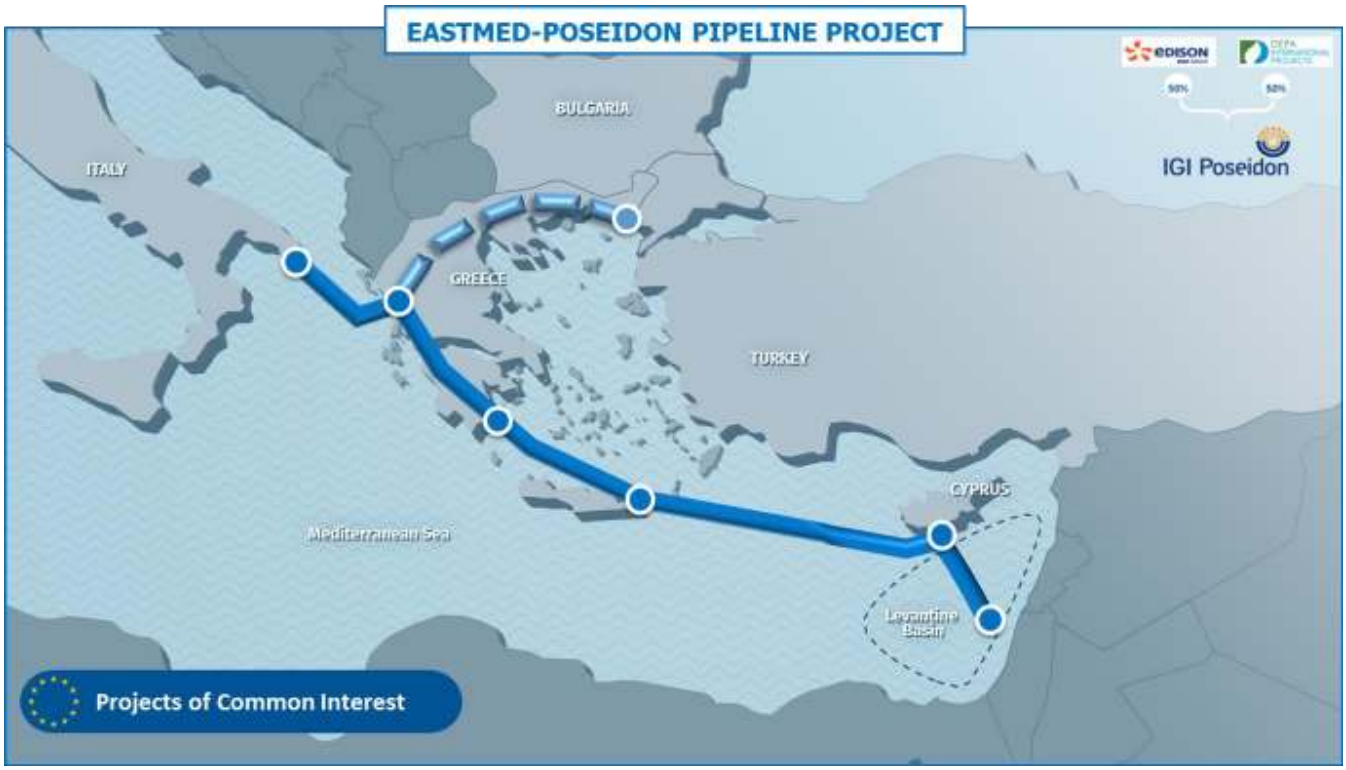
PROJECT:

EastMed Pipeline Project



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Abbreviations

See Document Map.

ANNEX 7 A ALTERNATIVES ASSESSMENT

7 A.1. INTRODUCTION

Scope of this annex is to present in detail the analyses prepared during the assessment of the various alternatives for the EastMed Pipeline Project within Greek jurisdiction.

Initially it provides an overview of the design alternatives for the project's footprint, the methodology and the feasible main alternatives investigated in the scope of the ESIA phase; and finally, the zero alternative.

It is noted that all alternatives assessed are viable and feasible and have been taken into consideration during the design of the project. It is clarified that fieldworks have been performed only for the qualified as baseline solution; the viability and feasibility of all alternatives have been assessed with site visits.

7 A.2. PROJECT CONCEPTUAL DESIGN

The identification of the conceptual design of the project, meaning basic geomorphological, technical, environmental and economic considerations, started back in 2012. During that time and up until 2018, the feasibility study of the project was elaborated which investigated various conceptual corridors and potential critical aspects of the EastMed Project.

Among others, the following were taken into consideration for the selection of the project conceptual corridor:

- Gas reserves to be connected to the pipeline. The project corridor should facilitate the transportation of natural gas[1] from countries which are interested in transferring gas from their reserves to the European Market through the specific project;
- Technical-economic considerations, e.g. most cost-effective solution, taking into consideration short and medium term funding options, market values, construction costs, operational costs (CAPEX/OPEX ratio), safety restrictions, technical constraints, environmental/social considerations, and regulatory compliance; and
- Compliance with European and national policies. This entails the European South Gas Corridor and Energy Policy. EU energy transition policy focuses on decarbonisation and democratization of energy, security of energy supply and competitiveness in the natural gas (NG) sector, and energy diplomacy.

[1] At present also the transportation of hydrogen is possible.

On this basis, various alternative scenarios were investigated. In the early phases of the project development, different project conceptual corridors (footprint) from Crete were extensively assessed (South-east/ East coastline of Peloponnese, Central Greece, i.e. in Thessaly, Northern Greece, near Komotini). Similarly, multiple alternatives for the landing on the coastline of Peloponnese were investigated since this was identified as the optimum conceptual corridor. The connection with the Peloponnese is considered the best solution because it allows for the following:

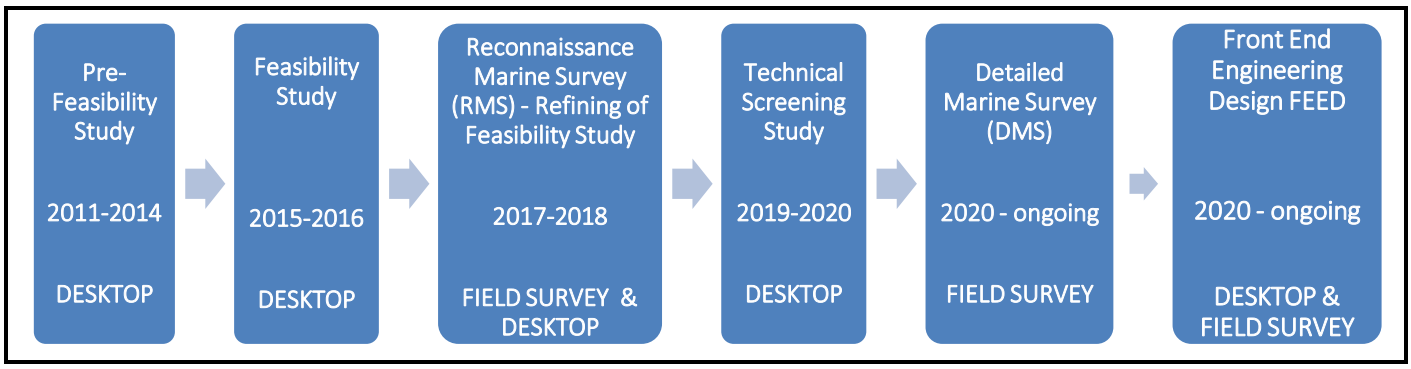
- NG supplying network to an area currently remote from existing NG infrastructure (while central and northern Greece already hosts gas pipelines with some branches allowing for possible connection of various areas to NG);
- an interconnection with the Greek National gas transmission system, close to the Megalopoli Power Plant; and
- NG and opportunities for clean energy sources in major population centres of this region (for example Patras and Sparta).

The Project definition was developed during different phases, including the following steps (Figure 7-1):

- Pre-Feasibility Study (2011-2014);
- Feasibility Study (2015-2018); definition of conceptual design (i.e. the basic geomorphological, environmental, economic and political considerations);
- Reconnaissance Marine Survey - RMS (2017-2018);
- Refining of Feasibility Study (advanced feasibility), following RMS results (2018)
- Technical Screening Study – for route optimization (2019-2020);
- Detailed Marine Survey - DMS (2020 - ongoing); and
- Front End Engineering Design (2020 - ongoing).

An early investigation of the most appropriate landfall areas and coast sections was performed in Crete and Peloponnese, and the relevant data were further refined (see details in relevant paragraphs of Section 7 A.5, below). During landfall investigations, the aim was to identify and refine the route alignment within the conceptual corridor so as to avoid areas with environmental sensitivities, areas with extended cultivations (e.g. greenhouses), tourist areas and areas with difficult morphology.

As indicated above, the evaluation of the landfalls took into consideration the connection to the corresponding onshore route. That is, from the landfall site the pipeline needs to connect with the onshore route, and thus avoidance of environmentally sensitive onshore areas, archaeological sites, settlements, etc. was also considered.



Source: ERM, 2021

Figure 7-1 EastMed Pipeline Project: Route Refinement Process Flow Chart.

Some key considerations for identifying the conceptual corridor at the coast and the connection with the onshore routes included the following:

- Crete. The eastern and southern coasts of Crete have a particular morphology with either long canyons oriented North-South or settlements, several of them with relevant tourism interests. Moreover, a dense network of Natura areas is found in rather pristine areas. As a consequence, the wider area of Atherinolakkos, already hosting the "Atherinolakkos Power Plant" of Public Power Cooperation was defined as the most suitable area for the location of the landfall alternatives;
- East Peloponnese. In East Peloponnese the vast majority of the coastal zones are characterised by steep slopes and complex morphology, towered inland by hilly and semi-mountainous ranges. Even where the coastal zone could be easily accessed from the sea, the technical works required for accessing and constructing the onshore section on the hilly and semi-mountainous ranges would require significant interventions, meaning both increase in environmental impacts and costs. The few areas where geomorphological restrictions are absent (e.g. Astros, Leonidio) are areas well known for their domestic tourism development, so they were considered less suitable than other areas in the region.

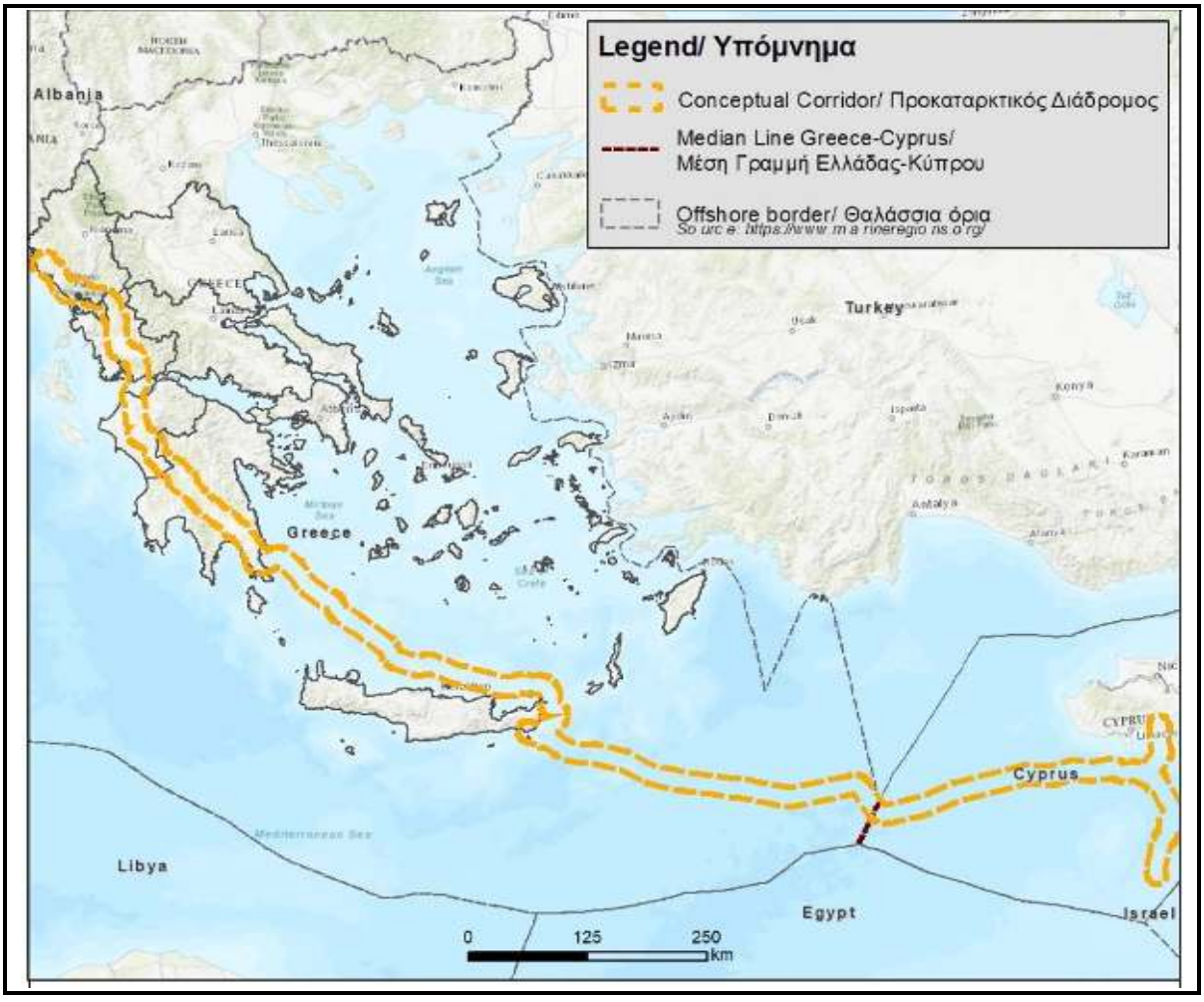
  The south-east coast of Peloponnese presents the above constraints to a lesser extent, hence was the preferred option for the landing alternatives in Peloponnese; and
- North-West Peloponnese. In Northern Western Peloponnese coastline, there is a touristic development and settlements hosting family summer houses and traditional holiday venues. The North West coastline of Peloponnese is very popular for domestic tourism given the proximity to the biggest population centre of Greece, its capital, Athens. Apart from local residents or families with origins in the specific area who visit their ancestral homes and places throughout the year,

many Athenians choose NW Peloponnese (especially the coastline) for short term vacations (during weekends and bank holidays) or even summer holiday.

Upon selection of a preferred conceptual corridor (undertaken for both offshore and onshore pipeline alignments), a process of route refinement commenced in order to optimize the route, especially for those sections which present greater technical/geohazards, environmental, socioeconomic and cultural heritage challenges.

Details on the assessed alternatives as well as other project development phases are presented in sections 7 A.3.1 and 7 A.5.

Section 15.1.3 - Alternatives Map also supports the alternatives assessment.



Source: ERM, 2021

Figure 7-2 EastMed Pipeline Project: Conceptual Corridor Design.

7 A.3. METHODOLOGY

7 A.3.1. OVERVIEW

As part of the assessment, the Zero Alternative has been evaluated and presented in section 7 A.4. In addition, a number of alternatives for the project footprint have been investigated which include pipeline route alignments and the location of main facilities (i.e. compressor and metering stations).

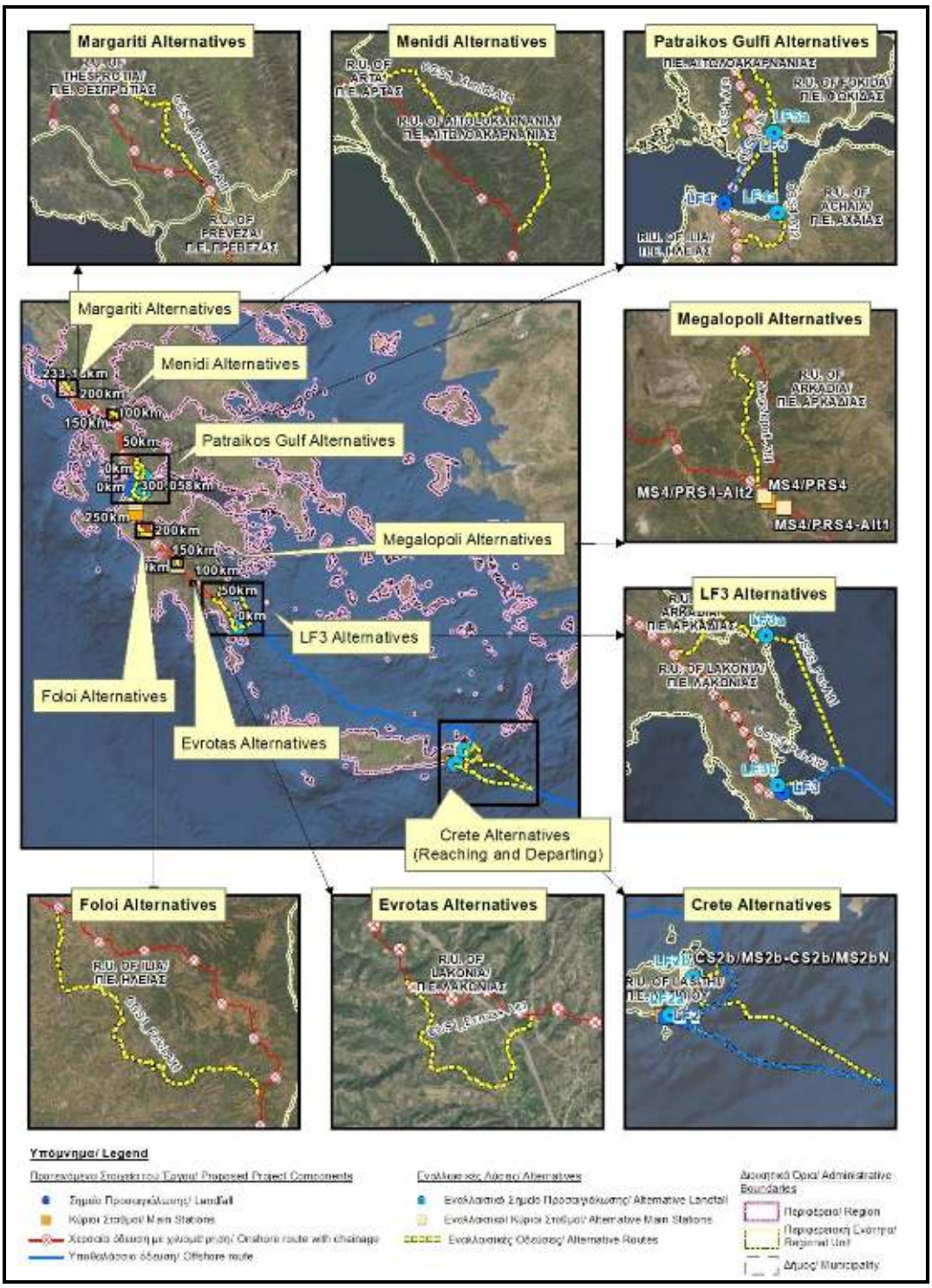
It should be noted that the pipeline routes (onshore and offshore) are part of the overall project, and therefore the offshore pipeline cannot be evaluated as an isolated element because the selection of the landfall has obvious implications for the potential impacts onshore. For instance, if a landfall site is evaluated as an isolated element, it may be considered better in terms of technical feasibility and environmental and social impacts than another landfall site alternative. However, this preferable landfall site, might induce significant impacts on the sections of the onshore and offshore approaches to the landfall point, and thus be in fact a less desirable project alternative.

In order to have a meaningful alternative assessment, the alternatives definition on the landfall and nearshore areas include the same starting point and end point. In other words, to allow for a holistic alternatives assessment and for a direct comparison between the various alternatives, common starting and ending points have been defined for all alternatives at a specific area. Obviously, this does not apply to the main facilities locations.

Lastly, the reader should note that the twin offshore pipelines, i.e. Southern Line (OSS2) and the Northern Line (OSS2N) in Greece, are very close to each other; hence, they can be assumed as one interconnector pipeline. This is why alternatives are assessed for the integrated pipeline, i.e. Pipeline System OSS2/OSS2N and Pipeline System OSS3/OSS3N.

