectives of *Elaphe quatuorlineata, Zamenis situla, Testudo hermanni, Testudo marginata*	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible
	Loss of individuals	Cons.objectives of *Elaphe quatuorlineata, Zamenis situla, Testudo hermanni, Testudo marginata, Lutra lutra*	Negative	Local	Short term	Low	High	Low	Low	Medium	Negligible

Phase	Threat	Receptor	Nature	Extend	Duration	Intensity	Value of the receptor	Frequency	Overall importance	Reversibility	Residual impact
	Disturbance	Cons. objectives of *Lutra lutra*	Negative	Local	Short term	High	High	Low	Medium	Medium	Low
Operation	Habitat type coverage loss, deterioration, fragmentation	5420	Negative	Local	Long term	Negligible	High	Medium	Low	Medium	Negligible
	Species habitat loss, deterioration, fragmentation	Fauna	Negative	*No impact expected*							
	Loss of individuals	Fauna	Negative	*No impact expected*							
	Disturbance	Fauna	Negative	*No impact expected*							

Prepared by: (NCC, 2021)

5.2.4 Sensitivities of other species

As presented in Table 5-8, other species included in the Annex II and IV of the Habitats Directive were also observed in the FSA. The reptiles are sensitive to loss of individuals, as presented above for the species included in the SDF, due to roadkill and trapping in open trenches.

Canis lupus has distribution in the area and are expected to use the area for their movement from and to the wetland areas. The species is sensitive to loss of individuals due to accidental roadkill, and to disturbance as they may avoid the area during construction due to disturbance. Furthermore, they may be attracted by the presence of garbage and food remains, increasing habituation of the species to humans, which may lead to increase of conflict. However, the construction environmental management plan will foresee appropriate disposal.

5.2.5 Cumulative impacts

It is well established that pipelines, power lines and roads can form a linear intrusion in natural areas leading to habitat loss, fragmentation, and to the creation of barriers to movement of terrestrial species. As mentioned above the site is crossed also by the European Route (E55), the local road network and a high voltage power line.

The crossing of pipeline from the Natura 2000 site coincides with the crossing of the high voltage power line and is in close proximity to the national road, minimizing the cumulative impact.

5.2.6 Alternative scenarios

Detailed description of alternative scenarios is given in the relevant chapter (Chapter 7) of the ESIA. Concerning the assessment of alternative routings of the project, to avoid the specific SAC site, this is not considered as a viable scenario due to technical reasons, as presented in Chapter 7 of the ESIA.

Scenario 1: Current routing.

The construction works for the current routing are estimated to have no impact on the fauna of the Natura 2000 site. By respecting the construction time-constraints and by taking appropriate mitigation measures the impact is expected to be negligible.

Scenario 2: Do-nothing Scenario.

In the case of the do-nothing scenario, there would be no pipeline construction, which would have the effect of negligible effects for all types of impacts. However, the implementation of the project

would result in a number of significant positive impacts, namely: enhancement of competition in the energy market and of EU security of supply, broadening of the Southern Gas Corridor, developing of natural gas resources within the EU or close border sources, ensurance of supply of natural gas to areas of Greece that do not have access to the National Network, support of the transitory phase to renewable sources.

Scenario 3: Alternative routing.

The alternative scenario that has been examined by the ESIA is CCS2-Alt2, which includes an alternative route crossing the plain west to Paramythia following afterwards a similar route to the one of Poseidon Pipeline Project. This alternative route passes in close proximity to the Natura 2000 site (GR2120006) (about 50m), as well as to the SCI GR2120003 (about 250m). The alternative scenario could cause impact to those sites, while its has been rejected due to sensitivities and technical difficulties at other areas of this routing, as presented in Chapter 7 of the ESIA.

5.3 Conclusions of Impact Assessment on conservation objectives and ecological integrity of the Natura 2000 site

Taking into consideration the above assessment and the current status of the ecological characteristics of the Study Area and the construction and functional requirements of the project, it is concluded that the implementation of the proposed project is not expected to:

- Cause delay or disrupt the progress in meeting the conservation objectives of the Natura 2000 area concerned.
- Reduce the size of the population of protected species or affect the conservation status of their habitats or fragment or affect the balance between species or affect their degree of isolation.
- Cause changes to vital parameters (e.g. terrain, water surface network) that contribute to the function of the Natura 2000 site.
- Interact with anticipated or expected physical changes.

Given the above and considering the implementation of the aforementioned management and mitigation measures preventing/reducing potential impacts, it is concluded that the implementation and operation of the proposed project address low impacts on the protected species, on the ecological functions they perform regarding the ecological integrity of the Study Area and on its role towards the coherence of the Natura 2000 network.

6 MITIGATION MEASURES OF POTENTIAL IMPACTS

Mitigation measures are proposed as precaution for the avoidance or reduction of potential adverse impacts. In this context the aim is to prevent, minimize and neutralize any negative impacts of the project and they are an integral part of its implementation specifications.

In this context the most vulnerable points and sections of the pipeline routing were highlighted and the areas or specific locations where measures should be implemented to prevent/minimize impacts are presented in the following Table.

It is noted the impact assessment presented in the above section, assessed residual impacts after the implementation of the management and mitigation measures listed below.

Table 6-1 Impact, mitigation measures proposed and significance of residual impact at the Study Area

Mitigation Commitments to Address the Impact / Risk	Efficiency				IP	Significance of Residual Impact / Risk
	Prevention/ avoidance	Reduction of intensity	Reduction of extent	Restoration		
Construction Phase						
Implement time-constraints and undertake construction works outside the breeding period between 1st March and the 31st July.	X				2703-2710	Low
Habitat types loss / Species habitat loss, degradation or fragmentation						
Already foreseen by the project: Establishment and marking of working strip and use of existing infrastructure and roads.	X				2703-2710	Negligible
Already foreseen by the project: The topsoil will be carefully stored and no construction materials will be taken from the surrounding environment unless approved by the responsible authority.	X					
Loss of individuals						
Limiting of vehicle speed (limits will be established at the Traffic Management Plan)	X	X	X		2703-2710	Negligible
At trenches, plugs will be incorporated every 100 m and daily fauna retrieval will be conducted if required. Where appropriate, temporary or permanent provisions for fauna	X					

Mitigation Commitments to Address the Impact / Risk	Efficiency				IP	Significance of Residual Impact / Risk
	Prevention/ avoidance	Reduction of intensity	Reduction of extent	Restoration		
to cross the working strip/ roads using underpasses, tunnels or other measures should be installed.						
Litter and other waste material have to be stored and disposed of appropriately. Any environmentally hazardous material used during construction works have to be carefully stored and in accordance with the applicable legislation.	X					
Pre-construction survey at the working strip prior to construction initiation by a herpetologist, for the relocation of tortoises or other reptiles to nearby locations.	X					
Collection of injured individuals and transfer to wildlife rehabilitation centres.		X				
Pre-construction survey along the route for potential presence of important hibernating species or colonies.	X					
Panels indicating that fauna species should not be caught or killed.	X					
Disturbance						
Avoidance of dusk-dawn work.		X			2703-2710	Low
Usage of lights to minimum, for safety reasons, and directional lighting.	X		X			
In case of blasting, use of modern explosives and techniques to reduce noise		X				
Access to the works area will only be allowed to site staff.	X		X			
All impacts						
A Biodiversity Action Plan (BAP) will be prepared & implemented for the Natura 2000 site. The BAP should foresee direct collaboration with the local Management Body of the protected site.	X	X	X	X	2703-2710	Low

Mitigation Commitments to Address the Impact / Risk	Efficiency				IP	Significance of Residual Impact / Risk
	Prevention/ avoidance	Reduction of intensity	Reduction of extent	Restoration		
Ecological awareness/behaviour training should be provided to all personnel.	X	X	X			
Establishment of a Fire Risk Prevention Plan	X					
Construction work must be supervised by fauna and habitat experts and monitoring of fauna will take place immediately before and during construction period, to carry out preventive conservation measures by the pipeline environmental team when/if required. The Management Body of the Protected Area will be timely informed for the specific ecological work..	X					
Operation Phase						
A Biodiversity Action Plan (BAP) will be implemented for the Natura 2000 site. The BAP should ensure a close collaboration of the ecological monitoring team with the management Body of the protected area..	X	X	X	X	2703-2710	Negligible

Prepared by: (NCC, 2021)

The majority of the aforementioned mitigation measures are expected to benefit also the other species observed in the area.Information concerning monitoring of the efficiency of the mitigation measures is provided in Section 8.

7 COMPENSATORY MEASURES

Compensatory measures, as described in Article 6 (4) of the EU Habitats Directive and incorporated into the Greek Law 4014/2011, are the "last resort" and are only used when a decision has been taken to proceed with a project or plan that could have negative impacts on the integrity of Natura 2000, because there are no alternatives and the project has been judged to be of overriding public interest.

Based on the guidelines for the interpretation of the European Directive 92/43/EEC, compensatory measures have to be considered only when a significant negative impact on the integrity of a Natura 2000 site is found.

Since no significant negative impact on the integrity and the conservation objectives of the investigated Natura 2000 site is assessed in the present Appropriate Assessment, no compensatory measures are proposed.

8 MONITORING PROGRAM

The implementation of a monitoring program is considered particularly important, during both (a) the construction phase of the pipeline, as well as (b) the operation and maintenance phase. It consists of two parts (a) monitoring the state of the species and habitats of interest and (b) monitoring the implementation of the mitigation measures.

8.1 General Monitoring Criteria

During construction

During construction phase, a "pre-construction" team composed by specialized field experts-scientists will monitor/survey (walkover) the construction corridor before construction initiation. Main goal for the team is to survey potential presence of important species, features and parameters that may need specific handlings (e.g. breeding species, important species, injured individuals, young individuals, important sites, etc.). This will ensure that any site-specific issues will be highlighted before construction and appropriate measures will be taken before construction activities begin.

Post construction

After construction has been finalized, a monitoring program during the operation of the project must be conducted for at least 3 years. Given the scale of the project, it is necessary to implement such monitoring follow-up in order to establish the effectiveness of the applied mitigation measures and record any possible changes/impacts to the natural environment and its components due to the project function. During the operation phase, monitoring actually has an ancillary role to observe the follow-up situation, and record some meta-status that may need attention.

Main goal of monitoring activities

The main aim of these two monitoring stages, is to be able to record the actual stage and status of fauna species, in-situ, with a pre-construction preceding team, then in real-time during the construction process, and eventually once the construction is over to record the post-construction situation, impact and effect of mitigation measures, and natural environment elements' status in the recovery phase.

Basic axis for monitoring implementation

There are four basic axes upon which the monitoring will be designed and carried out: (a) Important species of concern that must be studied monitored as per the conservation objectives and integrity of the Natura 2000 site, (b) Period (season-month and time of the day) of the monitoring

implementation, (c) Guidelines for monitoring implementation depending on each biological group which is studied, and (d) Biological and environmental parameters recorded during monitoring process.

All four axes are analytically described in the paragraphs below.

8.2 Monitoring Program for the Study Area

The implementation and monitoring of the mitigation measures proposed will be foreseen and included in the Environmental Management System of the project and their details will be defined by the Environmental Management Plan. An Environmental Monitoring Plan will be prepared, while a Biodiversity Management Plan will be included as an integral part of it. The Environmental Monitoring Plan shall be submitted to the competent authorities that will monitor its implementation by the contractor.

The monitoring will focus on (a) the presence of the species in the area and its use during construction in order to estimate the actual impact of the activities to the species in terms of loss of habitat, loss of individuals and disturbance and the efficiency of the mitigation measures in order to provide information for the assessment of the need for modifications in the construction timing or finetuning of mitigation measures etc. and (b) the presence of the species and the use of the area after the construction in order to estimate the long-term impacts of the project to the Natura 2000 site.

Furthermore, the monitoring will also focus on the collection of all necessary information on (a) the confirmation of the mitigation measures' implementation and (b) the effectiveness of the mitigation. A series of indicators representative of the effectiveness of the mitigation measures (Key Performance Indicators - KPIs) will be defined and monitored. The effectiveness of the one-off measures will be measured once, i.e. after their implementation.

All above information will feed the procedure of the periodic adjustment of the mitigation program, while annual reports of the monitoring program should be submitted to central, regional and local authorities responsible for environmental supervision.

Species/habitats for which monitoring should focus on, during construction and in post-construction surveys.

The species/habitats to be monitored are the species included in the SDF of the Habitats Directive that may be affected by the construction and operation of the project, as presented in the present AA, namely (a) *Lutra lutra*, (b) reptiles and (c) the habitat type 5420.

Monitoring during construction

In the case of the habitat type, on-the-spot investigation should be carried out and the Braun-Blanquet method should be applied.

In the case of mammals. Foot line transects is one of the most common, simple and low-cost technique to monitor mammals that can cover many species' survey. The main goal is to record direct and indirect observations that denote species' presence in the area. Direct observation refers to visual contact with an individual, which is an immediate index of the species' presence. Indirect observations refer to recording of surrogate parameters which denote nonetheless the species' presence in the area, such as prey left-overs, nests, scats, footprints, hair and more.

During construction it is advisable to have both a monitoring process 3-4 days before construction reaches at the surveyed area, whereas experts should also follow the working crews in-situ during construction. Permanent line transects should be applied. In case of direct observation of animals on the project area, evaluation of the situation should take place on a case by case basis.