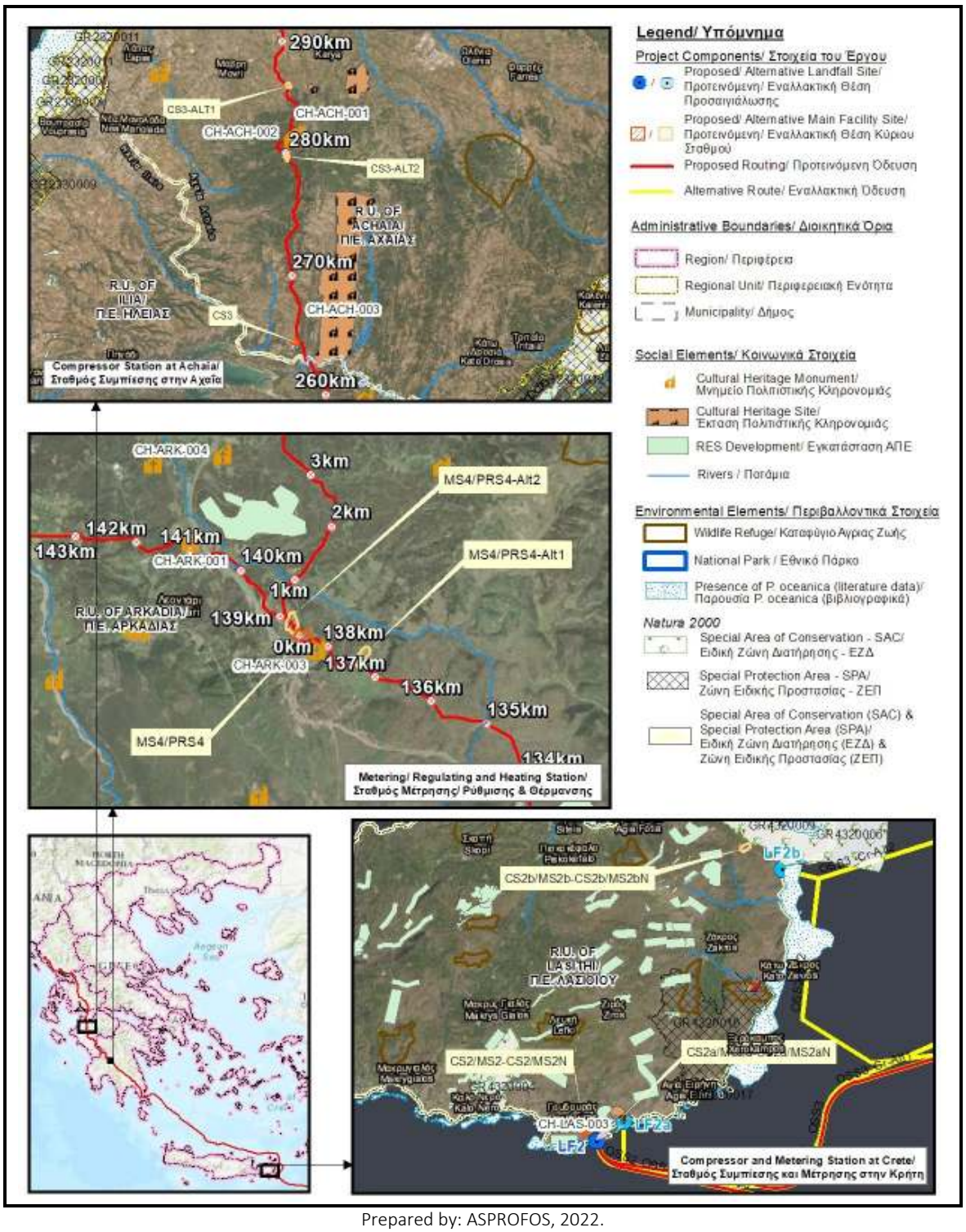
A summary of the alternatives assessment is presented in Table 7-1 and an overview in Figure 7-3. Map 15.1.3 provides the alternative routes in more detail, including environmental and social constraints.

Table 7-2 summarizes the alternatives investigated for the main project facilities (i.e. the compressor and metering stations); an overview is presented in Figure 7-4 and details are provided in Map 15.1.3.2. This map also presents the alternatives for all line valve stations (i.e. BVS, SS, LS) and the O&Ms. Alternatives of these features are not assessed given their minimum interaction with and no impact on the environment (natural and social); consequently, no real differentiation exists on the environmental performance of these features' alternatives.



Prepared by: ASPROFOS, 2022.

Figure 7-3 Overview of Feasible Pipeline Route Alternatives.



Prepared by: ASPROFOS, 2022.

Figure 7-4 Overview of Feasible Station Alternatives.

Table 7-1 Overview of Pipeline Route Alternatives.

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
1	OSS2 Reaching Crete	• OSS2 • LF2	• South Cretan Sea • Crete	• the nearshore area at South Cretan Sea • the landfall area at SE Crete	• Starting point: close to KP 575 of OSS2/OSS2 N Line, at approx. 2100 m WD. • Ending point: Landfall site at SE coastline of Crete	• OSS2-LF2 Base-case (OSS2-BC), as resulting from the starting point and reaching base-case landfall site LF2, at SE shores of Crete, close to Atherinolakkos area (Gourouras settlement), in the Municipality of Sitia. • OSS2-LF2a Alternative (OSS2-Alt1), as resulting from the starting point and reaching alternative landfall site LF2a, at SE shores of Crete, close to the Livari area, in the Municipality of Sitia. • OSS2-LF2b Alternative (OSS2-Alt2), as resulting from the starting point and reaching alternative landfall site LF2b, at E shores of Crete, close to Skinias beach and Paleokastro settlement, in the Municipality of Sitia.
2	OSS3 Departing Crete	• OSS3 • LF2	• South Cretan Sea • Crete	• the landfall area at SE Crete • the nearshore area at South Cretan Sea	• Starting point: Landfall site at SE coastline of Crete (same as #1) • Ending point: close to KP 55, at approx. 750 m WD.	• LF2-OSS3 Base-case (OSS3_Cr-BC), as resulting from the base-case landfall site LF2 at SE shores of Crete, close to Atherinolakkos area (Gourouras settlement), in the Municipality of Sitia and reaching base-case OSS3, at the ending point. • LF2a-OSS3 Alternative (OSS3_Cr-Alt1), as resulting from the alternative landfall site LF2a, at SE shores of Crete, close to the Livari area, in the Municipality of Sitia and reaching base-case OSS3, at the ending point.

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
						• LF2b-OSS3 Alternative (OSS3_Cr-Alt2), as resulting from the alternative landfall site LF2b, at E shores of Crete, close to Skinias beach and Paleokastro settlement, in the Municipality of Sitia and reaching base-case OSS3, at the ending point.
3	OSS3 Reaching Peloponnese	• OSS3 • LF3 • CCS1	• South East Aegean • Peloponnese	• the nearshore area at South East Aegean Sea • the landfall area at SE Peloponnese • the terrestrial area at SE Peloponnese	• Starting point: close to KP 410 of OSS3, at approx. 600 m WD. • Ending point: close to KP 65 of CCS1, close to Geraki Settlement, M. of Evrotas	• CCS1-OSS3 Base-case (OSS3_Pel-BC), as resulting from the starting point and reaching base-case landfall site LF3, at SE Peloponnese shores close to Agios Fokas settlement, in the Municipality of Monemvasia (southern limits of the Municipality) and reaching base-case CCS1, at the ending point. • CCS1-OSS3 Alt1 (OSS3_Pel-Alt1), as resulting from the starting point and reaching alternative landfall site LF3a, at the shores between Kiparisi and Kapsala, in the Municipality of Monemvasia (northern limits of the Municipality) and reaching base-case CCS1, at the ending point. • CCS1-OSS3 Alt2 (OSS3_Pel-Alt2), as resulting from the starting point and reaching alternative landfall site LF3b, at the shores of Kastela area, in Municipality of Monemvasia (southern limits of the Municipality) and reaching base-case CCS1, at the ending point.

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
4	Evrotas	CCS1	Peloponnese	R. Evrotas crossing, in the broader area N of Sparti	• Starting point: close to KP 100 of CCS1, near the E961 Road (Tripoli – Githio), Municipality of Sparti. • Ending point: close to KP 105 of CCS1, close to Provincial Road of Sparti - Megalopoli, Municipality of Sparti	• CCS1 Base-case (CCS1_Evrotas-BC), as resulting from the starting point, crossing R. Evrotas and E71 Road (Central Peloponnese Highway) at the NE and N of Karavas Soustianon settlement, respectively, before reaching ending point. • CCS1 Alt1 (CCS1_Evrotas-Alt1), as resulting from the starting point, crossing R. Evrotas and E71 Road (Central Peloponnese Highway) east of Karavas Logastras settlement, before reaching ending point.
5	Megalopoli	Megalopoli	Peloponnese	Entire Megalopoli branch.	• Starting point: close to KP 140 of CCS1, near Soulari Settlement, Municipality of Megalopoli. • Ending point: close to KP 10 of Megalopoli branch, close to Perivolia settlement, Municipality of Megalopoli	• Megalopoli Base-case (Megalopoli-BC), as resulting from the starting point, crossing R. Alfios close to Provincial Road of Sparti – Megalopoli, SE of Gefyra settlement, before reaching ending point. • Megalopoli Alt1 (Megalopoli-Alt1), as resulting from the starting point, crossing R. Alfios close to E71 Road (Central Peloponnese Highway), SE of Gefyra settlement, before reaching ending point.
6	Foloi Plateau	CCS1	Peloponnese	Crossing of Foloi plateau	• Starting point: close to KP 213 of CCS1, near	• CCS1 Base-case (CCS1_Foloi-BC), as resulting from the starting point, passing north of Lalas settlement,

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
				area in the Municipality of Ancient Olympia (Vasilaki settlement) and Municipality of Pirgos (Mouzaki settlement)	Vasilaki Settlement, Municipality of Ancient Olympia. • Ending point: close to KP 246 of CCS1, near Mouzaki settlement, Municipality of Pirgos	Municipality of Ancient Olympia and Goumero settlement, Municipality of Pirgos, before reaching ending point. • CCS1 Alt1 (CCS1_Foloi-Alt1), as resulting from the starting point, passing south of Lalas settlement, Municipality of Ancient Olympia and Goumero settlement, Municipality of Pirgos, before reaching ending point.
7	Patraikos Crossing	• CCS1 • LF4 • OSS4 • LF5 • CCS2	• Peloponnese • Patraikos Gulf • Western Continental Greece	• Plain of Achaia, in NW Peloponnese • landfall area at NW Peloponnese • Patraikos Gulf • landfall area at SW Etoloakarnania • Plain of Evinochori and Mt Arakynthos area at SW Etoloakarnania	• Starting point: close to KP 286 of CCS1, W of Petrochori settlement, Municipality of Dytiki Achaia. • Ending point: close to KP 29 of CCS2, NW of Grammatiko Settlement, M. of Agrinio	• OSS4 Base-case (OSS4-BC), as resulting from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia, crosses Patraikos Gulf, reaching base-case landfall site LF5 south of Evinochori settlement in the Municipality of Nafpaktia, crossing R. Evinos north of Evinochori settlement, starts climbing Mt Arakinthos in Municipality of I.P. of Messolonghi, before reaching ending point. • OSS4 Alternative 1 (OSS4-Alt1), as resulting from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia, crosses Patraikos Gulf, reaching alternative landfall site LF5a east of Kato Vasiliki settlement, Municipality of Nafpaktia, crossing R. Evinos

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
						north of Trikorfo settlement, starts climbing Mt Arakinthos in Municipality of Agrinio, before reaching ending point. • OSS4 Alternative 2 (OSS4-Alt2), as resulting from the starting point, reaching alternative landfall sites LF4a, at Tsoukaleika, Municipality of Patra, R.U. of Achaia, crosses Patraikos Gulf, reaching alternative landfall site LF5a east of Kato Vasiliki settlement, Municipality of Nafpaktia, crossing R. Evinos north of Trikorfo settlement, starts climbing Mt Arakinthos in Municipality of Agrinio, before reaching ending point. • OSS4 Alternative 3 (OSS4-Alt3), as resulting from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia, crosses Patraikos Gulf, reaching base-case landfall site LF5 south of Evinochori settlement in the Municipality of Nafpaktia, crossing R. Evinos west of Evinochori settlement, starts climbing Mt Arakinthos in Municipality of I.P. of Messolonghi, before reaching ending point.
8	Menidi	CCS2	Western Continental Greece	Crossing of Mt Makrinoros in the area of Wildlife Refuge of "Iera Moni	• Starting point: close to KP 112 of CCS2, SE of Agia Triada settlement, Municipality of Amfilochia.	• CCS2 Menidi (CCS2_Menidi-BC), as resulting from the starting point, running parallel to the coastline of Amvrakikos Gulf west of Retha Monastery, on the west ridges of Mt Makrinoros, at the westernmost boundaries

#	Name	Project Components	ESIA Study Area Sections	Spatial Context	Characteristic Points	Alternatives Assessed
				Retha and Iera Moni Loggos" (Monastery of Retha and Monastery of Loggos)	• Ending point: close to KP 126 of CCS2, close to Marlesi settlement, Municipality of Amfilochia	of the Wildlife Refuge of "Iera Moni Retha and Iera Moni Loggos", before reaching ending point. • CCS2 Alt1 (CCS1_Menidi-Alt1), as resulting from the starting point, passing east of Retha Monasteri, on the central ridges of Mt Makrinoros, at the easternmost boundaries of the Wildlife Refuge of "Iera Moni Retha and Iera Moni Loggos", before reaching ending point.
9	Margariti	• CCS2	• Western Continental Greece	• Crossing of the broader area of Margariti marshlands and valley formed between the mountain ranges of Parga and of Paramythia	• Starting point: close to KP 198 of CCS2, W of Kastri settlement, Municipality of Parga. • Ending point: close to KP 225 of CCS2, NW of Karteri settlement, Municipality of Igoumenitsa	• CCS2 Margariti (CCS2_Margariti-BC), as resulting from the starting point, passing west of Kipseli settlement, Municipality of Parga, and running parallel to the marshlands of Kalodiki, Margariti and Karteri, before reaching ending point. • CCS2 Alt1 (CCS1_Margariti-Alt1), as resulting from the starting point, passing east of Kipseli settlement, Municipality of Parga, and southwest of Paramythia settlement, Municipality of Souli, south of Lake Prondani, before reaching ending point.

Prepared by: ASPROFOS, 2022.

Table 7-2 Overview of Main Facilities Alternatives.

#	Project Components	ESIA Study Area Sections	Spatial Context	Alternatives Assessed
1	Facilities at Crete (CS2/MS2-CS2/MS2 N)	Crete	SE Crete	• CS2/MS2-CS2/MS2N Base-case (CS2/MS2-CS2/MS2N BC) in the area of Atherinolakkos • CS2/MS2-CS2/MS2N Alternative 1 (CS2a the/MS2a-CS2a/MS2aN) in the Livari area • CS2/MS2-CS2/MS2N Alternative 2 (CS2b/MS2b-CS2b/MS2bN) in the Skinia area
2	Compressor Station at Achaia (CS3)	Peloponnese	Municipality of Dytiki Achaia (NW Peloponnese)	• CS3 Base-case (CS3 BC), in the area of Kato Velitses, Municipality of Dytiki Achaia • CS3 Alternative 2 (CS3-ALT1), in the area of Lampreika, Municipality of Dytiki Achaia • CS3 Alternative 3 (CS3-ALT2), in the area of Vithoulka, Municipality of West Achaia
3	Metering, Regulating and Heating Station (MS4/PRS4 & Heating)	Peloponnese	Megalopoli area	• MS4/PRS4 & Heating Station Base-case (MS4/PRS4 & Heating BC), in the area of Soulari settlement (900 m to the North), Municipality of Megalopoli • MS4/PRS4 & Heating Station Alternative 1 (MS4/PRS4 & Heating Alt 1), in the area of Soulari settlement (300 m to the North), Municipality of Megalopoli • MS4/PRS4 & Heating Station Alternative 2 (MS4/PRS4 & Heating Alt 2), in the area of Soulari settlement (1100 m to the North), Municipality of Megalopoli

Prepared by: ASPROFOS, 2022.

7 A.3.2. PROJECT FOOTPRINT ALTERNATIVES EVALUATION CRITERIA

The evaluation of alternatives is based on a range of different criteria, which include environmental characteristics, socioeconomic characteristics as well as the possible presence of cultural heritage constraints, i.e. ESIA criteria. However, the selection also needs to take into consideration technical and geotechnical criteria related to the constructability and/or viability (in terms of technical-economic parameters), i.e. FEED criteria.

The criteria used for the pipeline route alternatives assessment are presented in Table 7-3, whilst the main facilities assessment criteria are presented in Table 7-4. In total, 80 criteria have been used for the pipeline route alternatives assessment and 31 for the assessment of the main stations facilities. These criteria are grouped in various categories, depending on the project component and the possible interactions with design and ESIA related parameters.

Given the large number of criteria applicable and in order to facilitate the presentation of data, each section presents only the relevant set of criteria (i.e. those that show differences between alternatives and thus can be used as the basis for the selection). The complete alternatives assessment matrix is also presented at the end of each relevant section for validation and a more detailed evaluation, if and as required.

The selection of the best alternative is a multi-criteria and multi-disciplinary exercise. Given the different objectives of each discipline (i.e. FEED and ESIA), the ranking of the alternative according to one set of criteria may differ from the ranking according to another set of criteria. The selection therefore is based on the weighted average of potential advantages and disadvantages and therefore, the expert opinion is also relevant in order to weight the relevance of the several criteria involved in each alternative.

It is noted that it is not within the scope of an ESIA to document all FEED criteria used for the design of the project. However, a high level qualitative assessment of the main technical parameters and challenges is provided, where necessary.

Table 7-3 ESIA Related Criteria for Evaluation of Pipeline Route Alternatives.

Code	Criteria	Definition	Units	Relation to impacts evaluation
L1	Length total (km)	Total path length within the study area	km	Duration of impacts on all parameters.
L2	Length onshore (km)	Total path length within the study area	km	Duration of impacts on all parameters.
L3	Length offshore (km)	Total path length within the study area	km	Duration of impacts on all parameters.
ES	**Environmental Sensitivities**			
ES1	Broad-leaved forest (Code CLC:311)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Permanent loss of forests due to safety restrictions during operation.
ES2	Coniferous forest (Code CLC:312)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Permanent loss of forests due to safety restrictions during operation.
ES3	Mixed forest (Code CLC:313)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Permanent loss of forests due to safety restrictions during operation.
ES4	Natural grasslands (Code CLC:321)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Temporary loss of grasslands due to safety restrictions during construction.
ES5	Sclerophyllous vegetation (Code CLC:323)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Permanent loss of bushlands due to safety restrictions during operation.
ES6	Transitional woodland/shrub (Code CLC:324)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Permanent loss of trees and shrubs due to safety restrictions during operation.
ES7	Beaches, dunes, sands (Code CLC: 331)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Temporary loss of beaches, dunes, sands due to safety restrictions during construction.

Code	Criteria	Definition	Units	Relation to impacts evaluation
ES8	Bare rock (Code CLC: 332)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Increased nuisance during construction due to noise (use of explosives, and/ or increase construction rate).
ES9	Sparsely vegetated areas (Code CLC: 333)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km^2 (%)	Temporary loss of sparsely vegetated areas due to safety restrictions during construction.
ES10	Inland marshes (Code CLC: 411)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km^2 (%)	Temporary loss of inland marshes due to safety restrictions during construction. Risk of impacts on water balance of the area.
ES11	Shallow water habitats	Various benthic communities, coralligenous formations and other habitats, growing in dim light conditions as well as a broad range of sciaphilic and perennial organisms.	Qualitative assessment	Temporary or permanent impacts on sensitive formations.
ES12	Deep sea habitats	Various benthic communities, coralligenous formations and other habitats, growing in deep sea (depths below where solar luminance plays a direct environmental role).	Qualitative assessment	Temporary or permanent impacts on sensitive formations.
ES13	Marine caves	Hollows formed by natural processes along the coast or the seabed.	Qualitative assessment	Temporary or permanent impacts on sensitive formations.
ES14	Endangered Species	Information on endangered species of biodiversity, according to IUCN and/ or national Red List datasets.	Qualitative assessment (conservation status: NATIONAL/ IUCN)	Temporary or permanent impacts on priority species.

Code	Criteria	Definition	Units	Relation to impacts evaluation
ES15	Other elements of Natural interest	Information on features of biodiversity interest, such as local corridor passages, nesting/feeding grounds, etc.	Qualitative assessment	Temporary or permanent impacts on sensitive formations.
ES16	Naturalness	Overall assessment of ecological status of the engaged area. The 'naturalness' criterion is defined as the degree to which an area is pristine and characterized by native species (i.e. absence of perturbation by human activities and absence of introduced or cultured species).	Qualitative assessment	Temporary impacts and potential permanent (fragmentation) to a pristine (or not) natural environment.
ES17	Vulnerability to natural disasters and Industrial accidents	Distance from restricted/ safety areas.	Qualitative assessment	Assessment of presence of infrastructures that may be sensitive such as other O&G infrastructures, etc., in the vicinity of the alternative.
OC	**Oceanographic Characteristics**			
OC1	Route length within Euphotic Zone (isobath of 40 m)	Total path length within the most sensitive marine zone	km	Duration and intensity of impacts on marine resources. Shallow waters are more sensitive and important due to their support to fish-populations and their role as biodiversity hotspots, in general.
OC2	Route length within Epipelagic Zone (isobath of 200 m)	Total path length within the Epipelagic Zone	km	Duration and intensity of impacts on marine resources.
OC3	Route length, up to the isobath of 600 m	Total path length within intermediate depths waters	km	Duration and intensity of impacts on marine resources.

Code	Criteria	Definition	Units	Relation to impacts evaluation
OC4	Route length, in depths greater than 600 m	Total path length within deep waters	km	Duration and intensity of impacts on marine resources.
P	**Protected Areas**			
P1	Natura 2000| Intersection (m)	Total area to be cleared along the working strip within areas of conservation interest in accordance with Directive 92/43/EEC	Total number & total km	Impact on environmentally sensitive areas of International protection.
P2	Natura 2000| Proximity (m)	Total area in proximity to the working strip within areas of conservation interest in accordance with Directive 92/43/EEC	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of International protection.
P3	Wild Life Refuge | Intersection (m)	Total area to be cleared along the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & total km	Impact on environmentally sensitive areas of national protection (excluding Natura sites).
P4	Wild Life Refuge | Proximity (m)	Total area in proximity to the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of national protection (excluding Natura sites).

Code	Criteria	Definition	Units	Relation to impacts evaluation
P5	National Park | Intersection (m)	Total area to be cleared along the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & total km	Impact on environmentally sensitive areas of national protection (excluding Natura sites).
P6	National Park | Proximity (m)	Total area to be cleared along the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of national protection (excluding Natura sites).
P7	Landscape of Outstanding Natural Beauty | Intersection (m)	Total area to be cleared along the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & total km	Impact on environmentally sensitive areas of national protection (excluding Natura sites).
P8	Landscape of Outstanding Natural Beauty | Proximity (m)	Total area to be cleared along the working strip within areas included in the national system of protected areas of L. 3937/2011 (A' 60) (excluding Natura sites)	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of national protection (excluding Natura sites).
P9	Rivers Crossed	Number of important intersecting water bodies	Total number	Any intersection can increase the environmental impact on water status.
P10	*Posidonia oceanica* seagrass (priority habitat 1120*- *Posidonia* Beds, according to	Total area of marine meadows of the angiosperm species *Posidonia oceanica* crossed by the pipeline.	total km	Important nursery grounds for a large number of fish and invertebrate species. Over 400 plant species and several thousand animals inhabit them. This very

Code	Criteria	Definition	Units	Relation to impacts evaluation
	Habitats Directive 92/43/EEC | Intersection (m)			productive habitat type also provides a number of ecosystem services such as food provision, coastal protection, carbon sequestration, water purification, etc.
P11	*Posidonia oceanica* seagrass (priority habitat 1120*- *Posidonia* Beds, according to Habitats Directive 92/43/EEC | Proximity (m)	Total area of marine meadows of the angiosperm species *Posidonia oceanica* in proximity to the pipeline.	minimum distance (km)	Important nursery grounds for a large number of fish and invertebrate species. Over 400 plant species and several thousand animals inhabit them. This very productive habitat type also provides a number of ecosystem services such as food provision, coastal protection, carbon sequestration, water purification, etc.
P12	ACCOBAMS sites | Intersection (m)	Total area to be cleared along the working strip within areas of conservation interest in accordance with ACCOBAMS	Total number & total km	Impact on environmentally sensitive areas of International protection.
P13	ACCOBAMS sites | Proximity (m)	Total area to be cleared along the working strip within areas of conservation interest in accordance with ACCOBAMS	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of International protection.
P14	Other Priority Habitats | Intersection (m)	Total area to be cleared along the project footprint within areas of conservation interest in accordance with Directive 92/43/EEC and/ or other international conventions (e.g. IUCN)	Total number & total km	Impact on environmentally sensitive areas of International protection.

Code	Criteria	Definition	Units	Relation to impacts evaluation
P15	Other Priority Habitats | Proximity (m)	Total area in proximity to the project footprint within areas of conservation interest in accordance with Directive 92/43/EEC and/ or other international conventions (e.g. IUCN)	Total number & minimum distance in km (per feature)	Impact on environmentally sensitive areas of International protection.
S	**Social Sensitivities**			
S1	Land Cover Classification	% of existing land cover (as interpreted by satellite imagery or other recent available data, e.g. CORINE LAND COVER) classified in the highest level (e.g. Artificial Surfaces, Agricultural Areas, Forests and Semi-natural Areas, Wetlands, Water Bodies)	Area (and %) per land cover class (and type)	Existing land uses are used as index of potential impacts to livelihoods, depending on the context of the broader area.
S1.1	Discontinuous urban fabric (Code CLC: 112)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value and nuisance on spatial development during operation.
S1.2	Industrial or commercial units (Code CLC: 121)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value and nuisance on spatial development during construction and operation.
S1.3	Road and rail networks and associated land (Code CLC: 122)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to nuisance of typical activities during construction.
S1.4	Mineral extraction sites (Code CLC: 131)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to economic development during operation.
S1.5	Non-irrigated arable land (Code CLC: 211)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.

Code	Criteria	Definition	Units	Relation to impacts evaluation
S1.6	Permanently irrigated land (Code CLC: 212)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S1.7	Vineyards (Code CLC: 221)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S1.8	Fruit tree and berry plantations (Code CLC: 222)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S1.9	Olive groves (Code CLC: 223)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S1.10	Complex cultivation patterns (Code CLC: 242)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S1.11	Land principally occupied by agriculture, with significant areas of natural vegetation (Code CLC: 243)	Total area to be cleared along the working/ pipeline protection strip, according to CORINE LAND COVER	km (%)	Impacts to land value, livelihoods and typical activities during construction and operation.
S2	Land Uses	Composition of existing land uses based on CORINE and Satellite Imagery Interpretation	Qualitative assessment	Existing land uses are used as index of potential impacts to livelihoods, depending on the context of the broader area.
S3	Land uses of Landfall Site	Composition of existing land uses based on CORINE and Satellite Imagery Interpretation	Qualitative assessment	Existing land uses are used as index of potential impacts to livelihoods, depending on the context of the broader area.

Code	Criteria	Definition	Units	Relation to impacts evaluation
S4	Spatial planning and development provisions	Official provisions regarding spatial planning and development, e.g. Local Town Plans, Regional Development Frameworks, etc.	Qualitative assessment	Compliance of the facility's establishment in the specific site and correlation to statutory provisions of the area.
S5	Military Restrictions	Minimum distance from designated military areas	km	Possible impact on national defence restrictions and/ or safety (integrity) of the project during military exercises.
S6	UXO	Number of areas in the AoI with potentially (or verified) Unexploded Ordinance.	Number	Possible impact on national defence restrictions and/ or safety (integrity) of the project during construction and operation.
S7	Population density	Existing population near the landfall site	Qualitative assessment	Crossing highly populated areas would increase socioeconomic impacts during project construction.
S8	Settlements' engagement and proximity	Total number and distance of affected settlements. As affected settlements, it is intended the ones within the study area or in direct connection to it (geomorphological, transportation, economic, social)	Number and distance (m) per feature	Main receptors for any form of socio-economic impact, and mainly potential impact on livelihood characteristics.
S9	Islets density	Number of islets within study area (1 km on each side of the pipeline axis). Islets as defined through existing naval maps and other remote sensing methods.	Number	Impact on migratory avifauna species, marine mammals (mainly seals), and biodiversity in general. Islets are considered biodiversity hotspots. Islets are more likely to host marine caves.
S10	Marine Traffic	Number of marine traffic routes crossed by the route	Number	Possible disturbance of normal marine traffic.
S11	Anchorage	Minimum distance from designated anchorage areas	km	Possible disturbance of normal marine traffic.

Code	Criteria	Definition	Units	Relation to impacts evaluation
S12	Fishing grounds	Total length through fishing grounds and reserves	km	Number of fishing grounds and reserves is related to fishermen's livelihoods potential disturbance.
S13	Aquaculture density	Number of aquaculture farms within study area (1 km on each side of the pipeline axis).	Number	Density of aquaculture farms is related to aqua farmers' livelihoods potential disturbance.
S14	Crossing of existing infrastructure	Number of crossing with underwater infrastructure lines.	Qualitative assessment based on the number and type of crossings (and/ or distance per feature).	Possible interaction of normal infrastructure operation (end-user everyday life and livelihood and market) due to impact on infrastructure during construction or operation phase.
CH	**Cultural heritage criteria**			
CH1	Declared archaeological sites	Number of declared cultural heritage resources (archaeological sites) within the study area	Number	Protection of cultural heritage.
CH2	Identified cultural heritage resources	Number of known (not declared) cultural heritage resources (archaeological sites) within the study area	Number	Protection of cultural heritage.
CH3	Areas of High Archaeological Potential (AHAP)	Number of areas identified as of High Archaeological Potential (either through consultation or desktop study) within the study area	Number	Protection of cultural heritage.
CH4	Religious resources	Churches, monasteries, cemeteries, and other places of worship, within the study area	Number and	Impacts on cultural customs, beliefs, and sensitivities.

Code	Criteria	Definition	Units	Relation to impacts evaluation
			minimum distance in km (per feature)	
CH5	Intangible cultural heritage	Intangible cultural resources including oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts.	Qualitative assessment	Impacts on cultural customs, beliefs, and sensitivities.
D	**Economic Development**			
D1	Planned projects (RES, Ports, etc.)	Engagement with planned projects, mainly RES (offshore and onshore), power lines and transportation facilities.	Number and minimum distance in km (per feature)	Possible impact on future investments and regulations.
D1.1	Photovoltaic	Engagement with existing projects.	Number and minimum distance in km (per feature)	Possible impact on livelihoods and/ or investments.

Code	Criteria	Definition	Units	Relation to impacts evaluation
D1.2	Wind farm	Engagement with existing projects.	Number and minimum distance in km (per feature)	Possible impact on livelihoods and/ or investments.
D1.3	Biomass	Engagement with existing projects.	Number and minimum distance in km (per feature)	Possible impact on livelihoods and/ or investments.
D2	Hydrocarbons exploration blocks	Total length through designated H/C exploration blocks	km	Possible interferences during construction phase.
D3	Tourism development	Qualitative assessment of disturbance to existing or planned (regardless of regulatory framework) touristic development land uses/ enterprises	Qualitative assessment	Distance from existing or planned tourism development land uses/ enterprises is related to operators' livelihoods potential disturbance.
D4	Industrial Areas (official or unofficial)	Engagement with existing projects.	Number and minimum distance in km (per feature)	Possible impact on livelihoods and/ or investments.

Code	Criteria	Definition	Units	Relation to impacts evaluation
D5	Spatial development plans	Compatibility assessment to spatial provisions	Qualitative assessment	Possible impact on livelihoods and/ or investments.
A	**Administrative Jurisdiction**			
A1	Region	Total number of Local Government Organizations included in the route	Number	Number of authorities involved in the licensing process.
A2	Regional Unit	Total number of Local Government Organizations included in the route	Number	Number of authorities involved in the licensing process.
A3	Municipality	Total number of Local Government Organizations included in the route	Number	Number of authorities involved in the licensing process.

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Table 7-4 ESIA Related Criteria for Evaluation of Main Facilities Alternatives.

Code	Criteria	Definition	Units	Relation to impact evaluation
A1	**Area**	**Total area occupied by the station**	**m^2**	**Size of impacts on all parameters**
P	**Engagement with Protected areas**			
P1	Natura 2000 sites	Overview of nearest areas of conservation interest in accordance with Directive 92/43 / EEC.	Distance (m) from Facility's centroid to the boundary of the closest resource.	Impact on environmentally sensitive areas of European statutory protection.
P2	National Parks	Overview of nearest areas included in the national system of protected areas of L. 3937/2011 (A' 60)	Distance (m) from Facility's centroid to the boundary of the closest resource.	Impact on environmentally sensitive areas of national statutory protection.

Code	Criteria	Definition	Units	Relation to impact evaluation
P3	Wildlife Refuge Areas	Overview of nearest areas included in the national system of protected areas of L. 3937/2011 (A' 60)	Distance (m) from Facility's centroid to the boundary of the closest resource.	Impact on environmentally sensitive areas of national statutory protection.
P4	Landscapes of Outstanding Natural Beauty	Overview of nearest areas of special protection status	Distance (m) from Facility's centroid to the boundary of the closest resource.	Impact on environmentally sensitive areas.
P5	Aesthetic Forests	Overview of nearest areas included in the national system of protected areas of L. 3937/2011 (A' 60)	Distance from Facility's centroid to the boundary of the closest resource.	Impact on environmentally sensitive areas of national statutory protection.
P6	Watercourses	Overview of water systems engaged with the plot.	Absolut Value (total km) for Number and length of engaged watercourses	Impact on water quality of the broader area due to potential pollution.
P7	Forests	Forests included in the plot area (forests as defined by national legislation. If official data is unavailable CORINE data shall be used.	Area (m^2) (and %) per forest type (if available)	Permanent loss of forests due to safety restrictions during operation.
ES	**Environmental Sensitivities**			
ES1	Land Cover	% of existing land cover (as interpreted by satellite imagery or other recent available data, e.g. CORINE LAND COVER)	Area (m^2) (and %) per land cover type	Existing land cover is used as an index of potential impacts to natural vegetation and ecosystems, in total, depending on the context of the broader area.
ES2	Air Quality	Existing air quality based on available data.	Qualitative assessment	Identification of air quality of the broader area is related to the overall human intervention in the area and the potential cumulative impacts from the air emissions of project's facility.

Code	Criteria	Definition	Units	Relation to impact evaluation
ES3	Noise Background	Existing noise levels based on available data.	Qualitative assessment	Identification of noise levels of the broader area is related to the overall human intervention in the area and the potential cumulative impacts from the air emissions of project's facility.
ES4	Landscape	Assessment of aesthetic value and visibility of the facility's site.	Qualitative assessment	Deterioration of broader area's aesthetic value. Impact assessment on visual amenity of the site's area.
ES5	Morphology	Assessment of morphological features within the plot site and the surrounding area.	Qualitative assessment	Assessment of necessary earthworks, visibility and air/ noise emissions impacts to sensitive receptors.
ES6	Vulnerability to Climate Change - Flooding Risk	Correlation to areas identified as of high flooding risk and coastal modifications.	Area (m^2) (and %) within flood plains. Qualitative assessment.	Assessment of location's vulnerability to climate change. Flooding events may increase if the current models for climate change impacts are accurate. Rise of sea-level close to the coastline.
ES7	Anthropogenic Pressures	General Environmental Baseline Conditions (air quality, natural environment, existing pollution sources and status, etc.)	Qualitative assessment	Indication for the overall quality of the natural environment and as such impacts on the ecosystems integrity.
S	**Social Sensitivities**			
S1	Land Uses	Composition of existing land uses based on CORINE and Satellite Imagery Interpretation	Qualitative assessment	Existing land uses are used as index of potential impacts to livelihoods,

Code	Criteria	Definition	Units	Relation to impact evaluation
				depending on the context of the broader area.
S2	Spatial planning and development provisions	Official provisions regarding spatial planning and development, e.g. Local Town Plans, Regional Development Frameworks, etc.	Qualitative assessment	Compliance of the facility's establishment in the specific site and correlation to statutory provisions of the area.
S3	Distance to residential areas	Existing population centres near the site.	Distance (m) from centroid of Facility to closest residential building	Main receptors for any form of socio-economic impact, and mainly potential impact on livelihood characteristics.
S4	Distance to industrial activity	Existing industrial activities near the site.	Distance (m) from centroid of Facility to closest residential building	Infrastructure bundling opportunities and potential constraints imposition need to be assessed, either positively or negatively, in relation to the facility's implementation.
S5	Concession Areas (turf, lignite, H/C, etc.)	Existing spatial/ economic restrictions of facility's site, including blocks for H/C exploration.	Qualitative assessment	Possible impacts on economic development.
S6	Touristic Development	Qualitative assessment of disturbance to existing or planned (regardless of regulatory framework) touristic development land uses/ enterprises	Qualitative assessment	Distance from existing or planned touristic development land uses/ enterprises is related to operators' livelihoods potential disturbance.
S7	Accessibility/ expected traffic nuisance	Existing road network condition and capacity.	Qualitative assessment	Identification of new access roads, level of upgrading works of existing roads, assessment of traffic nuisance to local commuters.

Code	Criteria	Definition	Units	Relation to impact evaluation
S8	Planned projects	Engagement with planned projects, mainly RES, electricity and hydrocarbons	Qualitative assessment	Infrastructure bundling opportunities and potential constraints imposition need to be assessed, either positively or negatively, in relation to the facility's implementation.
S18	Military Restrictions	Minimum distance from designated military areas	km	Possible impact on national defence restrictions and/ or safety (integrity) of the project during military exercises.
S19	UXO	Number of areas in the AoI with potentially (or verified) Unexploded Ordinance.	Number	Possible impact on national defence restrictions and/ or safety (integrity) of the project during construction and operation.
S20	Population density	Existing population near the landfall site	Qualitative assessment	Crossing highly populated areas would increase socioeconomic impacts during project construction.
S21	Settlements engaged	Total number of affected settlements. As affected settlements, it is intended the ones within the study area or in direct connection to it (geomorphological, transportation, economic, social)	Number	Main receptors for any form of socio-economic impact, and mainly potential impact on livelihood characteristics.
S9	Expected Social Acceptance	Reasonable arguments against or in favour of the specific option based on all available data, including press releases, other social criteria consideration, experts' opinion, consultation and disclosure results.	Qualitative assessment	Acquisition of social licensing; establishment of good communication lines and relationship between project and local communities.
CH	**Cultural Heritage**			

Code	Criteria	Definition	Units	Relation to impact evaluation
CH1	Archaeological sites	Number of areas in the AoI of identified archaeological interest whether they are declared or not	Number	Protection of cultural heritage and permitting implications.
CH2	Areas of High Archaeological Potential (AHAP)	Number of areas in the AoI where literature review or consultation indicate high potential to locate unidentified cultural heritage resources.	Number	Protection of cultural heritage and permitting implications.
CH3	Engagement with Intangible cultural heritage resources.	Overview of intangible cultural heritage assets in the AoI	Qualitative assessment	Protection of cultural heritage and permitting implications.
CH4	Engagement with Religious Sites (churches, cemeteries)	Overview of religious sites included that could be affected by the project or affect their availability to all users.	Distance from Facility's centroid to the boundary of the closest resource.	Impact on religious duties and customs of people within the AoI.

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7 A.4. ZERO ALTERNATIVE

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

The zero solution, i.e. the solution of non-implementation of the project, would result in the loss of all positive effects that the investigated project could induce in Greece and Europe in general (in terms of replacement of other more polluting fossil fuels, with the less polluting ones, transferred via EastMed Pipeline). This is especially so, given the fact that potential negative impacts of the project can be largely managed through sound design and management/monitoring practices. The following are a number of adverse effects under the zero alternative:

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

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

7 A.5. ALTERNATIVES ASSESSMENT FOR PIPELINE ROUTE

7 A.5.1. INTRODUCTION

This section presents the alternatives for the pipeline routes of the EastMed Pipeline Project. The footprint presented is slightly different from the one presented in the Scoping report (July 2021). The main difference is the refinement of the CCS2 section in Western Continental Greece.

As summarized in Table 7-1, route alternatives were assessed in nine (9) different areas of the entire project footprint, both onshore and offshore. More specifically:

1. Three (3) different alternatives were investigated reaching SE Crete, including OSS2/OSS2 N and LF2 project components (referred to as “OSS2 Reaching Crete” alternatives). Details are provided in section 7 A.5.3;
2. Three (3) different alternatives were investigated starting from SE Crete, including OSS3/OSS3 N and LF2 project components (referred to as “OSS3 Departing Crete” alternatives). Details are provided in section 7 A.5.4;
3. Three (3) different alternatives were investigated reaching SE Peloponnese, including OSS3/OSS3 N, LF3 and CCS1 project components (referred to as “OSS3 Reaching Peloponnese” alternatives). Details are provided in section 7 A.5.5;
4. Two (2) different alternatives were investigated in the area of R. Evrotas, including CCS1 project component (referred to as “Evrotas” alternatives). Details are provided in section 7 A.5.6;
5. Two (2) different alternatives were investigated in the area of Megalopoli, including Megalopoli Branch project component (referred to as “Megalopoli” alternatives). Details are provided in section 7 A.5.7;
6. Two (2) different alternatives were investigated in the area of Foloi Plateau, including CCS1 project component (referred to as “Foloi Plateau” alternatives). Details are provided in section 7 A.5.8;
7. Four (4) different alternatives were investigated for Patraikos Gulf crossing, including CCS1, LF4, OSS4, LF5 and CCS2 project components (referred to as “Patraikos Crossing” alternatives). Details are provided in section 7 A.5.9;
8. Two (2) different alternatives were investigated in the area of Menidi, as part of CCS2 project component (referred to as “Menidi” alternatives). Details are provided in section 7 A.5.10; and
9. Two (2) different alternatives were investigated in the area of Margariti, as part of CCS2 project component (referred to as “Margariti” alternatives). Details are provided in section 7 A.5.11.

Alternatives are presented in Map 15.1.3.

7 A.5.2. ROUTE REFINEMENT PROCESS

Since 2018, the route refinement process has allowed to develop more than five (5) integrated project footprint solutions, based on the technical studies and surveys conducted; the term integrated is used to describe an entire base-case for a project compound. **It is repeated that the presented past base-cases should not be considered, mandatorily, as feasible alternatives**. The offshore route is largely the same, but the onshore section has gone through a series of route modifications, mainly based on the consultation procedure of all project phases (see Figure **7-5**).

The latest qualified project footprint, the one presented during the Scoping Report, has been optimized based on the consultation held and better refined, thanks to the further site surveys performed for ESIA and technical purposes, resulting in the current base-case.