In the case of reptiles, foot line transects again is one of the most common, simple and low-cost technique to monitor them as well that can cover many species' survey, and is only applied during the day due to the species biological traits for reptiles and during day and night for amphibians. One of the main techniques of herpetofauna monitoring, apart the foot survey, is the turnover of all material possible to give shelter to reptiles, stones, cupboards, wood debris, trunks, etc. High attention should be given to possible encounter with venomous snakes, and only specialists should undertake handling. During night the survey is also (and probably mainly) acoustic, recording and identifying individuals from their sound. Line transects should be applied whenever there is adequate aquatic habitat for amphibian species. Line transects should cover linearly all the perimeter extension of any aquatic habitat.

During construction it is advisable to have both a monitoring process 3-4 days before construction reaches at the surveyed, whereas experts should also follow the working crews in-situ during construction. In case of direct observation of animals inside the working strip, evaluation of the situation should take place as well on a case by case basis, possible relocation should be considered, and first aid help if an animal is injured.

Monitoring during operation and maintenance phase

After the construction is finalized, the monitoring phase of the "post-construction" period will be conducted for a total of 3 years, except if during monitoring and assessment it is estimated that a shorter period can be sufficient. The main axis of its implementation is the same as presented in the above section of construction monitoring phase.

9 CONCLUSIONS

The present Appropriate Assessment concerns the onshore section of the EastMed pipeline, which crosses the Special Area of Conservation (SAC) “Elos Kalodiki", GR2120002. It has been prepared as a necessary and integral part of the Environmental and Social Impact Assessment of the project.

The present AA followed the specifications described in Annex 3.2.2 of the MD 170225/2014, concerning the AA of projects and activities located within Natura 2000 sites that are subject to specific conditions.

For the Study Area and the Field Survey Area of the project, detailed, sufficient and recent data are available from recent monitoring projects of the Management Body. The data have been assessed as sufficient, documented, reliable and exploitable, taking into consideration the size and the type of project. Moreover, they are recent and analytical, and they are derived from studies and surveys that have been carried out on behalf of the Management Body. In the frame of the present AA, 4 days of field work were performed.

The present AA provided a detailed ecological description of the Study Area with special emphasis in the Field Survey Area (a strip of 500 m either side of the proposed pipeline routing). In particular, the AA assessed the potential impacts of the project to the populations and distribution of protected species and the ecological functions of the site, and identified suitable mitigation measures to ensure that the proposed project will not harm the ecological integrity of the site and the connectivity of the Natura 2000 network.

The pipeline routing crosses the Study Area above the Kalodiki fen at an area covered by phrygana for a length of 0.14m. The construction is expected not to exceed a few weeks. The area crossed by the pipeline is expected to be inhabited by reptile species included in the SDF that are found in terrestrial areas. All of them are expected to have a broad distribution in the area. The expected residual impact is low and is mainly related to the potential disturbance of mammals due to construction works and mainly blasting that is related with significant increase of noise level, while the other impacts are estimated to be negligible, namely (a) the habitat loss due to the crossing of the pipeline the habitat type 5420 included in Annex I Directive and the relevant loss of habitat for the species and (b) the potential loss of individuals of reptiles and *Lutra lutra*, due to increase of vehicle traffic and trapping in open trenches.

The present AA proposes a key measure for mitigation of the impacts on the local biodiversity, in order to minimize project impacts to the site: The construction works within the site and its vicinity will take place outside the main breeding period, March-July, following the provisions of the EU Habitat Directive and of the national legislation. By applying this measure and other mitigation

measures proposed in the relevant chapter of the AA, the impact of the project on the ecological integrity of the SAC site are assessed to be low.

Concerning cumulative impacts, the site hosts also a high voltage power line and a national road, as well as a network of dirt roads; that are expected to act cumulatively. The fact that all these infrastructure cross the site at the same area leads to minimization of the cumulative impact, which is estimated as negligible. The scenario of the current routing is estimated as the optimal one.

The present AA also provides guidelines on the monitoring program to be carried out during construction alongside the executions of construction works, and during the pipeline operation for at least three years.

Provided that the described above precautions are taken into consideration, it is well beyond doubt that the impacts of the crossing of the project on the ecological integrity of the Special Area of Conservation (SAC) “Elos Kalodiki", GR2120002, of the Natura 2000 network, will be low.

10 STUDY TEAM

Name		Role
Tasos Dimalexis	Dr. Biologist	Project Coordinator Site assessment
Margarita Tzali	Environmental Engineer, MSc	Project Manager AA compilation
Alexandra Kontou	Environmentalist, MSc	AA compilation
Vassilis Goritsas	Environmentalist, MSc	Data management/Map production
Jakob Fric	Physicist	Development of databases/Data management
Apostolos Christopoulos	Environmentalist MSc, Phd candidate in Biology	Herpetofauna expert Field survey, Preparation of texts

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ANNEX A SDF DATA

Table 11-1 Habitat types present on the site and assessment for them

Code	Cover (ha)	Data quality	Assessment			
			Repres.	Rel.surf.	Cons.	Global
3150	34.14931162	G	A	C	A	B
5420	152.3743088	G	D			
92A0	7.184622144	G	C	C	C	C
7210	147.1221611	G	A	A	B	A

Prepared by: (NCC, 2021)

Definition:

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor'

Degree of representativity of the natural habitat type on the site (Representativity): A= 'excellent representativity', B= 'good representativity, C= 'significant representativity', D= 'non-significant presence'

Area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within the national territory (Relative surface): A=15%-100%, B=2%-15%, C=0%-2%.

Degree of conservation of the structure and functions of the natural habitat type concerned. and restoration possibilities (Conservation Status): This criterion comprises three sub-criteria: i) degree of conservation of the structure, ii) degree of conservation of the functions, iii) restoration possibility / A = 'excellent conservation' (= excellent structure, independent of the grading of the other two sub-criteria, = structure well conserved and excellent prospects independent of the grading of the third criterion), B = 'good conservation' (= structure well conserved and good prospects independent of the grading of the third sub-criterion, = structure well conserved and average/maybe unfavourable prospects and restoration easy or possible with average effort, = average structure/partially degraded, excellent prospects and restoration easy or possible with average effort, = average structure/partially degraded, good prospects and restoration easy), C = 'average or reduced conservation' (= all other combinations)

Global assessment of the value of the site for conservation of the natural habitat type concerned (Global assessment): A = 'excellent value', B =' good value', C = 'significant value'

Table 11-2 Species referred in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Group	Code	Species Name	Population						Assessment			
			Type	Min	Max	Unit	Abund.	Data Quality	Pop.	Cons.	Isol.	Global
R	1279	*Elaphe quatuorlineata*	p				C	M	C	B	C	C
R	6095	*Zamenis situla*	p				R	M	C	B	C	C
R	1220	*Emys orbicularis*	p				C	M	C	B	C	C
M	1355	*Lutra lutra*	p				R	DD	C	B	A	B
R	2373	*Mauremys rivulata*	p				R	M	C	B	C	C
F	5279	*Pelasgus thesproticus*	p				R	DD	C	B	A	C
R	1217	*Testudo hermanni*	p				C	M	C	B	C	C
R	1218	*Testudo marginata*	p				C	M	C	B	C	C
A	5364	*Triturus macedonicus*	p				R	M	C	B	C	C