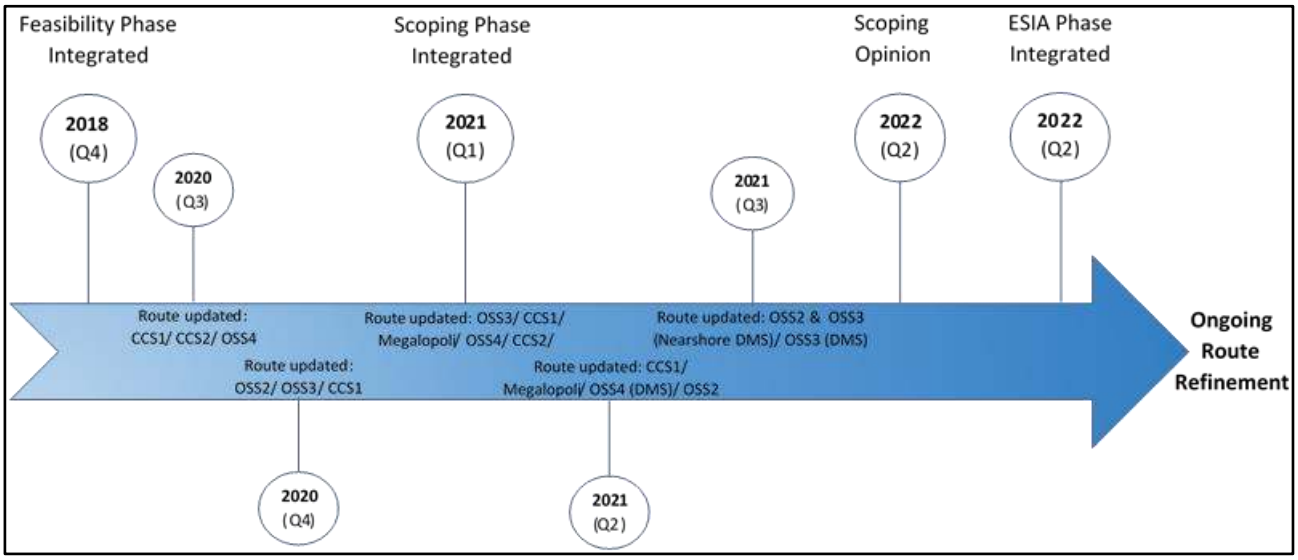

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Figure 7-5 Route Revisions Timeline.

7 A.5.2.1. ROUTE "CCS1 – PELOPONNESE"

Figure 7-6 illustrates the various routes investigated for the specific section. Most challenges were faced in the following sections (here below listed from LF3 to LF4). The figure also includes routes that have been considered in the past as basecase but modified during route refinement process. In more detail, the whole pipeline route has been assessed from a technical point of view by FEED via

many site visits at each area, taking also into consideration the Greek regulations, the authorities requests, the existing or planned infrastructures as well as to minimize the possible social impacts of the project.

1. Landfall area | Mt. Kounos crossing | Elliniko | Velies. It is the southernmost section of CCS1, including LF3, crossing of Mt Kounos (challenging from a geomorphological point of view and also hosting a number of RES developments), and proximity to Elliniko and Velies settlements. Specifically, for each area, the following different scenarios (main corridors) have been adopted in the course of the years as base-case: LF3 -> three (3); Mt Kounos -> three (3); Elliniko: two (2); Velies: two (2).

   The Landfall area was assessed during the feasibility study, as well as during the present phase of the project and the specific area has been considered as the most suitable compared with other alternatives, which were considered as more challenging from a technical view and having more social impacts due to the pipeline and the LF station installation. The pipeline installation through the mountainous area of Kounos is challenging due the terrain morphology (steep slopes) but feasible from a technical point of view and it is better than other alternatives that were assessed where extreme steep slopes and cliffs were observed. Moreover, all existing facilities (e.g. wind farms, existing or future PPC HT lines) have been avoided. The alternative routes at Elliniko area had more technical difficulties than the proposed routing, due to the terrain morphology with very steep slopes, deep ravines and areas where erosions and landslide phenomena are observed. The proposed route in Velies is better than the alternative ones since we avoid the lateral slopes and minimize the routing through permanent cultivations. To be noted also that, the extended irrigation system as well as the many scattered water boreholes which are located in the area have been also considered in order the impacts to be reduced as possible.
2. Apidea | Vrontamas & Gerakion plain. In these areas, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to (i) minimize impacts on natural (forest or forested areas) sites in the area of Apidea and (ii) to avoid dense network of small surface water bodies (numerous small ravines/ gorges, allowing a ripple agricultural area), in Vrontamas & Gerakion plain.

   In addition, in the area of Apidea plain, it is preferable the pipeline to avoid the mountainous area where steep slopes were observed as well as ravines that run parallel with the alternative route. In the area of Geraki plain, the alternative route crosses some ravines (e.g. Xerias stream) that are very steep and deep and present erosion phenomena.
3. Evrotas | Kastorio. At the NW limit of R.U. of Laconia. In these areas, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to (i) optimize R. Evrotas crossing, minimizing impacts on the water body and the surrounding (downstream and upstream river's crossing), in the area of Evrotas (details are

provided in section 7 A.5.6) and (ii) to avoid proximity to the pristine forest in the broader area of Kastorio (and crossing of R. Vathyorema in Kastorio area).

The alternative route which is located eastward from the city of Sparti, runs through an area presenting a very challenging terrain from a technical point of view, with steep slopes, and limited space for the installation of the pipeline. Additionally, it crosses numerous deep ravines with very steep banks where erosions phenomena were observed. Also is located close to the facilities of Sparti's University. Moreover, the crossing of Provincial road Sparti-Agrianon by a trenchless method was considered as more challenging due to the high slopes located along both sides of the road. Finally, the crossing of R. Evrotas was also evaluated as very difficult from a technical point of view due to limited space. The routing modification close to the settlement of Karavas Soustianon was requested by the Municipality of Sparti. Finally, the routing mofication at Kastorio was considered as more preferable, since the alternative routing was located along a narrow forest mountainous area presenting steep and/or lateral slopes

4. Megalopoli. In the area of Megalopoli, two (2) different scenarios (main corridors) were mostly considered. The base-case has been optimized resulting from consultation mainly with PPC, being a major stakeholder in the area due to the existing and operational Lignite Concession Area and Power Plant of Megalopoli;

   The proposed route was considered as more feasible from a construction point of view compared with the alternative which passes through mountainous areas with steep slopes. Moreover, the pipeline length was significantly reduced.

5. Foloi area. Between Ancient Olympia and Foloi, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to maximize distance from the UNESCO site of Ancient Olympia, and at the same time minimize impacts to Foloi Plateau area, which apart from hosting one of the rarest plain oak forests in Europe it is also an area of high archaeological potential (details are provided in section 7 A.5.8);

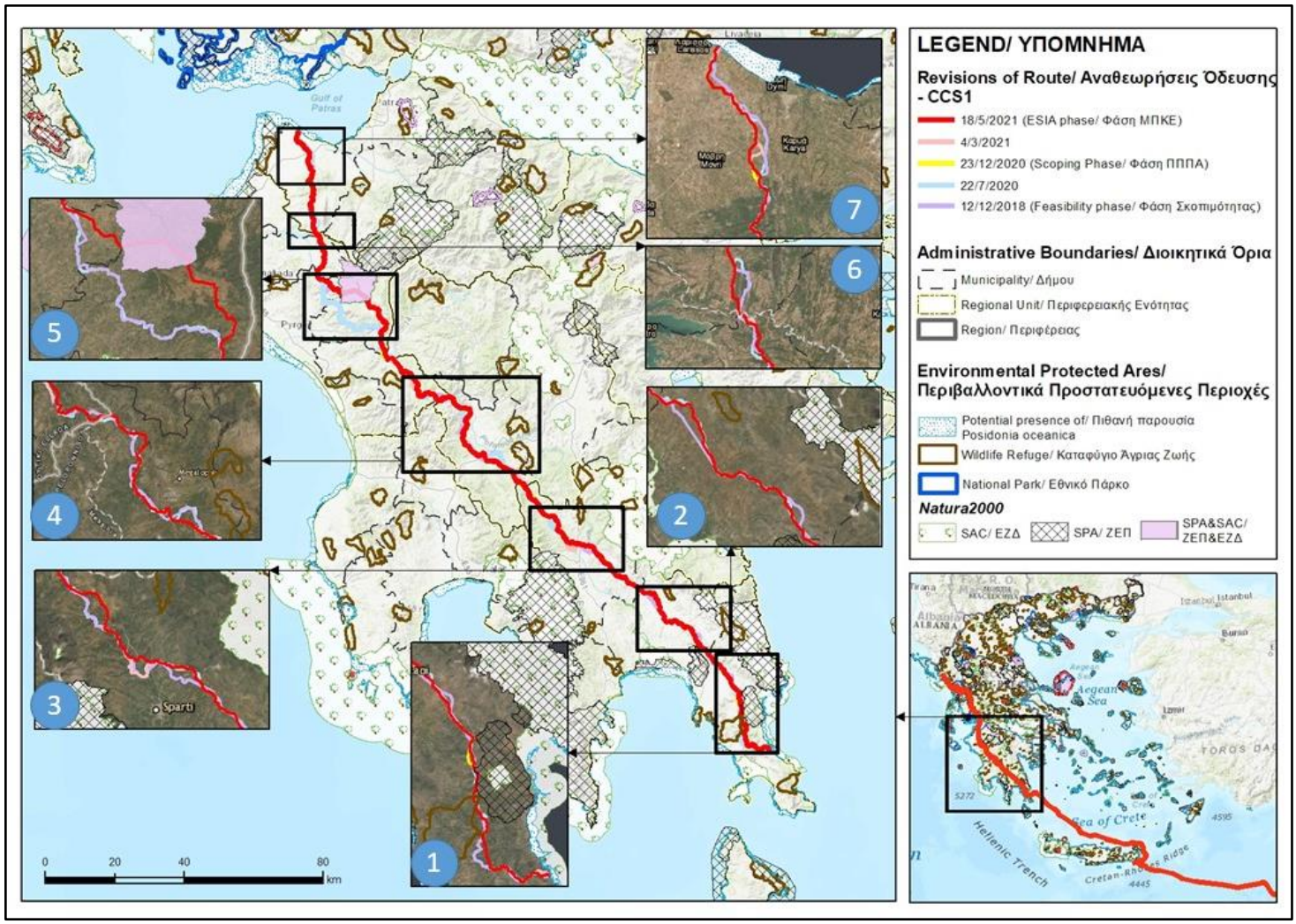
   The main reason of the route modification is because the alternative routing passes along an area presenting a very challenging geomorphological terrain where landslides and erosions are observed. The slopes at this area are very steep and the space for the installation of a 48 inches' pipeline is limited. Even if some special technics could be considered for the pipeline construction (e.g. microtunneling, raise Boring etc.) the risk for the pipeline integrity during operation phase is very high, and could lead to serious safety issues.

6. Mazaraki | Kato Velitses. Two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from design optimization of CS3 location selection process.

   Moreover, to be noted that the alternative route was modified in order to avoid numerous geohazardous areas presenting landslides and extended erosions. To be noted that the proposed

route has a distance more than 200 m from the archaeological areas which are located in the wider area. The CS3 facilities will be installed at a suitable plot which is located as far as possible from populated areas, as well as archaeological sites, free from permanent cultivations, easy accessibility during construction and operation etc.

7. Lampraika | Landfall area. Two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, mainly to minimize engagement with areas of high population density (minimize number and distance of engaged settlements). Specifically, a greater distance was considered from Lampraika, Veskoukeika and Kalamaki settlement.



Prepared by: ASPROFOS, 2022.

Figure 7-6 CCS1 Timeline of Integrated base-case and Overview of Alternatives.

7 A.5.2.2. ROUTE "CCS2 – WEST GREECE"

Figure 7-7 illustrates the various routes investigated for the specific section. Most challenges were faced in the following sections (here below listed from LF5 to end of EastMed Pipeline Project). The figure also includes routes that have been considered in the past as basecase but modified during route refinement process. In more detail, the whole pipeline route has been assessed from a technical point of view during the ongoing FEED via many site visits at each area, taking also into consideration the Greek regulations, the authorities requests, the existing or planned infrastructures as well as to minimize the possible social impacts of the project.:

1. Evinochori | Koutsocheri (Mt. Arakinthos) | Grammatiko-Gavalou. It is the southernmost section of CCS2, including crossing of Evinochori plain and R. Evinos, Koutsocheri (Mt Arakinthos) and Grammatiko-Gavalos development area. In these areas, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to (i) optimize design of shore crossing in LF5 avoiding cultural resources and RES developments, (ii) increasing distance from Natura 2000 site GR2310010 (Mt Arakinthos and the Kleisoura Straits), in the area of Koutsocheri, and (iii) minimize social impacts in a confined area (by Lake Trichonida to the north and Mt. Arakinthos to the south), where the pipeline needs to cross national road and an area of high population density.

   To be noted that at the area of Evinochori the proposed BC route avoids the National Park of Messologgi-Aitoliko as well as the Natura area. Also it was considered as more preferable the crossing of Ionia highway as well the crossing of River Evinos to be performed by a common trenchless method (avoiding also the National park). Finally, the proposed BC route compared with the alternative, has no impacts to the declared archaeological area of Kourtagas of Evinochori (Φ43/29188/1506/5-7-1991 (ΦΕΚ 600/Β/1-8-1991) and the archaeological area of N. Kalidona (ΦΕΚ 392/Δ/14-05-1987).

   Regarding the alternative route of Koutsocheri along Mt. Arakinthos it was considered more preferable to be modified in order to mitigate the impacts on the settlement as well as to avoid the geohazardous areas along a challenging morphological terrain. At Grammatikou-Gavalou area it was considered as more preferable the modification of the alternative route in order to mitigate the impacts to the settlements as well to ensure a greater distance from the scattered buildings located along the provincial road. Moreover, it was considered as more appropriate the pipeline to be installed as far as possible from the Trichonida Lake and the settlement of Trichoni.
2. Lepenou | Kechrinia. In the area of Lepenou, three (3) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to increase distance from cultural heritage sensitivities; respectively, two (2) in the area of Kechrinia in order to bundle with existing roads, taking into consideration geomorphological challenges, a number

of RES developments and minimization of impacts on natural environment (forest or forested areas).

Additionally, the proposed BC route is located at a greater distance from the settlement of Lepenou than the alternative route. All requests of the Ephorate of Palaeoanthropology and Speleology (to keep 200 m distances from specific areas) have been followed. Moreover, the proposed route is considered more appropriate since it has a greater distance from active quarries.

3. Menidi (WR of Monasteries of Retha and of Loggos). Uphill of the area of Menidi settlement, Mt. Makrinoros hosts the Wildlife Refuge of Monastery of Retha and Monastery of Loggos. In this area, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to minimize impacts to the environmental protected area by selecting a route at the limits of the area, and optimizing the route (length decrease, resulting in faster completion of construction works) (see Section 7 A.5.10).

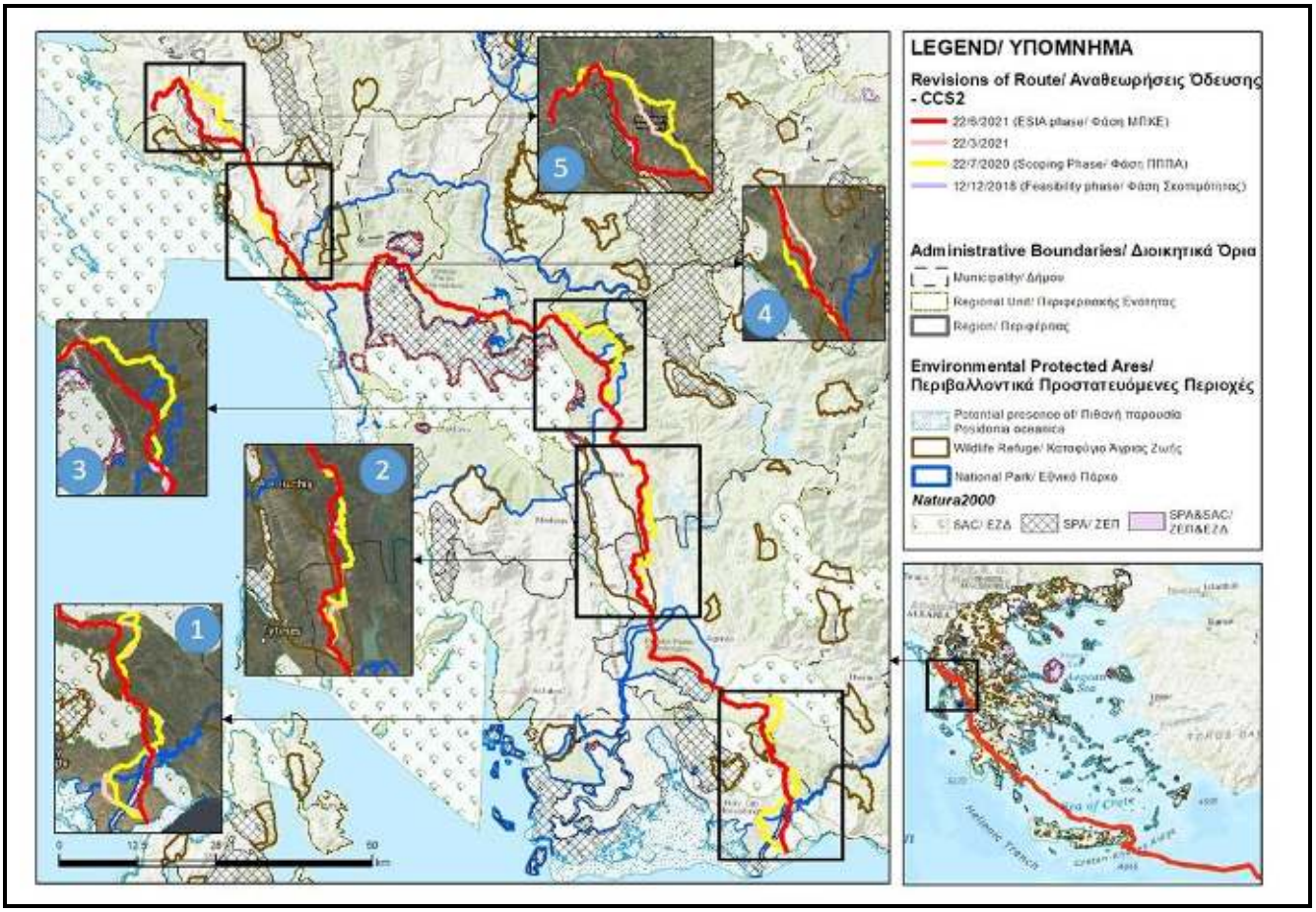
   Additionally, as observed during the site visits, the mountainous area along the alternative route presents erosions that could have impacts to the pipeline integrity during the operation phase of the project leading consequently to safety issues.

4. Plain of Acherontas. In this area, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to balance distancing from the surrounding settlements (Mesopotamo, Dikorfo and Themelo to the west; Kastri, Stavrochori to the east).

   Additionally, the proposed pipeline route is at a greater distance from Koukouli settlement. The steep slopes at the mountainous area before the Acherontas plain were avoided. Numerous existing scattered photovoltaic parks that are located at the Acherontas plain were found during the site visits and have been also avoided.

5. Margariti Marshlands. In this area, two (2) different scenarios (main corridors) have been adopted in the course of the years as base-case, resulting from the effort to minimize impacts on natural environment (forest or forested areas) and selecting passing through the agricultural outskirts of the Natura 2000 GR2120006 (Marshlands of Kalodiki, Margariti, Karteri and Lake Prodani) (see Section 7 A.5.11).

   Additionally, the alternative route crosses areas with currently permitted photovoltaic parks and/ or areas close to active quarries. Finally, it was considered as more preferable to avoid the mountainous area eastward from the Margariti settlement. This area presents steep slopes and mainly consists by limestones, resulting to construction activities of greater duration, including potential use of explosives.



Prepared by: ASPROFOS, 2022.

Figure 7-7 Timeline of CCS2 Integrated Base-Case.

7 A.5.3. OSS2/OSS2 N REACHING CRETE ALTERNATIVES

7 A.5.3.1. OVERVIEW

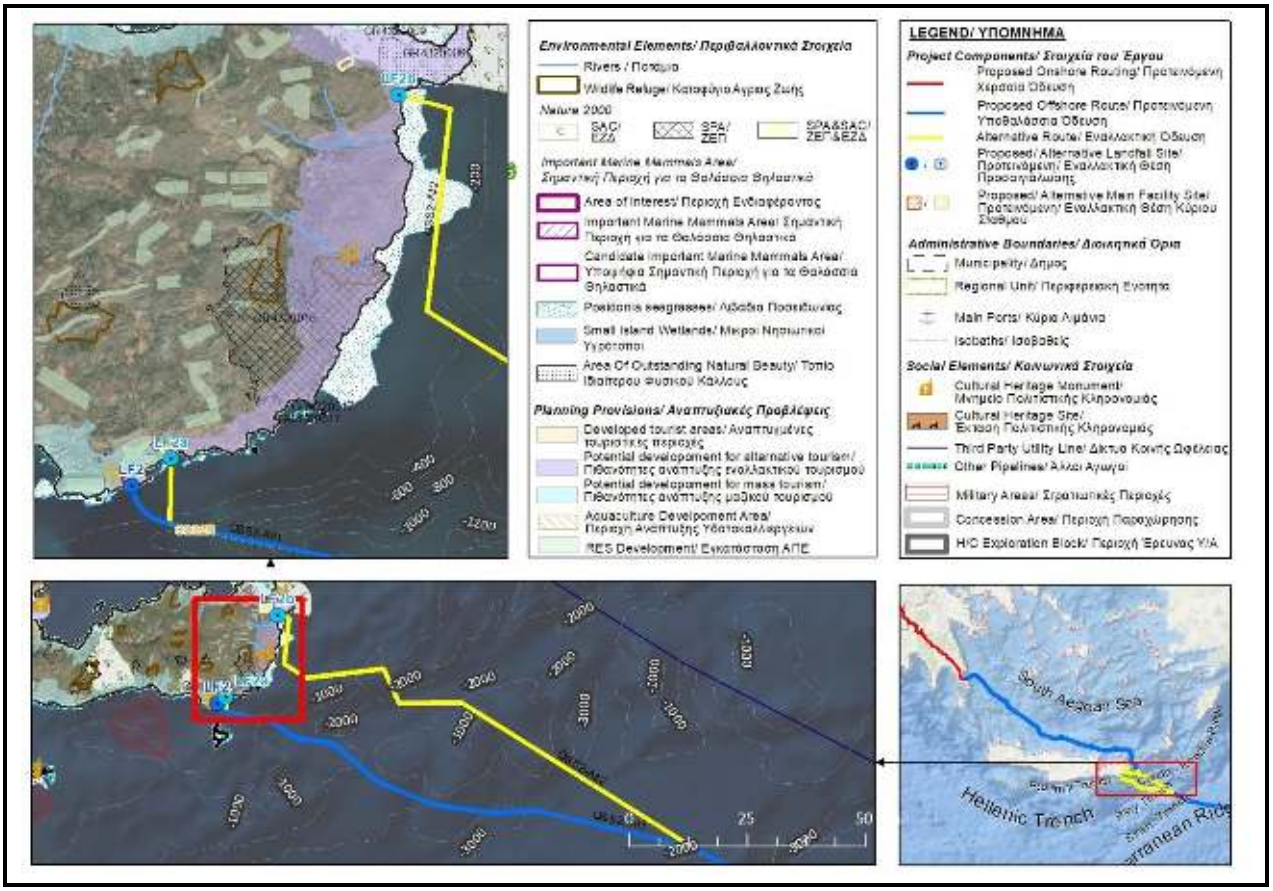
The alternative routes of the OSS2/OSS2N pipeline include[2]:

- OSS2-BC, i.e. the base-case offshore route section reaching Landfall Site LF2;
- OSS2-Alt1, i.e. the alternative offshore route section reaching Landfall Site LF2a; and
- OSS2-Alt2, i.e. the alternative offshore route section reaching Landfall Site LF2b.

In the South Cretan Sea reaching SE Crete, three (3) offshore route alternatives have been assessed connecting the starting point (between Pliny and Strabo Trenches, close to KP 575 of OSS2/OSS2 N Line, at approximately 2100 m WD), with the SE coast of Crete. Three (3) landfall sites and route alternatives are then connected (with a short onshore section) to the three (3) corresponding sites of construction of Crete Facilities (Assessment of Crete Facilities alternative sites is presented in section 7 A.6).

These alternatives are presented in Figure 7-8 (see Section 15.1.3 - Alternatives Map).

[2]These alternatives are the same as the ones assessed during the Scoping Phase; given that no improved alternative was identified, they are still considered valid.



Prepared by: ASPROFOS, 2022

Figure 7-8 Alternatives for Pipeline System OSS2/OSS2N Reaching SE Crete.

7 A.5.3.2. DESCRIPTION OF OSS2-BC

This alternative connects LF2 with OSS2/OSS2N through the offshore OSS2-BC segment.

LANDFALL LOCATION DESCRIPTION (LF2)

Landfall LF2 is located in the Atherinolakkos area, in M. of Sitia, Municipal Unit of Lefki. LF2 is located in the south-eastern part of Crete, 22 km south of the city of Sitia. The nearest settlement is Goudouras, located approximately 2,500 m to the west. The area is characterised by the industrial facility of the Public Power Corporation (power plant) and a mosaic of natural and agricultural areas.

The Project footprint does not engage with any environmentally protected areas. The Koufonisi island complex forms a significant biodiversity hotspot, which includes two (2) Natura 2000 sites overlapping each other (specifically SAC GR4320008 and SPA GR4320017) and a Wildlife Refuge. The

complex is located approximately 4 km to the south. Onshore, no biodiversity hotspots are identified in the vicinity; no habitats of conservation interest or areas important for biodiversity (terrestrial) are identified. No caves potentially suitable for the use by the Mediterranean monk seals (*Monachus monachus*) have been identified during the desktop study.

In general, the landfall site is dominated by the presence of the adjacent power plant, and the area to the east (occupied by the Power Plant) is characterised as Heavy Industrial Area according to the Spatial and Urban Plan (ΣΧΟΑΑΠ) of Lefki. In addition, the broader area is designated as "Potential for mass tourism" according to the national plan for tourism; however, the broader area is characterised by the industrial facility of PPC and no touristic facility was identified nor is to be expected.

Regarding social parameters, fishing effort in the area, which is indicative of fishing pressures, is minimal. The nearest port facility is located at the power plant 1000 m to the east. The site bundles with the existing power plant, which also provides an adequate road network for access. No aquaculture activity is identified. Two (2) RES projects are studied in the area of the landfall site: one with installation permit (750 m to the N) and one with an application file currently under evaluation (850 m to the N). No significant population centres are identified in the study area or in the broader region.

The landfall site is a flat area accessible through existing roads and the power plant's port. No significant geohazards are identified (no evidence of landslides, minimal liquefaction risk), and the site is located at an adequate distance from active faults (1.5 km) and earthquake epicentres (8.5 km). No extensive earthworks are expected.

No interaction with known significant cultural heritage areas is identified.

Regarding administrative jurisdiction, the LF is engaged with one (1) Municipality (Sitia), one (1) R.U. (Lasithi) and one (1) Region (Crete).

OFFSHORE ROUTE SECTION (OSS2-BC)

The entire offshore route section corresponding to the specific alternative stretches for approximately 108.47 km, out of which 340 m are in the euphotic zone (up to WD 40 m) and 1,940 m in the epipelagic zone (up to WD 200 m). No crossing of environmentally protected areas has been identified. The Koufonisi island complex (described for the corresponding landfall section) is located approximately 2.5 km to the south. One (1) shallow water habitat (A5.33 - Infralittoral sandy mud) is crossed (340 m) and 4 deep-sea habitats (for a length of 95 km, 13 km, 190 m and 5 m through A6.51 - Mediterranean communities of bathyal mud, A6.511 - Facies of sandy muds with *Thenea muricata*, A5.38 - Mediterranean biocoenosis of muddy detritic bottoms and A5.47 - Mediterranean communities of shelf-edge detritic bottoms, respectively).

Posidonia oceanica seagrass lay approximately 780 m to the SW. It is noted that the route crosses the Hellenic Trench IMMA for approximately 62 km (57.16 % of OSS2 BC total length).

According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). One (1) amphibian, 4 reptiles, 6 mammals and 37 avifauna species of conservation interest have been recorded in the broader area (based on Greek Red List of 2009 data).

It should be noted that alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (*Lagocephalus sceleratus, Pterois miles*).

Based on the EMODNET data[3], marine traffic density in the area is low or very low.

Regarding technical challenges (that could lead to increased construction duration and hence impacts) based on the available data[4,5], beach and seabed intervention works are estimated as moderate. Rocky undulating terrain can be expected in the nearshore area; however, no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route in intermediate waters.

No third party interaction influences the offshore pipeline routing.

No engagement with known significant cultural heritage areas is identified.

Regarding administrative jurisdiction, the alternative (onshore section) is engaged with one (1) Municipality (Sitia), one (1) R.U. (Lasithi) and one (1) Region (Crete).

7 A.5.3.3. DESCRIPTION OF OSS2-ALT1

This alternative connects LF2a with OSS2/OSS2N through the offshore OSS2-Alt1 segment.

LANDFALL LOCATION DESCRIPTION (LF2A)

Landfall LF2a is located in the Livari area, in M. of Sitia, Municipal Unit of Lefki. LF2a is located in the south-eastern part of Crete, 21 km south of the city of Sitia. The nearest settlement is Goudouras approximately 4,500 m to the west. The area is characterised by the industrial facility of the Public Power Corporation (power plant) and a mosaic of natural and agricultural areas.

[3] https://www.emodnet-humanactivities.eu/view-data.php
[4] EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[5] EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

No environmentally protected area has been identified. The Koufonisi island complex (described in the corresponding section for LF2, Section 7 A.5.3.2) is located approximately 6 km to the south. Onshore, no crossing of habitats of conservation interest or areas important for biodiversity (terrestrial) has been identified. However, the coastline of the study area is known to host a Mediterranean monk seal resting marine cave complex.

In general, the landfall site is dominated by the presence of the adjacent power plant, and the broader area is characterised as Heavy Industrial Area according to the Spatial and Urban Plan (ΣΧΟΑΑΠ) of Lefki. In addition, half of the LF area is designated as "Potential for mass tourism" and the other one as "Potential for alternative tourism"; however, the broader area is characterised by the industrial facility of PPC and no tourist facility was identified nor is to be expected (apart from the fishing shelter).

Regarding social parameters, fishing effort in the area, indicative of fishing pressures, is minimal. The nearest port facility is located at the power plant 1,300 m to the west near the port entrance. The site bundles with the existing power plant which also provides an adequate road network for access. No aquaculture activity is identified. One wind farm is planned in the area of the landfall site with an application file currently under evaluation (680 m to the W). No significant population centres are identified in the study area or the broader region.

The landfall site is a flat area accessible through existing roads and the power plant's port. No significant geohazards are identified (no evidence of landslides, minimal liquefaction risk), and the site is located at an adequate distance from active faults (1.5 km) and earthquake epicentres (8.5 m). No extensive earthworks are expected.

Regarding land use along the onshore route, in principle the wider area has limited economic development, which concerns agricultural areas and mainly olive trees. The presence of PPC Power Plant is the main characteristic as well as the fishing shelter to the east of the project footprint.

According to the Lefki Spatial and Urban Plan (ΣΧΟΑΑΠ, ΗΓΓ 539/ΑΑΠ/2009), the area is described as a "Non-declared or characterised Archaeological zone", hence the overall area has high archaeological potential.

Regarding administrative jurisdiction, the alternative (onshore section) is engaged with one (1) Municipality (Sitia), one (1) R.U. (Lasithi) and one (1) Region (Crete).

OFFSHORE ROUTE SECTION (OSS2A)

The entire offshore route section corresponding to the specific alternative stretches for approximately 108.84 km, 680 m of which are in the euphotic zone (up to WD 40 m) and 2,736 m in the epipelagic zone (up to WD 200 m). No crossing of environmentally protected areas has been identified. The Koufonisi island complex (described in the Section for LF2, Section 7 A.5.3.2) is located approximately 2 km to the south. Two (2) shallow water habitats (A5.33 - Infralittoral sandy mud and 1120 – *Posidonia oceanica* beds) are crossed for 690 m and 120 m, respectively; 3 deep-sea habitats are crossed (95 km, 13 km, 240 m through A6.51 - Mediterranean communities of bathyal muds, A6.511 - Facies of sandy muds with Thenea muricata, and A5.38 - Mediterranean biocoenosis of muddy detritic bottoms, respectively).

In addition, the route crosses for approximately 150 m through *Posidonia oceanica* seagrass and the Hellenic Trench IMMA for approximately 62 km (57.07 %).

According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of Habitat 8330 (Annex I of Directive 92/43/EEC). One (1) amphibians, 4 reptiles, 6 mammals and 37 avifauna species of conservation interest have been recorded in the broader area (based on Greek Red List of 2009 data).

It should be noted that alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (*Lagocephalus sceleratus, Pterois miles*).

Regarding technical challenges (that could increase construction duration and hence impacts) based on the available data[6,7], beach and seabed intervention works are estimated as moderate. Rocky undulating terrain can be expected in the nearshore area; it is anticipated that the coastline morphology adds complexity to shore crossing construction. Areas of potential geohazards lie on the route in the intermediate waters.

No third party interaction influences the offshore pipeline routing.

Regarding cultural heritage, LF2a is located within a non-declared archaeological zone, hence, the overall area has high archaeological potential.

7 A.5.3.4. DESCRIPTION OF OSS2-ALT2

This alternative connects LF2b with OSS2/OSS2N through offshore OSS2-Alt2 segment.

[6]EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[7]EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

LANDFALL LOCATION DESCRIPTION (LF2B)

Landfall LF2b is located 13 km south of the city of Sitia. The nearest settlement is Palaiokastro approximately 4,000 m to the north-west. The area is completely covered by natural vegetation.

Environmentally protected areas include 4 Small Island Wetlands located in a radius of 4,000 m, and the landfall site itself is 316 m from SAC GR4320006 (NE Crete: Dionisades, Elasa and Sidero Peninsula (Mavro Mouri – Vai – Plaka) and Marine Area); and 100 m from the Landscape of Outstanding Natural Beauty "AT6011002'' (Petsofas). In addition, according to available data[8], coastal waters host seagrass meadows (priority habitat type 1120 – *Posidonia oceanica* beds).

The study area is located within a completely isolated area of Crete of pristine environment, very close to protected areas/ habitats. In general, the area is characterised by complete lack of anthropogenic pressures.

Regarding social parameters, fishing effort in the area (which is mostly recreational), indicative of fishing pressures, is minimal. No port facility is identified in the broader area. Limited (if any) access to the area is possible only through dirt roads and tracks. A wind farm development application is under assessment by the competent authority, and another one for P/V has been rejected. Otherwise, the area has no human presence. Aquaculture activity is identified 9 km to the north. No other developments or planned projects are identified in the relative vicinity.

No significant population centres are identified in the study area or the broader region. The alternative engages areas of no economic development, restricted to natural areas. Regarding tourism, no tourist development is identified but some relevant activity is known to take place in the broader area since it is defined as an area of "Developing tourism with potential for development of alternative forms of tourism".

Regarding technical challenges, new access roads may be required thus increasing impacts during construction and operation (e.g. due to increased accessibility and risk of wildfires). Otherwise, no significant geohazards are identified (no evidence of landslides, minimal liquefaction risk), and the site is located closer to active faults (1 km) and earthquake epicentres (5 km) than the other alternatives. Some earthworks are expected.

No engagement with known significant cultural heritage areas is identified.

Regarding administrative jurisdiction, the alternative (onshore section) is engaged with one (1) Municipality (Sitia), one (1) R.U. (Lasithi) and one (1) Region (Crete).

[8]HGG D'105/2019

OFFSHORE ROUTE SECTION (OSS2B)

The entire offshore route section corresponding to the specific alternative stretches for approximately 114 km, 1,950 m of which are in the euphotic zone (to WD 40 m) and 9,710 m in the epipelagic zone (to WD 200 m). Similar to the landfall site, environmentally protected areas include 4 Small Island Wetlands located in a radius of 4,000 m, and the route itself is 255 m from SAC GR4320006 (NE Crete: Dionisades, Elasa and Sidero Peninsula (Mavro Mouri – Vai – Plaka) and Marine Area) and 100 m from the Landscape of Outstanding Natural Beauty "AT6011002'' (Petsofas). In addition, 2 shallow water habitats (A5.33 - Infralittoral sandy mud and 1120 - *Posidonia oceanica* beds for 1.95 km, 3.5 km, respectively, whilst it crosses an area of Probability of existence of coralligenous outcrops* >50% (MEDISEH) for 0.59 km. Also 4 deep-sea habitats are crossed: A6.51 - Mediterranean communities of bathyal muds (63 km), A6.511 - Facies of sandy muds with *Thenea muricata* (37 km), A5.38 - Mediterranean biocoenosis of muddy detritic bottoms (4.89 km), A5.33 - Infralittoral sandy mud (0.05 km), and the route crosses an area of Probability of existence of coralligenous outcrops >50% for 11.66 km. Moreover, the route crosses the Hellenic Trench IMMA for approximately 71 km (62 %).

It should be noted that alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (*Lagocephalus sceleratus*, *Pterois miles*).

According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is located in the distribution of Habitat 8330 (Annex I of Directive 92/43/EEC). One (1) amphibian, 5 reptiles, 6 mammals and 37 avifauna species of conservation interest have been recorded in the broader area (based on Greek Red List of 2009 data).

Regarding land use, onshore route is not available; however, in general, the broader area is located within a completely isolated area of Crete of pristine environment very close to protected areas/ habitats.

Regarding technical challenges (that could increase construction duration and hence impacts) based on the available data[9,10], beach and seabed intervention works are estimated as moderate. Rocky undulating terrain can be expected in the nearshore area; it is anticipated that the coastline morphology adds complexity to shore crossing construction. Areas of potential geohazards lie on the route in intermediate waters.

No third party interaction influences the offshore pipeline routing.

[9]EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[10]EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

No engagement with known significant cultural heritage areas is identified.

7 A.5.3.5. ALTERNATIVES ASSESSMENT

The main differences of these three alternatives are the following:

- Natural Environment. Regarding landfall sites, OSS2-Alt2 (LF2b) lies in a pristine area, whilst the two others in typical phrygana areas[11]. A marine cave supporting a *Monachus monachus* couple is recorded in the area E of LF2a. Proximity to Natura 2000 site is noted for OSS2-Alt2 (approximately 300 m), contrary to the other two. Offshore route OSS2-BC does not cross *Posidonia oceanica* beds unlike the other two;
- Social Environment: Regarding the landfall sites, OSS2-BC (LF2) and OSS2-Alt1 (LF2a) bundle with the existing PPC Atherinolakkos Power Plant and the nearby fishing shelter; LF2a engages with the entrance of the fishing shelter, contrary to LF2. OSS2-Alt2 (LF2b) lies in an area where no economic development is identified; however, the area is known to host some alternative tourism activity (in the broader area); and
- Cultural Heritage: The landfall site of OSS2-Alt1 (LF2a) is described as a "Non-declared or characterised Archaeological zone", hence the overall area has high archaeological potential.

Table 7-5 summarizes the criteria where the alternatives present differences that are considered relevant in the selection process. The detailed results of environmental criteria comparison for the landfall sites and all corresponding offshore route sections are presented in section 7 A.7.

OSS2-BC bundles safely with the existing industrial character of the area, avoiding significant technical challenges and areas of biodiversity interest (e.g. protected areas or biodiversity hotspots). OSS2-Alt1 is similar (identical) to OSS2-BC but it is located in front of the PPC port and most importantly interferes with an area known for its archaeological potential; as such, OSS2-BC is considered as more favourable than OSS2-Alt1 (Figure 7-16). OSS2-Alt2 lies in close proximity to biodiversity hotspots; lies within an area known to host *P. oceanica* seagrass (priority habitat). OSS2-Alt2 spans a greater length through the epipelagic zone. As such, OSS2-BC is considered more favourable than the previous alternatives.

[11] Phrygana areas are open dwarf shrublands dominated by low, often cushion-shaped, spiny shrubs. These shrubs are extremely high temperature- and drought-tolerant and they grow at low altitudes. This vegetation type is characteristic of Mediterranean ecosystems and is considered the result of macchie or forest degradation. Phrygana usually grow on poor and rocky limestone and siliceous substrates or at areas previously repeatedly burnt by fires.

Prepared by: ASPROFOS, 2022.

Figure 7-9 Base-Case Selection for OSS2 - Atherinolakkos Area.

Table 7-5 High Level Comparison Matrix for Alternatives OSS2/OSS2 N Reaching Crete.

General Parameter	Base-case OSS2-BC (OSS2/OSS2N->OSS2->LF2 "Atherinolakkos")	Alternative OSS2-Alt1 (OSS2/OSS2N -> OSS2a -> LF2a "Livari“)	Alternative OSS2-Alt2 (OSS2/OSS2N -> OSS2b -> LF2b "Skinias“)
Protected Areas	No interference. Site is located at great distance from any protected area (national or international) No engagement for the Route.	*M. monachus* hosting marine cave in the area of LF2a. Route crosses P. oceanica beds for approx. 105 m	Proximity to protected areas, incl. 1 Natura 2000 site, 4 Small Island Wetlands Route crosses *P. oceanica* beds for approx. 3.5 km
Biodiversity Hotspots	No interference with identified habitats of conservation interest or areas important for biodiversity (terrestrial)		The landfall area is located within completely natural vegetated areas,

General Parameter	Base-case OSS2-BC (OSS2/OSS2N->OSS2->LF2 "Atherinolakkos")	Alternative OSS2-Alt1 (OSS2/OSS2N -> OSS2a -> LF2a "Livari“)	Alternative OSS2-Alt2 (OSS2/OSS2N -> OSS2b -> LF2b "Skinias“)
	Route crosses for 62km (57 % of total length) the Hellenic Trench IMMA.		secluded from other anthropogenic pressures and even presence. Proximity to biodiversity hotspots (e.g. Natura 2000 and Landscape of Outstanding Beauty). Route crosses for 71km (62 % of total length) the Hellenic Trench IMMA
Cultural Heritage	No crossing of known cultural heritage resources	Landfall site is located within an area considered as High Archaeological Potential	No crossing of known cultural heritage resources
Infrastructure	Bundling with existing power plant. Adequate road network used for PPC power plant. Proximity to power plant port. Proximity to two RES projects (one under installation permit and another one which application is under evaluation)		Limited (if any) access to the area. Only dirt roads and tracks available. A wind farm development application is under assessment by the competent authority, whilst another one for P/V has been rejected. Otherwise, the area is completely secluded from any human presence
Technical challenges[12]	It is a flat area accessible through existing roads and power plant port. No significant geohazards are identified (no evidence of landslides, minimal liquefaction	Similar to LF2 site. However, LF2a is located in front of power plant port entrance.	Most likely new access road construction will be required. No significant geohazards (no evidence of landslides, minimal liquefaction risk); the site is located at

[12]Note that all geohazards identified along the routes are considered manageable through standard engineering techniques/processes (i.e. the route already avoids key geological hazards/constraints areas).