Prepared by: (NCC, 2021)

Definitions:

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

Type: p = permanent, r = reproducing, c = concentration, w = wintering

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor'

Size and density of the population of the species present on the site in relation to the populations present within national territory (Population): the ratio of the population in the site / population in the national territory: A: 15%-100%, B=2%-15%, C=0%-2%, D=non-significant population

Degree of conservation of the features of the habitat which are important for the species concerned and possibilities for restoration (Conservation). This criterion comprises two sub-criteria: i) degree of conservation of the features of the habitat important for the species, ii) restoration possibilities. A = conservation excellent

(= elements in an excellent condition, independent of the grading of the possibility of restoration), B = good conservation (= elements well conserved independent of the grading of the possibility of restoration), C = average or reduced conservation (= all other combinations)

Degree of isolation of the population present on the site in relation to the natural range of the species (Isolation). A: population (almost) isolated, B: population not-isolated, but on margins of area of distribution, C: population not-isolated within extended distribution range

Global assessment of the value of the site for conservation of the species concerned. A: excellent value, B: good value, C: significant value.

Other species

There are also 30 other species of importance for the area included in the SDF, of which 5 are amphibians, 9 mammals, 1 plant, 1 invertebrate and 14 reptiles, of which 28 included in the National Red Data Lists, 26 in International Conventions, while 14 are listed in Annex IV of the Habitats Directive and 3 in Annex V. 3 are listed for other reasons. There are no endemic species. For further detail please refer to the SDF.

ANNEX B THREAT STATUS

Table 11-3 Threat and Protection status of Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC

Group	Code	Species Name	IUCN (2020)	Greek Red Data Book (2008)	Endemic - Greek Red Data Book (2008)	Habitats Directive Annex II	Habitats Directive Annex IV	Bern Convention	Bonn Convention	CITES	Observed during field work
R	1279	*Elaphe quatuorlineata*	NT	LC		Y	Y	II			
R	6095	*Zamenis situla*		LC		Y	Y	III			
R	1220	*Emys orbicularis*	NT	NT		Y	Y	II			
M	1355	*Lutra lutra*	NT	EN		Y	Y	II		I	
R	2373	*Mauremys rivulata*		LC		Y-CTC	Y-CTC	III			
F	5279	*Pelasgus thesproticus*	NT	NT		Y-CTC					x
R	1217	*Testudo hermanni*	NT	VU		Y	Y	II		II	
R	1218	*Testudo marginata*	LC	LC		Y	Y	II		II	
A	5364	*Triturus macedonicus*	LC	LC		Y	Y	II			

Prepared by: (NCC,2021)

Definitions:

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

Threat categories according to IUCN's Red List of Threatened Species (2020.1) (http://www.iucnredlist.org/): EX: Extinct, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, LC: Least Concern, DD: Data Deficient, NE: Not Evaluated

Red Data Book of Rare and Threatened Plants of Greece (2009): EX: Extinct, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, LC: Least Concern, DD: Data Deficient, NE: Not Evaluated, (): temporary category

Threat categories according to the Red Data Book for Endangered Animals of Greece (2009): EX: Extinct, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, LC: Least Concern, DD: Data Deficient, NE: Not Evaluated

Habitats Directive (92/43/EC), including amendments up to 2007. Annex II: core areas of their habitat must be protected under the Natura 2000 Network and the sites managed in accordance with the ecological requirements of the species, Annex IV: strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites.

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). I: Appendix I – Strictly Protected Flora Species, II: Appendix II - Strictly Protected Fauna Species, III: Appendix III – Protected Fauna Species

Convention on the conservation of migratory species of wild animals (CMS, Bonn Convention). I: Appendix I – Endangered migratory species, II: Appendix II – Migratory species conserved through Agreements

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). I: Appendix I - endangered species of animals and plants, which CITES generally prohibits international trade of their specimens, II: Appendix II - species of animals and plants which are not directly threatened with extinction, but may be listed in Annex I if their trade is not controlled.

ANNEX C SITE SPECIFIC CONSERVATION OBJECTIVES

Site Specific Conservation Objectives

1110, 1130, 1140, 1210, 91M0, 1310, 1410, 9350, 5420, 91B0, 92A0, 92C0:

The General Conservation Objectives apply to these habitat types.

Elaphe situla, Emys orbicularis, Mauremys caspica:

The General Conservation Objectives apply to these species.

Testudo hermanni:

Average population density in areas with suitable habitat greater than or equal to 4 ind./ha. Conservation of suitable habitat at a percentage of >50% in 14 cells of 1x1km grid in the Natura 2000 site. Recording of the species presence in 16 cells of 1x1km grid in the Natura 2000 site. On the habitat quality, see general conservation objectives for the Natura 2000 site in relation to the species' habitat conservation degree.

Testudo marginata:

Average population density in areas with suitable habitat greater than or equal to 5 ind./ha. Conservation of suitable habitat at a percentage of >50% in 11 cells of 1x1km grid in the Natura 2000 site. Recording of the species presence in 14 cells of 1x1km grid in the Natura 2000 site. On the habitat quality, see general conservation objectives for the Natura 2000 site in relation to the species' habitat conservation degree.

Triturus macedonicus:

Conservation of suitable habitat at a percentage of >50% in 16 cells of 1x1km grid in the Natura 2000 site. Recording of the water reservoirs with reproductive activity of the species in 1 location in the Natura 2000 site. On the habitat quality, see general conservation objectives for the Natura 2000 site in relation to the species' habitat conservation degree.

Pelasgus thesproticus:

Positive recording of the species distribution at a percentage of ≥50%. On the habitat quality, see general conservation objectives for the Natura 2000 site in relation to the species' habitat conservation degree.

Lutra lutra:

Average density 1 person/35km^2. Presence of the species in each 5x5 cell of the species distribution within the Natura 2000 site. Permanent presence of the species in at least 1 5x5km cell within the Natura 2000 site. The suitable habitat should cover a significant part of the area of 10x10 cells of the species distribution within the Natura 2000 site (>50%). For the habitat quality, see general

conservation objectives for the Natura 2000 site in relation to the species' habitat conservation degree. The species is found in riparian zones of rivers and lakes, provided that natural riparian vegetation exists.