General Parameter	Base-case OSS2-BC (OSS2/OSS2N->OSS2->LF2 "Atherinolakkos")	Alternative OSS2-Alt1 (OSS2/OSS2N -> OSS2a -> LF2a "Livari“)	Alternative OSS2-Alt2 (OSS2/OSS2N -> OSS2b -> LF2b "Skinias“)
	risk); the site is located at adequate distance from active faults (1.5 km) and earthquake epicentres (8.5 m). No extensive earthworks are expected.		relatively smaller distance from active faults (1 km) and earthquake epicentres (5 km) than the other alternatives. Difficulties are expected during excavation works due to the hard rock formation substrate.
Development Plans	Located in an area designated for industrial use as well as for touristic use (at regional level). No marine spatial planning provisioned in the area		Located in an area designated for touristic use (at regional level) No marine spatial planning provided for in the area
Touristic Interest	Area designated for touristic use (at regional level) but no evidence of touristic activity. It is reasonable to expect limited (if any) touristic interest in the area, due to the presence of the power plant		Designated for touristic use (at regional level). No touristic development is identified in the area. The area is defined as area of "Developing tourism with potential for development of alternative forms of tourism"

Prepared by: ASPROFOS, 2022.

7 A.5.4. OSS3 DEPARTING CRETE ALTERNATIVES

7 A.5.4.1. OVERVIEW

The alternative routes of the OSS3/OSS3N pipeline departing from SE Crete towards SE Peloponnese and the continental section of the EastMed Pipeline Project include[13]:

[13]These alternatives are the same as the ones assessed during the Scoping Phase; given that no improved alternative was identified, they are still considered valid.

- OSS3_Cr-BC, i.e. the base-case offshore route section starting from Landfall Site LF2;
- OSS3_Cr-Alt1, i.e. the alternative offshore route section starting from Landfall Site LF2a; and
- OSS3_Cr-Alt2. i.e. the alternative offshore route section starting from Landfall Site LF2b.

In the South Cretan Sea departing SE of Crete, three (3) offshore route alternatives have been assessed connecting the starting point; i.e. the different landfall sites at the SE coastline of Crete[14]) with the OSS3/OSS3N line, close to KP 55, at approximately 750 m WD.

These alternatives are the same as the ones assessed during the Scoping Phase; given that no improved alternative was identified, they are still considered valid.

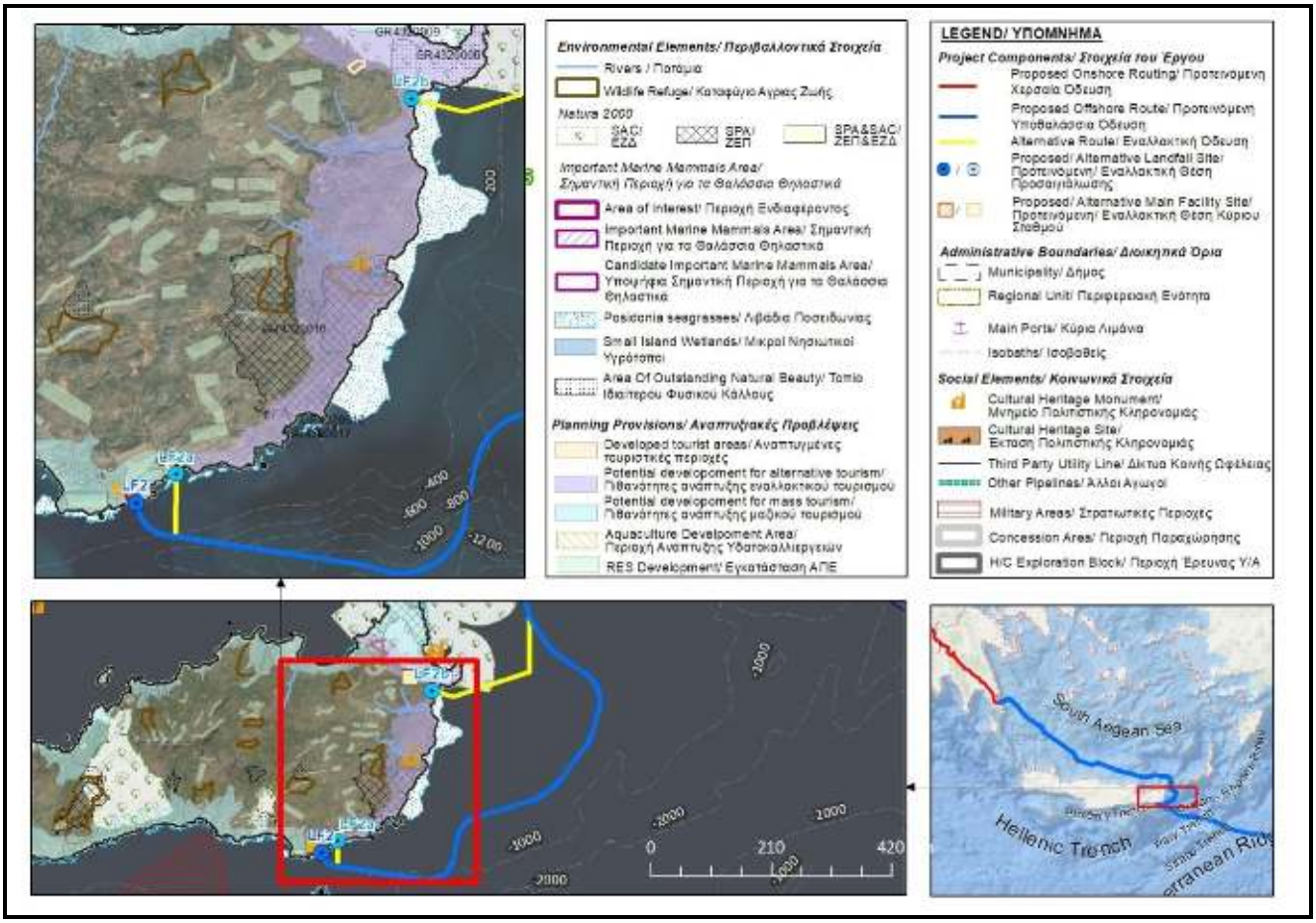
Alternatives for the section departing SE Crete of OSS3/OSS3N are presented in Figure 7-10 (see Section 15.1.3 - Alternatives Map).

Landfalls at Crete for OSS3 (i.e. starting from Crete) are essentially the same as the landfall sites for OSS2/OSS2 N (i.e. reaching Crete). The slight shifting of the two landfalls (incoming and outgoing) is very small and therefore does not make any difference from an ESIA point of view. As such, they are considered identical.

In addition, the nearshore route section[15] starting from SE Crete is equivalent to the corresponding section reaching SE Crete (Figure 7-8). This is why the information provided for the corresponding section of OSS2/OSS2N (i.e. landfall sites and nearshore route sections) is valid for this section as well. Differences exist in the offshore route section in waters deeper than the 40 m necessary to connect the landfall area and the nearshore route section (to 40 m water depth, which was described in the previous section) to the OSS3/OSS3N pipeline system.

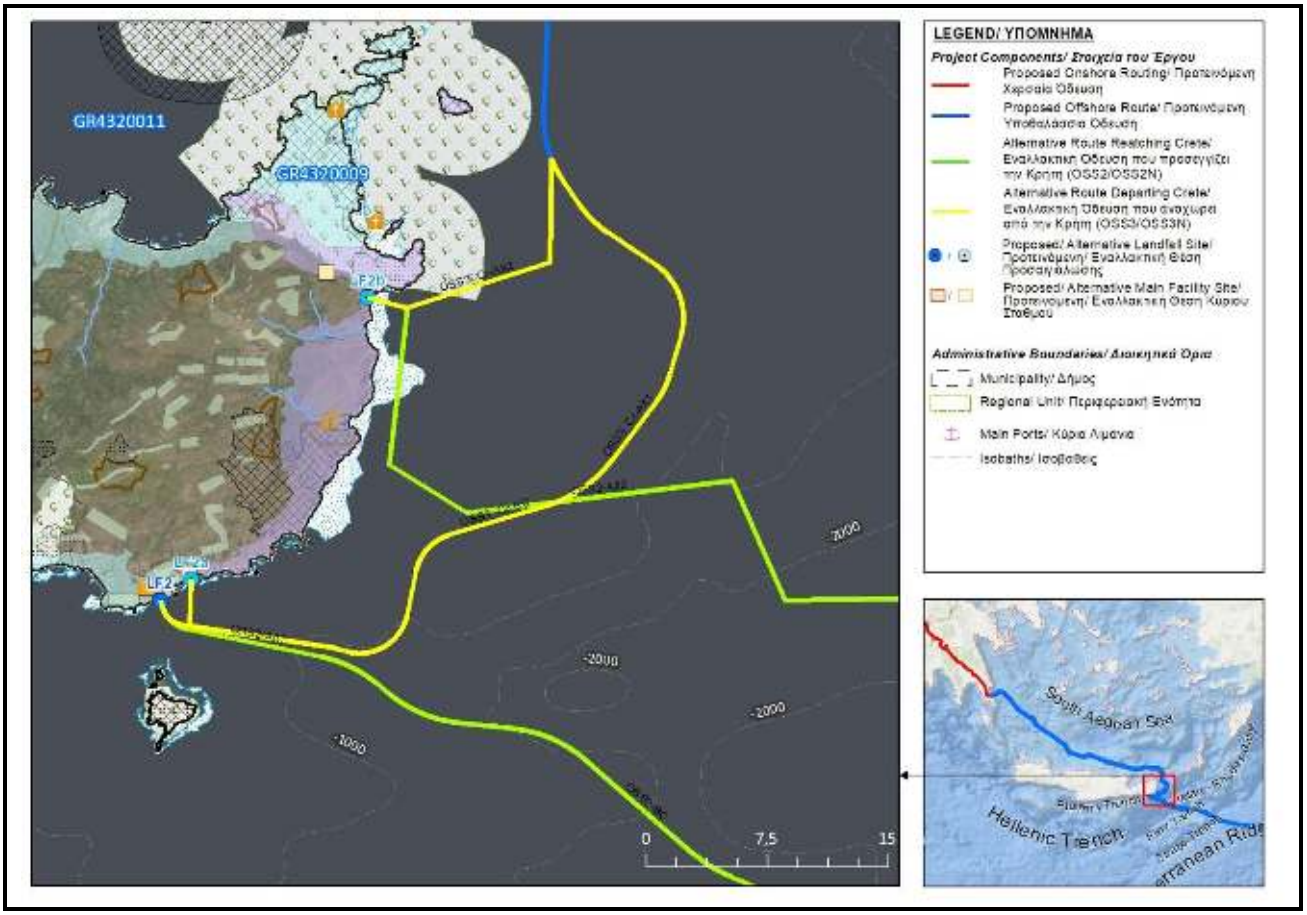
[14] It is noted that slight shifting of the two landfall sites exists, i.e. for the landfall site receiving the OSS2/OSS2N line and the landfall site dispatching OSS3/OSS3N for SE Peloponnese at SE Crete, it does not make any difference from an ESIA point of view. As such, they are considered identical.

[15] to 40 m water depth



Prepared by: ASPROFOS, 2022

Figure 7-10 Alternatives for Pipeline System OSS3/OSS3N starting from SE Crete.



Prepared by: ASPROFOS, 2022

Figure 7-11 Correlation of Alternative Landfalls for Pipeline Systems OSS2/OSS2N and OSS3/OSS3N at Crete.

7 A.5.4.2. DESCRIPTION OF OSS3_CR-BC

This alternative connects LF2 with OSS3/OSS3N through the offshore route OSS3_Cr-BC segment.

LANDFALL LOCATION DESCRIPTION

Landfall location description is identical to the one provided in Section 7 A.5.3.2.

OFFSHORE ROUTE SECTION

Offshore route description is similar to the one provided in Section 7 A.5.3.2, especially to WD 800 m, whilst the rest of the offshore alternative does not differentiate in any significant aspect, but for

the engaged route lengths (for the marine habitats engaged) with still very small differences. As such, it is considered unnecessary to present them anew.

For typical reasons, the following are mentioned.

The total offshore route length is 58.08 km with 1 shallow water habitat (A5.33 - Infralittoral sandy mud) crossed (330 m) and 4 deep-sea habitats (for a length of 4.5 km, 24.3 km, 120 m and 120 m respectively through A6.51 - Mediterranean communities of bathyal muds, A6.511 - Facies of sandy muds with Thenea muricata, A5.38 - Mediterranean biocoenosis of muddy detritic bottoms and A5.47 - Mediterranean communities of shelf-edge detritic bottoms).

7 A.5.4.3. DESCRIPTION OF OSS3_CR-ALT1

This alternative connects LF2a with OSS3/OSS3N through offshore OSS3_Cr-Alt1 segment.

LANDFALL LOCATION DESCRIPTION

Landfall location description is identical to the one provided in Section 7 A.5.3.3.

OFFSHORE ROUTE SECTION

Offshore route description is similar to the one provided in Section 7 A.5.3.3, especially till WD 800 m, whilst the rest of the offshore alternative does not differentiate in any significant aspect, but for the engaged route lengths (for the marine habitats engaged) with still very small differences. As such, it is considered unnecessary to present them anew.

For typical reasons, the following are mentioned.

The total offshore route length is 58.35 km. Two (2) shallow water habitats (A5.33 - Infralittoral sandy mud and 1120 – *Posidonia oceanica* beds) are crossed for 690 m and 120 m, respectively, and 3 deep-sea habitats (4.5 km, 24.3 km, 0.24 km through A6.51 - Mediterranean communities of bathyal muds, A6.511 - Facies of sandy muds with Thenea muricata, and A5.38 - Mediterranean biocoenosis of muddy detritic bottoms, respectively.)

7 A.5.4.4. DESCRIPTION OF OSS3_CR-ALT2

This alternative connects LF2b with OSS3/OSS3N through the offshore OSS3_Cr-Alt2 segment.

LANDFALL LOCATION DESCRIPTION

Landfall location description is identical to the one provided in Section 7 A.5.3.4.

OFFSHORE ROUTE SECTION

It is clarified that the first approximately 2,500 m, OSS3_Cr-Alt2 and OSS2-Alt2 (described in Section 7 A.5.3.4) including the Nearshore section (up to 40m water depth), are identical.

The entire offshore route section corresponding to the specific alternative stretches for approximately 18.31 km, 1,950 m of which are in the euphotic zone (to WD 40 m) and 4,310 in the epipelagic zone (to WD 200 m). Similar to the landfall site, environmentally protected areas include 4 Small Island Wetlands located in a radius of 4,000 m, and the route itself is 255 m from SAC GR4320006 (NE Crete: Dionisades, Elasa and Sidero Peninsula (Mavro Mouri – Vai – Plaka) and Marine Area); and 100 m from the Landscape of Outstanding Natural Beauty "AT6011002'' (Petsofas). However, the route crosses for approximately 2,200 m the SAC GR4320006 site. The same shallow water habitats with OSS2-Alt2 are engaged. Four (4) deep-sea habitats are crossed: A6.511 - Facies of sandy muds with Thenea muricata (13.35 km), A5.38 - Mediterranean biocoenosis of muddy detritic bottoms (2.53 km), A5.33 - Infralittoral sandy mud (0.51 km), and for 3.65 km the route crosses an area of a >50% Probability of existence of coralligenous outcrops.

The rest are identical to OSS2-Alt2.

Regarding technical challenges (that could increase construction duration and hence impacts, e.g. species nuisance or sediment suspension) and based on the available data[16,17], beach and seabed intervention works are estimated as moderate. Rocky undulating terrain can be expected in the nearshore area; it is anticipated that the coastline morphology adds complexity to shore crossing construction. Areas of potential geohazards lie on the route in intermediate waters.

No third party interaction influences the offshore pipeline routing.

No engagement with significant identified cultural heritage areas.

7 A.5.4.5. ALTERNATIVES ASSESSMENT

From the presentation of the alternatives, it is evident that the differences between the OSS2/OSS2 N alternatives (described in section 7 A.5.3) and the OSS3_Cr alternatives are insignificant in

[16]EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[17]EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

environmental and social terms. As such, it is self-evident that the assessment will be identical; hence, the assessment is not repeated.

Table 7-5 summarises the key constraints for the alternatives assessed (reaching and/ or departing Crete). The detailed results of environmental criteria comparison for the landfall sites and the entire corresponding offshore route sections are presented in section 7 A.7.2.

It is evident that Base-case OSS3 bundles safely with the existing industrial character of the landfall area, avoiding significant technical challenges and areas of biodiversity interest (e.g. protected areas or biodiversity hotspots). OSS3-Alt1 is similar (identical) to OSS3 but it is in front of the PPC port and most importantly is engaged with an area known for its archaeological potential. OSS3-Alt2 lies in close proximity to biodiversity hotspots; in fact, it is within area known to host *P. oceanica* seagrass (priority habitat). At greater depths, OSS3-Alt2 crosses a Natura 2000 site and poses more technical challenges than any other alternative. As such, Base-case OSS3 is better in all aspects than the other alternatives.

7 A.5.5. OSS3 REACHING PELOPONNESE ALTERNATIVES

7 A.5.5.1. OVERVIEW

Having selected SE Peloponnese as the most appropriate geographical region of continental Greece for landing the pipeline (see Section7 A.2), the most appropriate landfall and nearshore areas were investigated by defining several alternatives. Before providing the details of these it is worth noting that, among the various constraints identified along the east and northeast coastline of Peloponnese, two relevant and extended constrains were identified:

- Tourism development and settlements hosting family summer houses and traditional holiday venues. Peloponnese, especially NE and E coastline is very popular for domestic tourism (throughout the year) given the proximity to the biggest population centre of Greece (i.e. Athens). As such, many Athenians have family origins in the specific area and visit their ancestral homes and places very often throughout the year. On the other hand, many Athenians opt NE and E Peloponnese (especially the coastline) for short term vacations (during weekends and bank holidays) or even summer holiday. This tourism development is not restricted, however, to domestic tourism. Korinthos, Epidaurus, Nafplio are international tourist venues mainly for their cultural heritage and natural beauty; and
- Coastline geomorphology. The east coast of Peloponnese is characterised by steep slopes and complex morphology. Most of the coastline consists of cliffs and rocky shores, towered inland by

hilly and semi-mountainous ranges. Therefore, even if the coastal zone/landfall site could be somehow easily approached from the sea, the technical challenges to construction at the landfall could be remarkable. These challenges not only involve aspects of pipeline integrity but also considerable potential requirements in terms of accessibility and logistics (e.g. would require significant interventions such as opening access roads for heavy machinery, levelling terrain for camps and pipe yards, etc.), increasing construction timings, challenging reinstatement works, etc. thus resulting in increased environmental and social impacts/challenges.

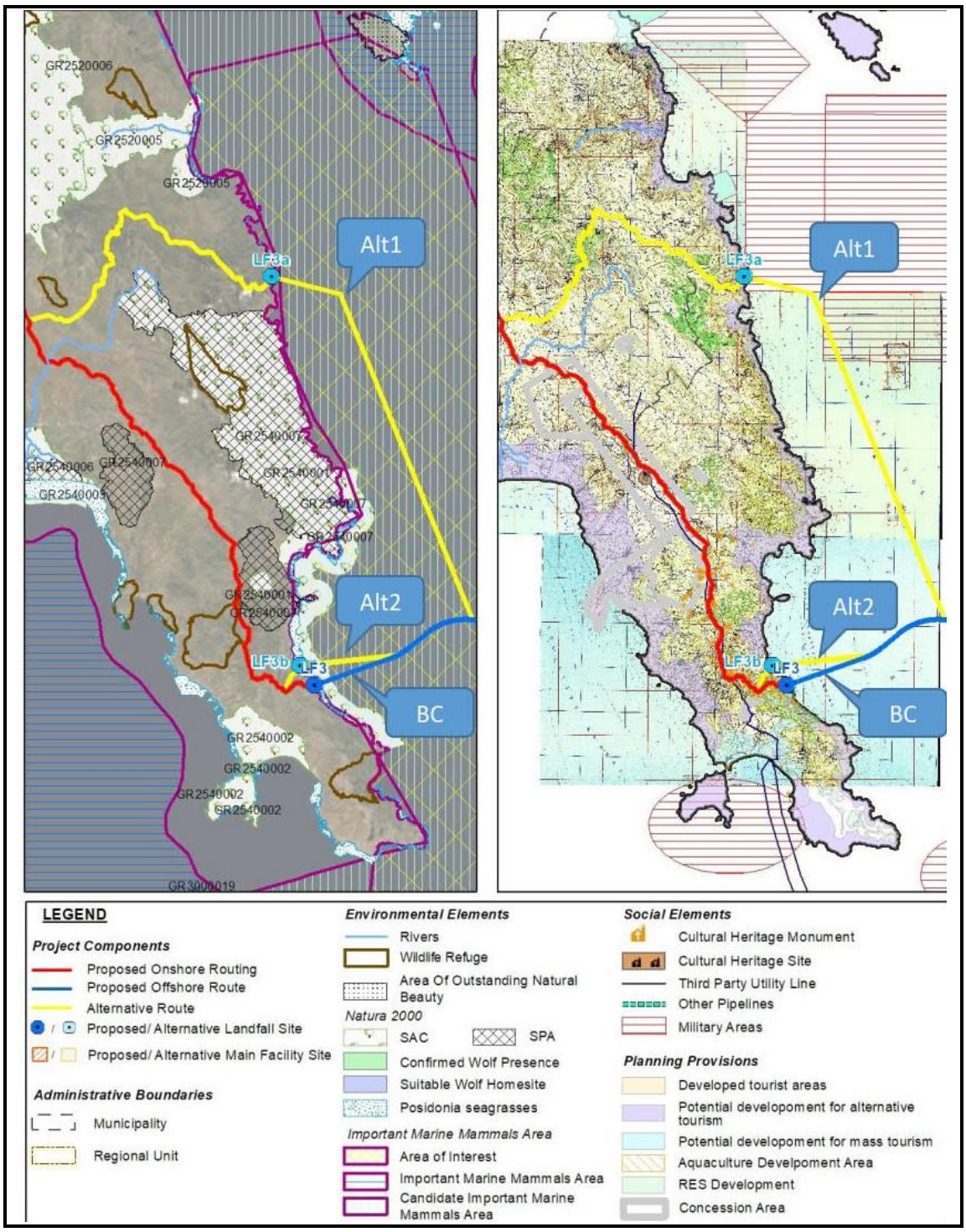
The above constraints show that the few areas where geomorphological restrictions are limited (e.g. Astros, Leonidio, Monemvasia area) coincide with areas that are well known for their domestic tourist development. As such, it is expected that areas with fewer technical constraints would potentially lead to more relevant stakeholder concerns, as identified in the very first stages of the project design.