ANNEX D ECOLOGICAL REQUIREMENTS

Table 11-4 Ecological requirements, threats and state in Greece and the Study Area of Species assessed by the AA ([1]: Papamichael et al. 2015, Ioannidis et al. 2015, [2]: SDF)

Code	Species Name	Habitat[1]		Threats[1]	Presence Status in Greece[1]	Significant Presence Status in the Study Area[2]
		Reproduction	Foraging			
Annex II (92/43/EEC) species of the Study Area - Reported in chapter 3.2 of the site's SDF						
1279	*Elaphe quatuorlineata*	Wood edge and hedges	Wood edge and hedges	Cultivation, roads, pollution, collection	Resident	C
6095	*Zamenis situla*	Sunny vegetation and stony ground	Sunny vegetation and stony ground, cultivated land	Urbanisation, roads	Resident	C
1217	*Testudo hermanni*	Areas with dense vegetation and hot summers	Areas with dense vegetation and hot summers	Agricultural intensification, hedge/grassland removal, pollution, roads, collection, fires	Resident, continental Greece	C
1218	*Testudo marginata*	dense vegetation, mainly in shrubs, oak forests, and even crops	dense vegetation, mainly in shrubs, oak forests, and even crops	wildfires, habitat degradation, road construction, illegal collection	mainland Greece to the south of Macedonia, the Peloponnese, Evia, the Sporades and the islands of the Saronic Gulf	C
1355	*Lutra lutra*	Riparian zones	Wetlands	Habitat fragmentation, poisoning, water pollution, wetland alteration	Resident, mostly in continental Greece	C

Prepared by: (NCC, 2021)

ANNEX E PHOTOGRAPHIC DOCUMENTATION

Study Area

Photographs	
	
	

Prepared by: (NCC, 2021)

Field Survey Area

IP	Photograph	Sampling Plot	Filename / Date
2704-2709		Panoramic	DJI_0351.JPG 19/12/2021

Prepared by: (NCC, 2021)

ANNEX F MAPS

REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components / Στοιχεία του Έργου

- Proposed Routing / Προτεινόμενη Όδευση
- Proposed Routing (offshore) / Προτεινόμενη Όδευση (θαλάσσιο τμήμα)
- Study Area / Περιοχή Μελέτης

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Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984
WKID: 3857 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: Asprofos engineering, ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT - GREEK SECTION/
ΕΡΓΟ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED - ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC - GR2120002" /
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 "ΕΖΔ - GR2120002"

Map n°:	
M1-N10 S12	*STUDY AREA: NATURA 2000 SITES CROSSED BY ONSHORE EASTMED PIPELINE / ΠΕΡΙΟΧΗ ΜΕΛΕΤΗΣ: ΠΕΡΙΟΧΕΣ NATURA 2000 ΠΟΥ ΤΕΜΝΕΙ Ο ΑΓΩΓΟΣ EASTMED*

Scale/ Κλίμακα	Project DWG No./ Αρ. Σχ. Έργου:	Rev/ Αναθ
1:2.500.000		0A

Size/ Μέγεθος	Company's DWG No/ Αρ. Σχ. Εταιρείας:	Engineer's DWG No/ Αρ. Σχ. Μελετητή:	Sheet/ Φύλλο
A3	-	AUT-11727500-STU-XXX/ Section 11.1.1	

Document Name: Map1_PROJECT_ver3.1_2022.01.09

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REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
M2-N18 S12A01	APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC GR2120002" FOR THE ONSHORE SECTION OF EASTMED PIPELINE PROJECT ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 "SAC GR2120002" ΓΙΑ ΤΟ ΧΕΡΣΑΙΟ ΤΜΗΜΑ ΤΟΥ ΔΙΑΣΥΝΔΕΤΗΡΙΟΥ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components / Στοιχεία του Έργου

- Routing Chainage (5km) / Χιλιομέτρηση Όδευσης (5 χλμ.)
- Route IP / Κορυφή Όδευσης
- Proposed Routing / Προτεινόμενη Όδευση
- Study Area / Περιοχή Μελέτης
- Field Survey Area inside Natura 2000 site / Περιοχή Έρευνας Πεδίου εντός περιοχής Natura 2000
- Field Survey Area / Περιοχή Έρευνας Πεδίου

Natura 2000 Network / Δίκτυο Natura 2000

- SAC/ΕΖΔ: Special Area of Conservation / Ειδική Ζώνη Διατήρησης
- SAC-SPA/ΕΖΔ-ΖΕΠ: Special Area of Conservation - Special Protection Areas / Ειδική Ζώνη Διατήρησης - Ζώνη Ειδικής Προστασίας
- SPA/ΖΕΠ: Special Protection Areas / Ζώνη Ειδικής Προστασίας

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

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Contract No.
Αρ. Συμβολαίου: project code

Coord. Syst.: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
WKID: 2100 Authority: EPSG

COMPANY / ETAIPEIA: IGI Poseidon

ENGINEER/ CONSULTANT: Asprofos engineering, ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

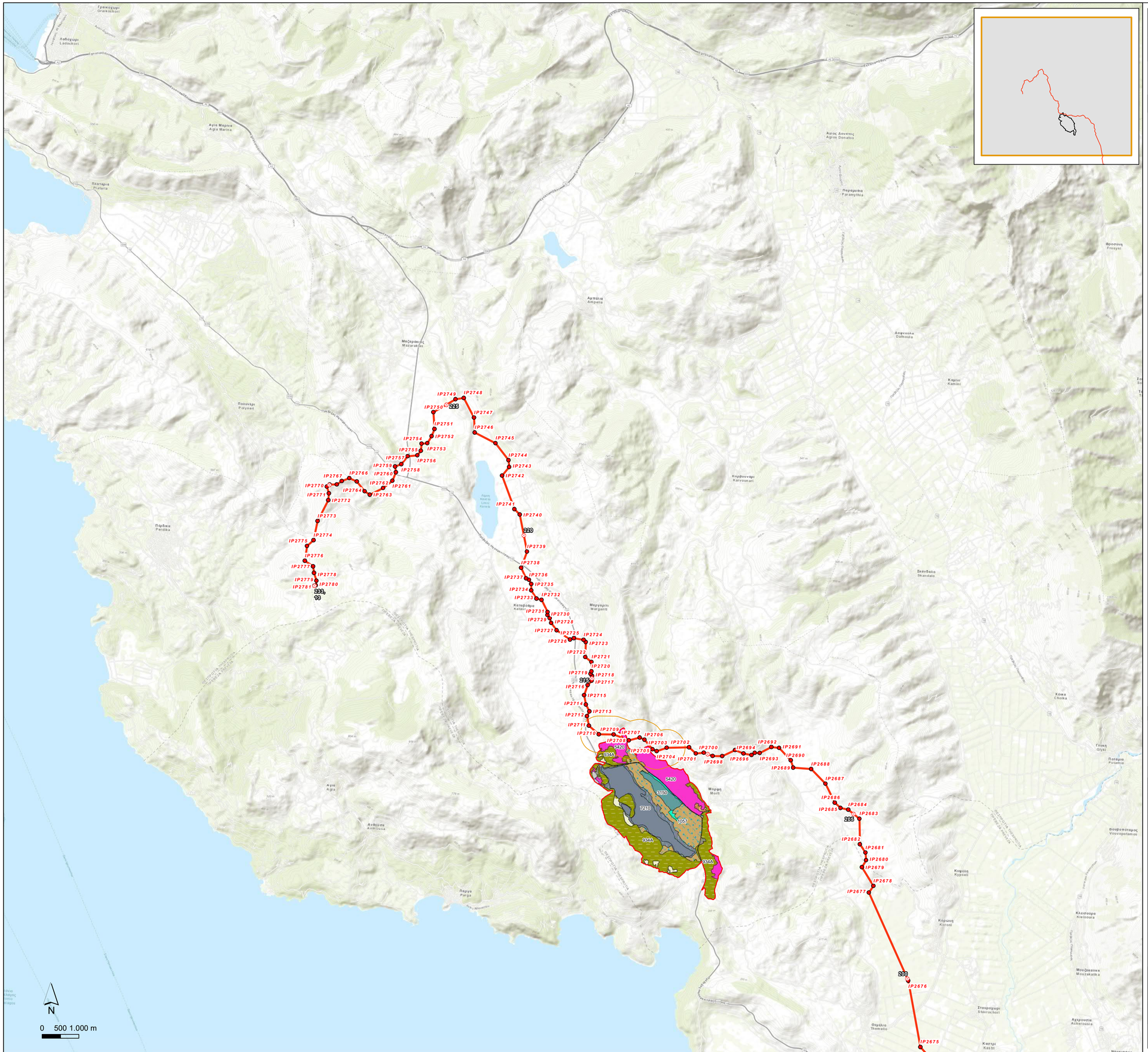
EASTMED PIPELINE PROJECT - GREEK SECTION/
ΕΡΓΟ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED - ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC - GR2120002" /
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 "ΕΖΔ - GR2120002"

Map n°:		
M2-N18 S12A01	*STUDY AREA / ΠΕΡΙΟΧΗ ΜΕΛΕΤΗΣ*	
Scale/Κλίμακα 1:50.000	Project DWG No./ Αρ. Σχ. Έργου:	Rev/Αναθ 0A
Size/Μέγεθος A1	Company's DWG No/ Αρ. Σχ. Εταιρείας -	Engineer's DWG No/ Αρ. Σχ. Μελετητή: AUT-11727500-STU-XXX/ Section 11.1.1
		Sheet/Φύλλο 1 of 1

Document Name: Map2_STUDY_AREA_ver3.1_2021.01.09_A1_onshore



REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT / ΑΡ. ΕΓΓΡΑΦΟΥ	DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ
M3-N18 S12A01	APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC GR2120002" FOR THE ONSHORE SECTION OF EASTMED PIPELINE PROJECT ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 "SAC GR2120002" ΓΙΑ ΤΟ ΧΕΡΣΑΙΟ ΤΜΗΜΑ ΤΟΥ ΔΙΑΣΥΝΔΕΤΗΡΙΟΥ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components / Στοιχεία του Έργου

- Routing Chainage (5km) / Χιλιομέτρηση Όδευσης (5 χλμ.)
- Route IP / Κορυφή Όδευσης
- Proposed Routing / Προτεινόμενη Όδευση
- Field Survey Area / Περιοχή Έρευνας Πεδίου
- Study Area / Περιοχή Μελέτης

Habitat types - Annex I (92/43/EEC) / Τύποι οικοτόπων - Παράρτημα I (92/43/ΕΟΚ)

- 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation / Ευτροφικές φυσικές λίμνες με βλάστηση τύπου Magnopotamion ή Hydrocharition
- 5420 Sarcopoterium spinosum phryganas / Φρύγανα από Sarcopoterium spinosum
- 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae / *Ασβεστούχοι βάλτοι με Cladium mariscus και είδη της Caricion davallianae
- 92A0 Salix alba and Populus alba galleries / Δάση-στοές με Salix alba και Populus alba

Habitat types - Others (not listed in the Annex I of 92/43/EEC) / Τύποι οικοτόπων - Λοιποί (εκτός Παραρτήματος Ι της 92/43/ΕΟΚ)

- 1021 Concentration of agricultural - processing units / Συγκεντρώσεις αγροτικών - μεταποιητικών μονάδων
- 1024 Provincial roads / Δρόμοι επαρχιακοί
- 1032 Construction sites / Χώροι δόμησης
- 1056 Permanently irrigated land / Μόνιμα αρδευόμενη γη αμιγής
- 1057 Permanently irrigated land - mixed / Μόνιμα αρδευόμενη γη μεικτή
- 1062 Abandoned cultivation / Εγκαταλελειμμένες καλλιέργειες
- 1067 Fruit trees and berry plantations - mixed / Οπωροφόρα δέντρα & φυτείες (μεικτό)
- 1068 Olive groves - pure / Ελαιώνες αμιγείς
- 1069 Olive groves - mixed / Ελαιώνες μεικτοί
- 72A0 Reed beds / Καλαμώνες
- 934A Greek Kermes oak forests / Ελληνικά δάση Πρίνου

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
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Contract No.
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Datum: GGRS 1987
WKID: 2100 Authority: EPSG

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/ CONSULTANT: Asprofos engineering, ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