For the landfall site at SE Peloponnese, three (3) alternative landfall sites connected through corresponding offshore route sections were assessed. The different landfall sites correspond to different onshore sections (mainly two corridors), connecting the landfall site to the proposed onshore pipeline route (CCS1 in Peloponnese). As such, the following alternatives have been assessed, starting from close to KP 410 of OSS3, at approximately 600 m WD (starting point), and close to KP 65 of CCS1, close to Geraki Settlement, M. of Evrotas (ending point). The alternative routes of the OSS3/OSS3N pipeline, reaching SE Peloponnese and the continental section of the EastMed Pipeline Project include[18]:

- Base-case offshore route section OSS3_Pel-BC reaching Landfall Site LF3;
- Alternative offshore route section OSS3_Pel-Alt1) starting from Landfall Site LF3a; and
- Alternative offshore route section (OSS3_Pel-Alt2) starting from Landfall Site LF3b.

Alternatives for the section reaching SE Peloponnese of Pipeline System OSS3/OSS3N are illustrated in Figure 7-12 (see Section 15.1.3 - Alternatives Map).

[18]These alternatives are the same as the ones assessed during the Scoping Phase; given that no improved alternative was identified, they are still considered valid.



Prepared by: ASPROFOS, 2022

Figure 7-12 Alternatives for Pipeline System OSS3/OSS3N Reaching SE Peloponnese.

7 A.5.5.2. DESCRIPTION OF OSS3_PEL-BC

OSS3 Base-case (OSS3_Pel-BC) results from the starting point reaching base-case landfall site LF3 at SE Peloponnese shores close to Agios Fokas settlement, in the Municipality of Monemvasia (southern limits of the Municipality) (length 20 km) and connects to base-case CCS1, at the ending point (65 km).

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 1 (Laconia); and
- Municipalities: 2 (Monemvasia, Evrotas).

ONSHORE ALTERNATIVE SEGMENT (CCS1-BC)

Regarding environmental sensitivities, this alternative crosses mainly through *Sclerophyllous* vegetation (39%) and Mixed forests (3%) (of the total onshore length). Twenty-nine (29) avifauna, 5 reptile and 6 mammal species of conservation interest have been reported in the study area (1 terrestrial – *Canis aureus*). The study area crosses mainly isolated areas (onshore and offshore) of pristine environment. Most prominent features include the plains of Molai and Vrontamas-Geraki (intensively cultivated) and Mt Kounos, Mt Megali Rahi and Mt Kourkoula. One major (1) river is crossed: R. Mariorema.

Specifically, regarding protected areas (terrestrial ones) GR2540007 SPA is crossed for approximately 2 km; WR Pratagos – Aetofolia is crossed for 1 km.

Regarding socioeconomic sensitivities and development, the base case crosses Non-irrigated arable land (4%), Olive groves (35%), Complex cultivation patterns (7%) and Land principally occupied by agriculture, with significant areas of natural vegetation (12%) (based on CLC 2018 data). In general, the route engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Many small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. Four (4) major roads are crossed. The alternative crosses through Natural Environment Protection Area ("PEP3") for 9 km, "Elliniko" Area of Building Control and Check ("PEPD5") for 8 km, Suburban Green Zone of Agios Nikolaos ("PEP4") for 2 km and for 5 km through "Velies", "Agios Dimitrios" Area of Building Control and Check ("PEPD3") of Monemvasia SXOOAP. The entire project footprint located on Peloponnese is engaged with a mosaic of agricultural area and rural settlements; only agricultural development is identified. No engagement with military areas is noted.

No significant tourism development is identified in the area; Monemvasia UNESCO site is located 9,400 m from the route.

No significant population centres are identified in the study area. In general, the area is quite secluded. Nine (9) settlements have been identified within the study area (Agios Fokas 350 m, Lira 300 m, Velies 750 m, Apidea 850 m, Gouves 1000 m, Kastella 300 m, Ellinko 350 m, Agios Nikolas 470 m, Sykea 650 m, Metamorfosi 920 m)

Proximity to 4 RES projects is noted as well as crossing of 1.

Regarding cultural heritage, 88 declared cultural heritage resources are located within the study area but only 7 of them within 200 m of the axis; 4 other identified, but yet to be declared, cultural heritage resources lie within the study area. Four (4) religious sites are identified.

LANDFALL LOCATION DESCRIPTION (LF3)

Landfall LF3 is located in the Agios Fokas area in M. of Monemvasia, Municipal Unit of Monemvasia. LF3 is located in south-eastern Peloponnese, 10 km south of the city of Monemvasia. The nearest settlement is Agios Fokas 300 m to the south. The area is characterised by a mosaic of natural and semi-natural areas, bush land and scrubland merged with areas mainly occupied by agricultural activity. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment.

In general, the landfall site area is characterised by absence of anthropogenic pressures or developments.

The landfall area is located within the Natura 2000 site GR2540001 SAC “ORI GIDOVOUNI, CHIONOVOUNI, GAIDOUROVOUNI, KORAKIA, KALOGEROVOUNI, KOULOCHERA KAI PERIOCHI MONEMVASIAS SPILAIO SOLOMOU TRYPA KAI PYRGOS AG. STEFANOU KAI THALASSIA ZONI EOS AKROTIRIO KAMILI”, and close to *Posidonia oceanica* habitats.

Based on national spatial planning, the area is designated as “Low Industrial Priority” and as “High Wind Power Potential”. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism". Landfall is close to Agios Fokas beach; no significant tourist development is identified in the area but a significant development (a conference centre, according to unverified sources) is noted uphill from Agios Fokas. Although Monemvasia UNESCO site is located 9,400 m to the NE of the landfall site, due to the open sea horizon, some visibility is expected.

Regarding marine caves, coastline of the study area was surveyed and no caves potentially suitable for the use by Mediterranean monk seals (*Monachus monachus*) have been located.

Regarding technical challenges that could incur direct impacts during construction or indirect impacts during operation (e.g. increased risk of wildfires in forested areas), it is noted that the landfall site is a flat area accessible from existing dirt roads. No significant geohazards are anticipated.

Regarding cultural heritage, consultation has indicated that there is an archaeological site at 250 m (declared ancient quarry).

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 1 (Laconia); and
- Municipalities: 1 (Monemvasia).

OFFSHORE ROUTE SECTION (OSS3- BC)

The entire offshore route section corresponding to the specific alternative stretches for approximately 20 km, 730 m of which are in the euphotic zone (up to WD 40 m) and 2 km in the epipelagic zone (up to WD 200 m).

Regarding protected areas, this alternative crosses the GR2540001 SAC Natura 2000 site for approximately 1.9 km. It is important to note that the SE Peloponnese coastline is a sensitive area for marine biodiversity and this is why it is characterised as an Area of Interest (AoI) and a candidate Important Marine Mammals Site (cIMMA); the OSS3_Pel-BC crosses both of these areas. OSS3_Pel-BC crosses *P. oceanica* beds for 620 m. Two (2) additional shallow water habitats are identified nearshore: Infralittoral seabed for 830 m and Probability of existence of coralligenous outcrops* >50% for 470 m. Regarding deep-sea habitats, 5 have been identified: A6.511 – Facies of sandy muds with Thenea muricata (10620 m), Circalittoral seabed (1310 m), Infralittoral seabed (180 m) and Probability of existence of coralligenous outcrops* >50% (1420 m). According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of Habitat 8330 (Annex I of Directive 92/43/EEC). Five (5) marine mammals of conservation interest have been identified in the area: *Monachus monachus*, *Physeter microcephalus*, *Grampus griseus*, *Stenella coeruleoalba* and *Tursiops truncatus*. The loggerhead sea turtle (*Caretta caretta*) has been recorded in the area. Based on data provided by ARCHELON, about 4-5 nests of the species are recorded annually at the beach of Agios Fokas (less than 500 m from LF3).

Based on the EMODNET data[19], marine traffic density in the area is low. The closest fishing shelter is located in Agios Fokas (700 m distance) at the limits of the study area; however, it is not expected to provide significant facilities for the project. No aquaculture activity is identified.

Regarding technical challenges (that could increase construction duration and hence impacts, e.g. species nuisance or sediment suspension) and based on the available data[20,21], beach and seabed intervention works are estimated as small to moderate. The nearshore section seabed is rocky, overlain with sediments of increasing thickness that can be expected offshore, but no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route at greater depths (greater than 40 m WD).

No third party interaction influences the nearshore pipeline routing.

No interaction with known significant cultural heritage areas is identified.

7 A.5.5.3. DESCRIPTION OF OSS3_PEL-ALT2

OSS3 Alternative 2 (OSS3_Pel-Alt2) results from the starting point, reaching base-case landfall site LF3b, at SE Peloponnese shores close to the Kastela settlement (building association), in the Municipality of Monemvasia (southern limits of the Municipality) (length 21 km) and connects to base-case CCS1, at the ending point .

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 1 (Laconia); and
- Municipalities: 2 (Monemvasia, Evrotas).

It is noted that this alternative varies from the OSS3_Pel-BC only in respect to its landfall site and small onshore and offshore segment reaching LF3b.

ONSHORE ALTERNATIVE SEGMENT (CCS1-BC)

Onshore route description is identical to the one provided in Section 7 A.5.5.2, from KP 4 of OSS3_Pel-BC to the ending point. Only the small section approximately 3.5 km from LF3b differs, whilst the rest of the onshore alternative does not differ in any significant aspect, but for the engaged route lengths

[19] https://www.emodnet-humanactivities.eu/view-data.php
[20] EM-610-20-PL-RPT-002 Rev1 -- Preliminary Geohazards Identification Report
[21] EM-2000-20-PL-RPT-001 Rev1 – Preliminary Geohazards Study Report

(for the affected habitats or land uses engaged) with still very small differences. As such, it is considered unnecessary to present them anew.

For typical reasons, the following are mentioned, which pose the main differences between the two alternatives.

No significant tourism development is identified in the area; Monemvasia UNESCO site is located 8,000 m away.

No significant population centres are identified in the study area. In general, the area is quite secluded. Eight (8) settlements have been identified within the study area (Kastella 300 m, Lira 300 m, Velies 750 m, Apidea 850 m, Gouves 1000 m, Ellinko 350 m, Agios Nikolas 470 m, Sykea 650 m, Metamorfosi 920 m).

The rest of the environmental and social features identified on the onshore section of the specific alternative are identical to OSS3_Pel-BC.

LANDFALL LOCATION DESCRIPTION (LF3B)

Landfall LF3b is located in the Kastela area, in M. of Monemvasia, Municipal Unit of Monemvasia. LF3b is located in south-eastern Peloponnese, 8 km south of the city of Monemvasia. The alternative landfall location is located approximately 2.5 km north of LF3. The nearest settlement is Kastela approximately 900 m to the south. The area is characterised by a mosaic of natural and semi-natural areas, bush land and scrubland merged with areas mainly occupied by agricultural activity. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment.

In general, the landfall site area is characterised by absence of anthropogenic pressures or developments.

The landfall area, like for the base case, is located within the Natura 2000 site GR2540001 SAC “ORI GIDOVOUNI, CHIONOVOUNI, GAIDOUROVOUNI, KORAKIA, KALOGEROVOUNI, KOULOCHERA KAI PERIOCHI MONEMVASIAS SPILAIO SOLOMOU TRYPA KAI PYRGOS AG. STEFANOU KAI THALASSIA ZONI EOS AKROTIRIO KAMILI”, and close to *Posidonia oceanica* habitats.

Based on national spatial planning, the area is designated as “Low Industrial Priority” and as “High Wind Power Potential”. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism". Landfall is close to Kastela beach; no significant tourism development is identified in the area but a significant development by Kastela area itself; Kastela is a compound of houses, mostly summer ones (apparently some sort of a building association). Although the Monemvasia UNESCO site is located 8,000 m to the NE of the landfall site, due to the open sea horizon, visibility is expected, given orientation of Monemvasia site and LF3b.

Regarding marine caves, no published data support presence of caves potentially suitable for the use by the Mediterranean monk seals (*Monachus monachus*).

Regarding technical challenges that could incur direct impacts during construction or indirect impacts during operation (e.g. increased risk of wildfires within forested areas), it is noted that the landfall site is a flat area accessible through existing dirt roads. No significant geohazards are expected. The wider area presents tourism development because it is located close to Monemvasia city as well close to known beaches at the area (e.g. Xifias beach).

No engagement with significant known cultural heritage areas is identified.

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 1 (Laconia); and
- Municipalities: 1 (Monemvasia).

OFFSHORE ROUTE SECTION (OSS3-ALT2)

The entire offshore route section corresponding to the specific alternative stretches for approximately 21 km, 1,690 m of which are in the euphotic zone (to WD 40 m) and 1,850 m in the epipelagic zone (up to WD 200 m).

Regarding protected areas, this alternative crosses the GR2540001 SAC Natura 2000 site for approximately 2.6 km. It is important to note that the SE Peloponnese coastline is a sensitive area for marine biodiversity which is why it is characterised as an Area of Interest (AoI) and a candidate Important Marine Mammals Site (cIMMA); the entire OSS3_Pel-Alt2 crosses both of these areas. OSS3_Pel-Alt2 crosses *P. oceanica* beds for 750 m. Three (3) additional shallow water habitats are identified nearshore: Infralittoral seabed for 360 m, Circalittoral seabed for 500 m, and Probability of existence of coralligenous outcrops* >50% for 880 m. Regarding deep-sea habitats, 4 have been identified: A6.511 – Facies of sandy muds with *Thenea muricata* (10520 m), Bathyal seabed for 740 m, Circalittoral seabed (1020 m), and Probability of existence of coralligenous outcrops* >50% (1380m). According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). Five (5) marine mammals of conservation interest have been identified in the area: *Monachus monachus*, *Physeter microcephalus*, *Grampus griseus*, *Stenella coeruleoalba* and *Tursiops truncatus*. The loggerhead sea turtle (*Caretta caretta*) has been recorded in the area. Based on data provided by ARCHELON about 25 nests of the species are recorded annually at the beach of Xifias (less than 2 km from LF3b).

Based on the EMODNET data[22], marine traffic density in the area is low. The closest fishing shelter is located in Agios Fokas (>2 km distance); however, it is not expected to provide significant facilities for the project. No aquaculture activity is identified.

Regarding technical challenges and based on the available data[23,24], beach and seabed intervention works are estimated as small to moderate. The nearshore section seabed is rocky with overlying sediments that are expected to increase in thickness offshore, but non-significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route at greater depths (greater than 40 m water depth).

No third party interaction influences the nearshore pipeline routing.

No interaction with known significant cultural heritage areas is identified.

7 A.5.5.4. DESCRIPTION OF OSS3_PEL-ALT1

OSS3 Alternative 1 (OSS3_Pel-Alt1C) results from the starting point, reaches alternative landfall site LF3a at the shores between Kiparisi and Kapsala, in the Municipality of Monemvasia (northern limits of the Municipality) (length 47 km) and connects to CCS1 at the ending point (length 44 km).

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 2 (Laconia, Arcadia); and
- Municipalities: 3 (Monemvasia, Evrotas, South Kinouria).

ONSHORE ALTERNATIVE SEGMENT (CCS1-ALT1)

Regarding environmental sensitivities, this alternative crosses mainly through Coniferous forest (14%), Natural grasslands (24%), Sclerophyllous vegetation (41%) and Transitional woodland/ scrub (7%) (of the total onshore length). Thirty (30) avifauna, five (5) reptile and six (6) mammal species of conservation interest have been reported in the study area (all marine mammals, none of them are terrestrial). The study area crosses mainly isolated areas (onshore and offshore) of pristine environment, in the broader area of Mt Parnonas, known for its natural environment and ecotourism potential. No major river is crossed.

Specifically, regarding protected areas none is engaged or within the study area.

[22] https://www.emodnet-humanactivities.eu/view-data.php
[23] EM-610-20-PL-RPT-002 Rev1 -- Preliminary Geohazards Identification Report
[24] EM-2000-20-PL-RPT-001 Rev1 –Preliminary Geohazards Study Report

Regarding socioeconomic sensitivities and development, this alternative crosses Olive groves (4%) and Land principally occupied by agriculture, with significant areas of natural vegetation (9%) (based on CLC 2018 data). In general, this alternative engages areas of almost no economic development; any development is restricted to agricultural activities - most of them are tree crops. Few (considering the length of the alternative) small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. Three (3) major roads are crossed. The entire project footprint located on Peloponnese is engaged with a mosaic of agricultural area and rural settlements; only agricultural development is identified.

No significant tourism development is identified in the area.

No significant population centres are identified in the study area. In general, the area is quite secluded. Four (4) settlements have been identified within the study area (Vlisidia 900 m, Ochtos 600 m, Peleta 880 m, Chouni 400 m).

Proximity to 4 RES projects is noted as well as crossing of 3 more.

Regarding technical challenges, the area is dominated by steep slopes (in some cases more than 45%) especially at the first part (reaching Landfall LF3a) and in other parts there are areas prone to landslides.

Regarding cultural heritage, one (1) declared cultural heritage resource is located within the study area (at 325 m); 2 other identified, but yet to be declared, cultural heritage resources lie within the study area. Three (3) religious sites are identified, including a Monastery (Monastery of Dormition, at 650 m).

LANDFALL LOCATION DESCRIPTION (LF3A)

Landfall LF3a is located in the Kapsala area, in M. of Monemvasia, Municipal Unit of Zaraka, within Spilies Bay. LF3a is located in south-eastern Peloponnese 6 km north of Kiparissi settlement. The nearest settlement is Mitropoli 5 km to the south. The surrounding area is completely covered by natural vegetation. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment. *Posidonia* oceanica beds are present 100 m to the north.

In general, the landfall site area is characterised by absence of anthropogenic pressures or developments. The LF3a landfall site, itself, is located at a sloped area that is mainly covered by permanent crops (olive trees). Moreover after the LF area the area presents steep slopes, which increase technical considerations for the onshore route part. Moreover, selection of this landfall would result in the onshore part, which just 300m west from LF3a, the route would intersect the asphalt road that connects the settlements of Kiparisi and Fokianos, in a quite challenging area (see Figure 7-13). In more detail, 300 m westward from the landfall location the routing intersects with

the asphalt road which connects the two settlements both of which present high interest from a tourism point of view. Apart from the steep terrain slopes before and after the intersection point, the pipeline would have to pass through the technical works constructed in order to ensure the road stability.

Prepared by: C&M, 2021

Figure 7-13 Landfall site and onshore route at LF3a.

Based on national spatial planning, the area is designated as Low Industrial Priority and as High Wind Power Potential. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism". Landfall is in the broader area of Kiparissi, known for its tourist potential, but no tourist, or any other, development is identified in the area.

Regarding marine caves, no published data support presence of caves potentially suitable for the use by the Mediterranean monk seals (*Monachus monachus*).

Regarding technical challenges that could incur direct impacts during construction or indirect impacts during operation (e.g. increased risk of wildfires in forested areas), it is noted that the landfall site is a flat area accessible from existing dirt roads; however, roads would need to be upgraded and extended for approx. 350 m. No significant geohazards are expected; however, some excavation works are necessary at the landfall site.

No engagement with significant known cultural heritage areas is identified.

Regarding local administration, the following are engaged:

- Region: 1 (Peloponnese);
- Regional Unit: 1 (Laconia); and
- Municipalities: 1 (S. Kinouria).

OFFSHORE ROUTE SECTION (OSS3-ALT1)

The entire offshore route section corresponding to the specific alternative stretches for approximately 47 km, 60 m of which are in the euphotic zone (up to WD 40 m) and 2.8 km in the epipelagic zone (up to WD 200 m).

Regarding protected areas, this alternative does not engage with any. However, it is important to note that the SE Peloponnese coastline is a sensitive area for marine biodiversity which is why it is characterised as an Area of Interest (AoI) and a candidate Important Marine Mammals Site (cIMMA); the entire OSS3_Pel-Alt1 crosses both of these areas. OSS3_Pel-Alt1 does not cross any *P. oceanica* beds, but such are recorded at approximately 100 m[25]. Two (2) additional shallow water habitats are identified nearshore: Infralittoral seabed for 400 m and Probability of existence of coralligenous outcrops* >50% for 390 m. Regarding deep sea habitats, 6 have been identified: A6.511 – Facies of sandy muds with *Thenea muricata* (34800 m), A6.51 - Mediterranean communities of bathyal muds (7710 m), Bathyal seabed (3130 m), Circalittoral seabed (870 m), Infralittoral seabed (500 m) and Probability of existence of coralligenous outcrops* >50% (1420 m). According to the third national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). Five (5) marine mammals of conservation interest have been identified in the area: *Monachus monachus*, *Physeter microcephalus*, *Grampus griseus*, *Stenella coeruleoalba* and *Tursiops truncatus*. The loggerhead sea turtle (*Caretta caretta*) has been recorded offshore during the nesting season (May - October). No nesting beaches have been recorded in the wider area of LF3a.