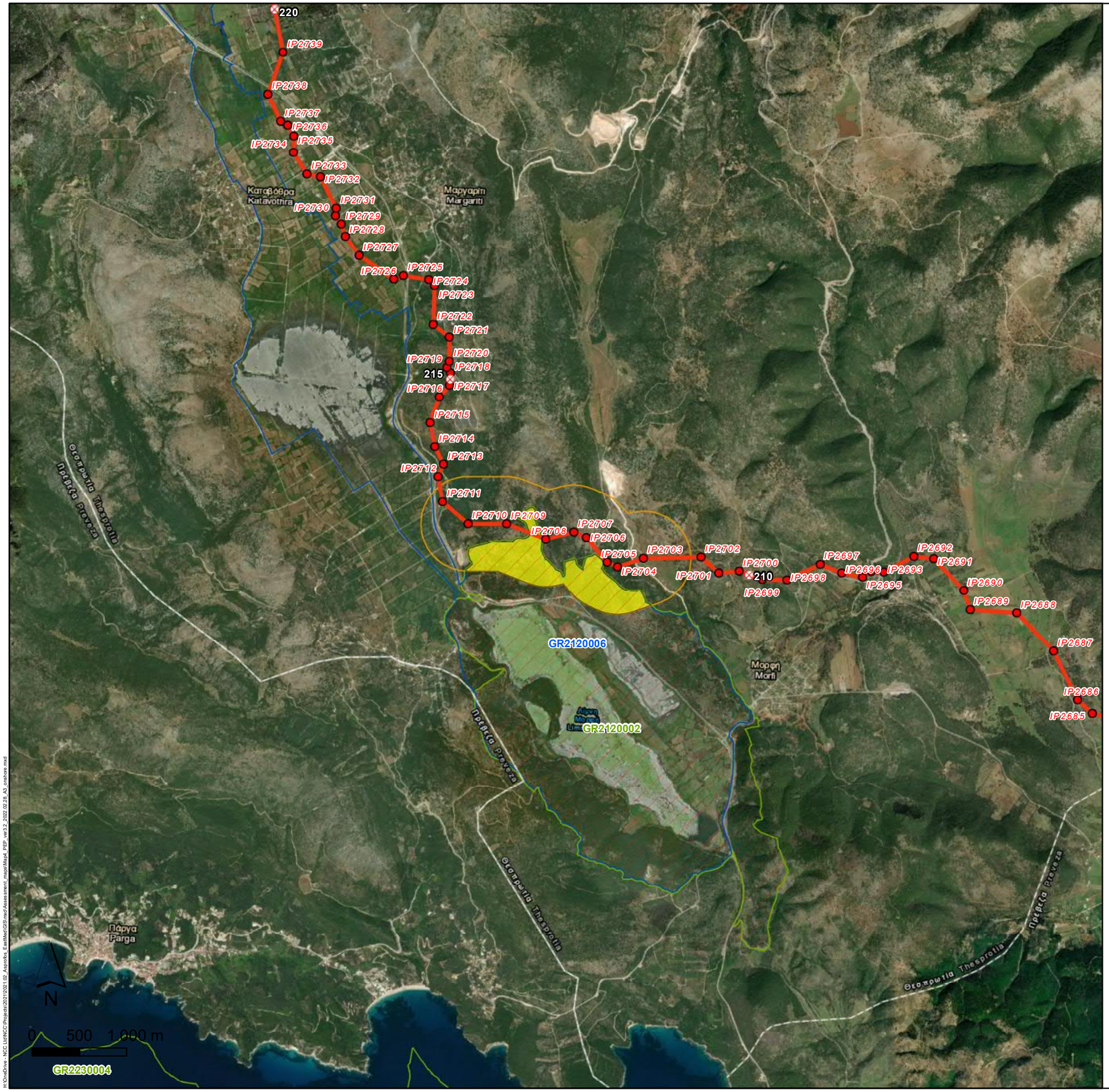
EASTMED PIPELINE PROJECT - GREEK SECTION/
ΕΡΓΟ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED - ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC - GR2120002" /
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 " - GR2120002"

Map n°:	*HABITAT TYPES - ECOLOGICAL SPATIAL UNITS INSIDE STUDY AREA / ΤΥΠΟΙ ΟΙΚΟΤΟΠΩΝ - ΟΙΚΟΛΟΓΙΚΕΣ ΧΩΡΙΚΕΣ ΕΝΟΤΗΤΕΣ ΣΤΗΝ ΠΕΡΙΟΧΗ ΜΕΛΕΤΗΣ*	
M3-N18 S12A01		
Scale/Κλίμακα 1:50.000	Project DWG No./ Αρ. Σχ. Έργου:	Rev/Αναθ 0A
Size/Μέγεθος A1	Company's DWG No/Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/Αρ. Σχ. Μελετητή: AUT-11727500-STU-XXX/ Section 11.1.1
		Sheet/Φύλλο 1 of 1

Document Name: Map3_HABITATS-OXE_ver3:1_2022.02.14_A1_onshore



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REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE " GR2120002"
FOR THE ONSHORE SECTION OF EASTMED PIPELINE PROJECT
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 " GR2120002"
ΓΙΑ ΤΟ ΧΕΡΣΑΙΟ ΤΜΗΜΑ ΤΟΥ ΔΙΑΣΥΝΔΕΤΗΡΙΟΥ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components / Στοιχεία του Έργου

- Routing Chainage (5km) / Χιλιομέτρηση Όδευσης (5 χλμ.)
- Route IP / Κορυφή Όδευσης
- Proposed Routing / Προτεινόμενη Όδευση
- Study Area / Περιοχή Μελέτης
- Field Survey Area inside Natura 2000 site / Περιοχή Έρευνας Πεδίου εντός περιοχής Natura 2000
- Field Survey Area / Περιοχή Έρευνας Πεδίου

Natura 2000 Network / Δίκτυο Natura 2000

- SAC/ΕΖΔ: Special Area of Conservation / Ειδική Ζώνη Διατήρησης
- SAC-SPA/ΕΖΔ-ΖΕΠ: Special Area of Conservation - Special Protection Area / Ειδική Ζώνη Διατήρησης - Ζώνη Ειδικής Προστασίας
- SPA/ΖΕΠ: Special Protection Area / Ζώνη Ειδικής Προστασίας

NOTES/ ΣΗΜΕΙΩΣΕΙΣ

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
0A	28/2/2022	ISSUED FOR REVIEW	NCC Ltd	PiM	Client

Contract No:
Αρ. Συμβολαίου:

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

COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: Asprofos engineering, ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

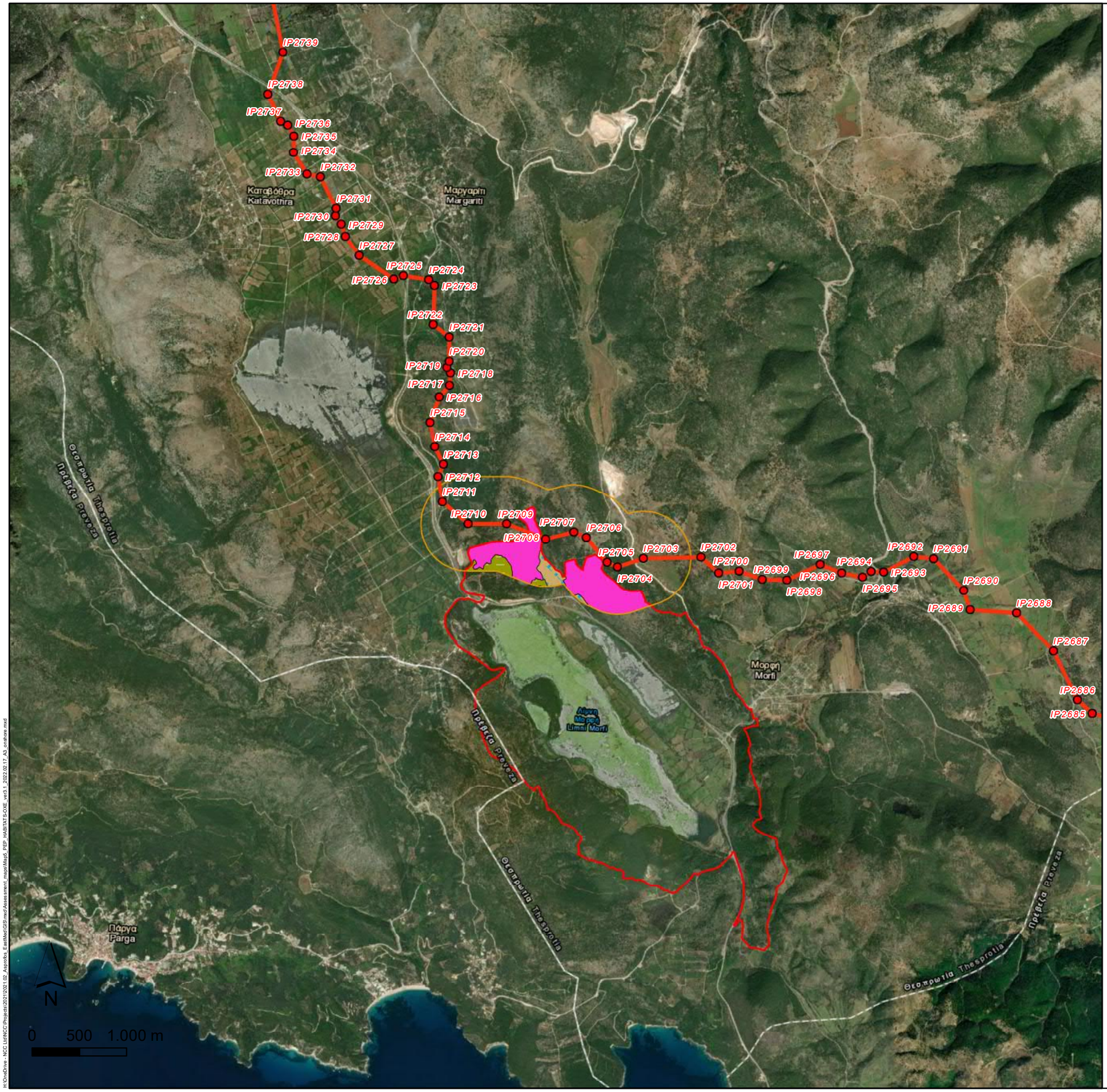
EASTMED PIPELINE PROJECT - GREEK SECTION/
ΕΡΓΟ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED - ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE " - GR2120002" /
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 " - GR2120002"

Map n°: M4-N11 S12A01	*FIELD SURVEY AREA / ΠΕΡΙΟΧΗ ΕΡΕΥΝΑΣ ΠΕΔΙΟΥ*	
Scale/ Κλίμακα 1:40.000	Project DWG No./ Αρ. Σχ. Έργου:	Rev/ Αναθ 0A
Size/ Μέγεθος A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή: AUT-11727500-STU-XXX/ Section 11.1.1
		Sheet/ Φύλλο 1 of 1

Document Name: Map4_PEP_ver3.2_2022.02.28_A3_onshore



REFERENCE DOCUMENTS / DRAWINGS
ΣΧΕΤΙΚΑ ΕΓΓΡΑΦΑ / ΣΧΕΔΙΑ

DOCUMENT TITLE / ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC GR2120002"
FOR THE ONSHORE SECTION OF EASTMED PIPELINE PROJECT
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 "SAC GR2120002"
ΓΙΑ ΤΟ ΧΕΡΣΑΙΟ ΤΜΗΜΑ ΤΟΥ ΔΙΑΣΥΝΔΕΤΗΡΙΟΥ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED

LEGEND/ ΥΠΟΜΝΗΜΑ

Project Components / Στοιχεία του Έργου

- Route IP / Κορυφή Όδευσης
- Proposed Routing / Προτεινόμενη Όδευση
- Field Survey Area / Περιοχή Έρευνας Πεδίου
- Study Area / Περιοχή Μελέτης

Habitat types - Annex I (92/43/EEC) / Τύποι οικοτόπων - Παράρτημα I (92/43/ΕΟΚ)

- 5420 Sarcopoterium spinosum phryganas / Φρύγανα από Sarcopoterium spinosum

Habitat types - Others (not listed in the Annex I of 92/43/EEC) / Τύποι οικοτόπων - Λοιποί (εκτός Παραρτήματος I της 92/43/ΕΟΚ)

- 1057 Permanently irrigated land - mixed / Μόνιμα αρδευόμενη γη μεικτή
- 934A Greek Kermes oak forests / Ελληνικά δάση Πρίνου

Rev. Αναθ.	Date Ημερομ.	Description Περιγραφή	Drawn Σχεδίαση	Checked Έλεγχος	Approved Έγκριση
0A	28/2/2022	ISSUED FOR REVIEW	NCC Ltd	PiM	Client

Contract No:
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COMPANY / ΕΤΑΙΡΕΙΑ: IGI Poseidon

ENGINEER/CONSULTANT ΜΗΧΑΝΙΚΟΣ/ ΜΕΛΕΤΗΤΗΣ: Asprofos engineering, ERM

PROJECT TITLE - ΤΙΤΛΟΣ ΕΡΓΟΥ

EASTMED PIPELINE PROJECT - GREEK SECTION/
ΕΡΓΟ ΑΓΩΓΟΥ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ EASTMED - ΕΛΛΗΝΙΚΟ ΤΜΗΜΑ

DOCUMENT TITLE - ΤΙΤΛΟΣ ΕΓΓΡΑΦΟΥ

APPROPRIATE ASSESSMENT OF THE NATURA 2000 SITE "SAC - GR2120002" /
ΕΙΔΙΚΗ ΟΙΚΟΛΟΓΙΚΗ ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΠΕΡΙΟΧΗΣ NATURA 2000 " - GR2120002"

Map n°:	
M5-N11 S12A01	*HABITAT TYPES - ECOLOGICAL SPATIAL UNITS INSIDE FIELD SURVEY AREA /ΤΥΠΟΙ ΟΙΚΟΤΟΠΩΝ - ΟΙΚΟΛΟΓΙΚΕΣ ΧΩΡΙΚΕΣ ΕΝΟΤΗΤΕΣ ΣΤΗΝ ΠΕΡΙΟΧΗ ΕΡΕΥΝΑΣ ΠΕΔΙΟΥ*

Scale/ Κλίμακα	Project DWG No./ Αρ. Σχ. Έργου:		Rev/ Αναθ
1:40.000			0A
Size/ Μέγεθος A3	Company's DWG No/ Αρ. Σχ. Εταιρείας: -	Engineer's DWG No/ Αρ. Σχ. Μελετητή: AUT-11727500-STU-XXX/ Section 11.1.1	Sheet/ Φύλλο 1 of 1

Document Name: Map5_PEP_HABITATS-OXE_ver3.1_2022.02.17_A3_onshore

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