Based on the EMODNET data[26], marine traffic density in the area is low. The closest fishing shelter is located in Mitropoli, Agia Kiriaki beach (approximately 4 km distance). No aquaculture activity is identified.

Regarding technical challenges and based on the available data[27,28], beach and seabed intervention works are estimated as small to moderate. The coastline is mountainous and rocky. The nearshore

[25] (Topouzelis, Makri, Stoupas, Papakonstantinou, & Katsanevakis, 2018)
[26] https://www.emodnet-humanactivities.eu/view-data.php
[27] EM-610-20-PL-RPT-002 Rev1 -- Preliminary Geohazards Identification Report
[28] EM-2000-20-PL-RPT-001 Rev1 – Preliminary Geohazards Study Report

section seabed is rocky, overlain with sediments of increasing thickness expected offshore but non-significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route at greater depths (greater than 40 m WD).

No third party interaction influences the nearshore pipeline routing. However, a military area is engaged for approximately 16 km (submarine exercise area).

No interaction with significant known cultural heritage areas is identified.

7 A.5.5.5. ALTERNATIVES ASSESSMENT

OSS3 reaching SE Peloponnese alternatives assessment critical points can be summarised as follows:

- Natural Environment. CCS1 segment of the OSS3_Pel-Alt1 (CCS1-Alt1) alternative passes for most of its length through pristine forested areas of Mt Parnonas, similar to the land cover of the corresponding landfall site (LF3a). Although the other two landfall sites lie within pristine natural areas, these are phrygana associations, very typical for Greece, and especially the area. The onshore segment of OSS3_Pel-BC (CCS1-BC) passes mainly through intensively agricultural areas (Plains of Molai and Vrontamas-Geraki);
- Military areas. Offshore segment of OSS3_Pel-Alt1 (OSS3-Alt1) engages with a submarine exercise area which might cause permits' duration to prolong ;
- Landscape. LF3 and LF3b lie approximately 10 km and 8 km, respectively from Monemvasia UNESCO site. Although from a great distance, project construction might be visible, with a view similar to the current one (low sparse natural phrygana vegetation and rural road network). LF3a, on the other hand, might not lie in view of Monemvasia, but it is surrounded by densely vegetated natural areas; any break in the continuity of the landscape will be clearly visible;
- Protected species and habitats:

  Posidonia oceanica is present in all nearshore areas of the landfall sites. In the southern landfall sites (LF3 and LF3b) *Posidonia oceanica* beds are directly engaged with the project (620 m and 760 m, respectively), whilst in LF3a, they are present approximately 100 m to the north,

  C. caretta. LF3b, and to a smaller extent, LF3 lie in close proximity to species nesting sites, Natura 2000 sites. The southern alternatives cross two protected areas; OSS3_Pel-BC for approximately 4 km and OSS3_Pel-Alt2 for approximately 4.5 km;

- Geohazards issues. The selection of the proposed route needs to take into consideration geohazards and accessibility. In many cases, the impact from the geotechnical works for slope

stabilization or the need for new access road construction is more significant than temporary impact on protected areas or biodiversity hotspots. As a consequence, geotechnical issues, such as slope stability and access should also be taken into consideration, as studied by the technical team. Such geotechnical issues pose more challenges on construction safety issues; moreover, they pose significant operational hazards in terms of project vulnerability to mass earth movements that could be triggered and impact the Project. OSS3_Pel-Alt1 involves major technical challenges because the area is dominated by steep slopes (in some cases more than 45%) especially at the first part (Landfall LF3a) and in other parts there are areas prone to landslides. Because of these challenges this solution is deemed not preferable due to increased technical and safety challenges; and

- Social Environment: Regarding the landfall sites, both landfall sites support limited development. However, Kyparissi (LF3a) is a bit more developed in terms of tourism activity.

Table 7-6 and Figure 7-14 summarize the criteria where the alternatives present differences that are considered relevant in the selection process. A detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.3.

Based on the above, OSS3_Pel-BC is the preferable solution.

Table 7-6 High Level Comparison Matrix for OSS3 Alternatives Reaching Peloponnese.

General Parameter	Base-case OSS3_Pel-BC (OSS3-BC -> LF3 -> CCS1-BC)	Base-case OSS3_Pel-Alt2 (OSS3-Alt2 -> LF3b -> CCS1-BC)	Alternative OSS3_Pel-Alt1 (OSS3-Alt1 -> LF3a -> CCS1-Alt1)
Protected Areas	• Offshore Route crosses SAC GR2540001 for approx. 2 km (2 km OSS3-BC, 2.5 OSS3-Alt2); Posidonia oceanica for approx. 680 m (620 m OSS3-BC and 750 m OSS3-Alt2.		• None of the project components is directly engaged with any protected area. However, the natural environment, both onshore and offshore, is of pristine quality. P. oceanica beds are located 100 m N of LF3a.
	• Landfall site is located within Natura 2000 site (SAC) GR2540001; C. caretta nests have been recorded in the beaches of LF3b and LF3 (according to ARCHELON data).		
	• Onshore Route crosses SPA GR2540007 for approx. 2 km and WR Pratagos – Aetofolia for 1 km		
Biodiversity Hotspots	• Offshore Route crosses AoI and cIMMA		
	• The landfall site area is characterised by absence of anthropogenic pressures or developments, in a pristine phryganic area.		• The landfall site area is characterised by absence of anthropogenic

General Parameter	Base-case OSS3_Pel-BC (OSS3-BC -> LF3 -> CCS1-BC)	Base-case OSS3_Pel-Alt2 (OSS3-Alt2 -> LF3b -> CCS1-BC)	Alternative OSS3_Pel-Alt1 (OSS3-Alt1 -> LF3a -> CCS1-Alt1)
			pressures or developments, in a pristine forested area (bushlands).
	• Onshore route passes through pristine phryganic areas very typical for Greece, and especially the area, close to the landfall site, but towards the mainland through intensively agricultural areas (Plains of Molai and Vrontamas-Geraki).		• Onshore route passes through pristine forests of Mt. Parnonas, almost reaching down to the landfall site.
Cultural Heritage	• No engagement with known cultural heritage resources exists.		
	• Landfall site is located 250 m south of a declared ancient quarry.	• No engagement with significant known cultural heritage areas is identified	
	• Onshore route lays within 200 m from declared cultural heritage resources.		• No cultural heritage resource is identified within 200 m from the onshore route.
Infrastructure	Area is quite secluded. Accessibility through existing dirt roads is feasible, but most likely some road upgrading will be performed. The small fishing shelter of Agios Fokas is not expected to provide significant facilities to the project but it is noted (at ~750 m to the south)	Similar to LF3. The small fishing shelter of Kastela is not expected to provide significant facilities to the project but it is noted (at ~900 m to the south)	• Area is quite secluded. Accessibility through existing dirt roads is feasible. The fishing shelter of Mitropoli is not expected to provide significant facilities to the project but it is noted (at ~3,000 m to the south). • The alternative crosses an area designated as a submarine exercise area by the national defence
Technical Challenges[29]	• Offshore, beach and seabed intervention works are estimated as small to moderate. The nearshore section seabed is rocky, overlain with sediments of increasing		

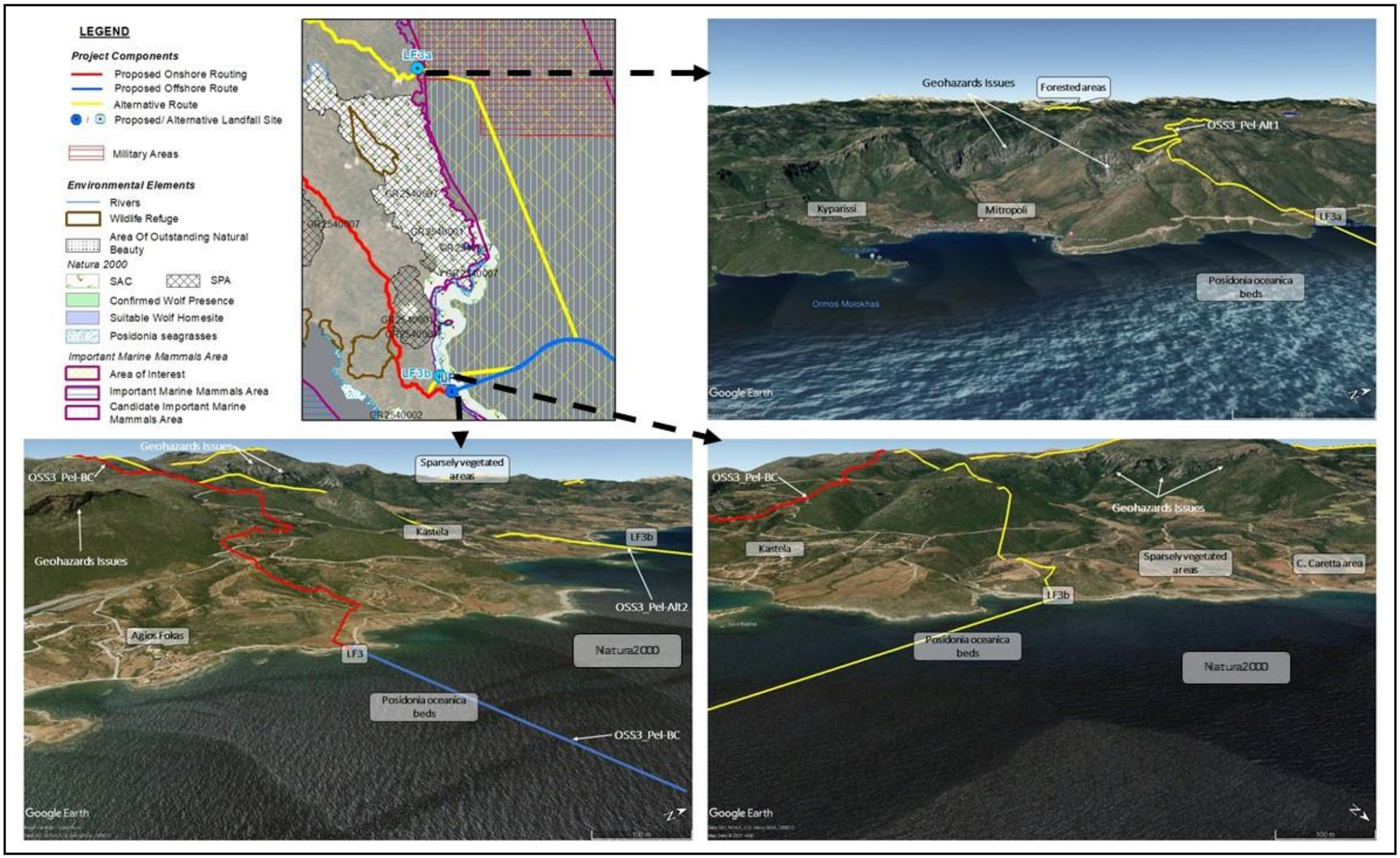
[29]Note that all geohazards identified along the routes are considered as manageable through standard engineering techniques/processes (i.e. the route already avoids key geological hazards/constraints areas).

General Parameter	Base-case OSS3_Pel-BC (OSS3-BC -> LF3 -> CCS1-BC)	Base-case OSS3_Pel-Alt2 (OSS3-Alt2 -> LF3b -> CCS1-BC)	Alternative OSS3_Pel-Alt1 (OSS3-Alt1 -> LF3a -> CCS1-Alt1)
	thickness, but no significant constraints are identified. Areas of potential geohazards lie on the route at greater depths (greater than 40 m WD)		
	• Landfall site is a flat area accessible through existing dirt roads. No significant geohazards are anticipated.		• Similar to other alternatives but some excavation works are necessary.
	• Onshore route phases typical geohazards on the rocky slopes.		• Major technical challenges due to steep slopes (in some cases more than 45%) especially at the first part (close to landfall) and areas prone to landslides.
Development Plans	• Based on national spatial planning, the area is designated Low Industrial Priority but High Wind Power Potential. • Numerous wind farm applications exist in the area but at significant distance (~1.2 km)	• Similar to LF3 site. • Difference lies in the greater distance of the closest wind farm application compared to LF3 (1.5 km). • No marine spatial planning provided in the area	• Similar to LF3 site. • Difference lies in the greater distance of the closest wind farm application compared to LF3 (2 km). • No marine spatial planning provided in the area
Land uses/ Economic development	• Marine traffic density in the area is low. The closest fishing shelter is located in Agios Fokas (south at 700 m and > 2 km, for BC and Alt 1, respectively). No aquaculture activity is identified		• Marine traffic density in the area is low. The closest fishing shelter is located in Mitropoli, Agia Kiriaki beach (approx. 4 km distance). No aquaculture activity is identified
	• Onshore, alternative engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Many small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. The entire project footprint is engaged with a mosaic of agricultural area		• Onshore, alternative engages areas of almost no economic development; any development is restricted to agricultural activities -

General Parameter	Base-case OSS3_Pel-BC (OSS3-BC -> LF3 -> CCS1-BC)	Base-case OSS3_Pel-Alt2 (OSS3-Alt2 -> LF3b -> CCS1-BC)	Alternative OSS3_Pel-Alt1 (OSS3-Alt1 -> LF3a -> CCS1-Alt1)
	and rural settlements; only agricultural development is identified.		most of them are tree crops. Few (considering the length of the alternative) small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. 3 major roads are crossed. The entire project footprint is engaged with a mosaic of agricultural area and rural settlements; only agricultural development is identified.
Population centres	• No significant population centres are identified in the study area. 9 settlements have been identified within the study area (Agios Fokas 350 m, Lira 300 m, Velies 750 m, Apidea 850 m, Gouves 1000 m, Kastella 300 m, Ellinko 350 m, Agios Nikolas 470 m, Sykea 650 m, Metamorfosi 920 m)	• No significant population centres are identified in the study area. 8 settlements have been identified within the study area (Kastella 300 m, Lira 300 m, Velies 750 m, Apidea 850 m, Gouves 1000 m, Elliniko 350 m, Agios Nikolas 470 m, Sykea 650 m, Metamorfosi 920 m)	• No significant population centres are identified in the study area. In general, the area is quite secluded. 4 settlements have been identified within the study area (Vlisidia 900 m, Ochtos 600 m, Peleta 880 m, Chouni 400 m).
Touristic Interest (incl. Landscape)	Nearby villages have little touristic development. Proximity to Kastella Beach but no significant touristic development is identified in the area. Monemvasia Landscape of Outstanding Natural Beauty is an international venue (UNESCO site) but is located in a significant distance to the north (~10 km for LF3 and 8 km for LF3bnorth). Area is characterised as area of "Developing tourism with potential for development of		There is evidence of touristic development at 4,500 m to the south (Beach of Mitropoli). However, no significant touristic development is identified in the area of interest, although the landfall site is characterised

General Parameter	Base-case OSS3_Pel-BC (OSS3-BC -> LF3 -> CCS1-BC)	Base-case OSS3_Pel-Alt2 (OSS3-Alt2 -> LF3b -> CCS1-BC)	Alternative OSS3_Pel-Alt1 (OSS3-Alt1 -> LF3a -> CCS1-Alt1)
	alternative forms of tourism" based on national spatial planning		as an area of "Developing tourism with potential for development of alternative forms of tourism" based on national spatial planning
Military Areas	No engagement		Offshore route crosses a submarine exercise area for approximately 16 km

Prepared by: ASPROFOS, 2022.



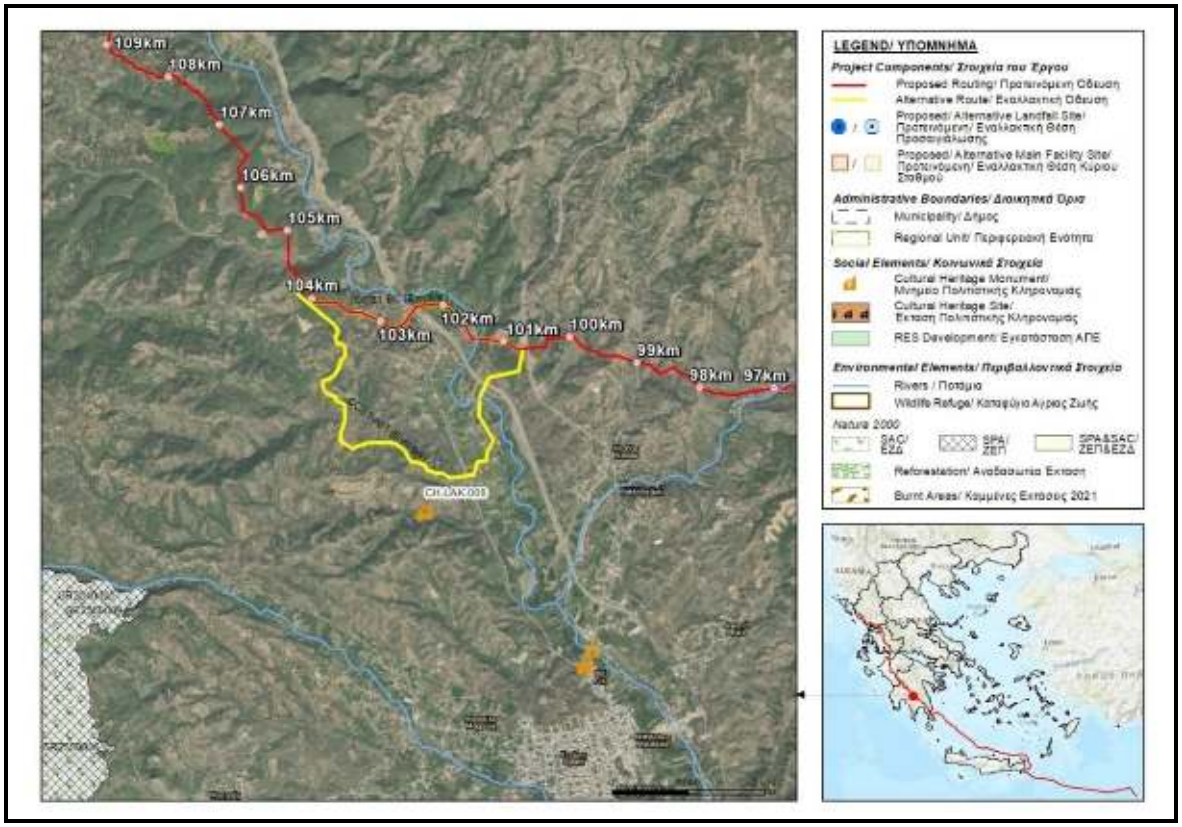
Prepared by: ASPROFOS, 2022.

Figure 7-14 Criticalities for OSS3 reaching Peloponnese alternatives assessment.

7 A.5.6. EVROTAS ALTERNATIVES

7 A.5.6.1. OVERVIEW

North of Sparti, at the northern limits of the Sparti plain near the Kladas settlement, the pipeline crosses R. Evrotas. For the section of CCS1, two (2) feasible alternatives are identified.[30] The starting point of this set of alternatives lies NW of Kladas settlement, Municipality of Sparti (close to KP 100 of CCS1 base-case at the crossing of E961 Tripoli – Sparti road). The ending point lies close to KP105 of CCS1 base-case and the Provincial Road of Sparti - Megalopoli, Municipality of Sparti. Investigated alternatives in this area, are presented in Figure 7-15 (see Section 15.1.3 - Alternatives Map).



Prepared by: ASPROFOS, 2022.

Figure 7-15 Alternative Routes at Evrotas Area for CCS1 – Peloponnese Pipeline Section.

[30]These alternatives include the route that was presented in the Scoping Report as base-case and a new route that resulted from optimization of the latter route, based on a request by the Municipality of Sparti (14542/23-12-2020 from Technical Department of Municipality of Sparti).

7 A.5.6.2. DESCRIPTION OF BASE-CASE

The section of CCS1 considered (CCS1_Evrotas-BC) is approximately 4 km from the starting point, crossing R. Evrotas and E71 Road (Central Peloponnese Highway) NE and N of Karavas Soustianon settlement, respectively, before reaching the end point.

Regarding environmental sensitivities, this alternative crosses mainly through Sclerophyllous vegetation (63.5%) (based on CLC 2018 data). Nine (9) avifauna and 1 mammal species of conservation interest have been reported in the study area; R. Evrotas supports 4 endemic fish species (based on Greek Red List of 2009 data). Only R. Evrotas is crossed (i.e. considering major surface water network). Presence of the A71 highway has increased human presence and nuisance. Most prominent features in the area include R. Evrotas and a mosaic of shrublands and tree-crops (olive groves). The general character of the area is natural (not pristine but, mainly unaffected). No protected area is crossed; it is noted that R. Evrotas is characterised as a Natura 2000 area more than 20 km downstream the crossing point.

Regarding socioeconomic sensitivities and development, the base case crosses olive groves (33%) (based on CLC 2018 data). In general, it engages areas of limited economic development restricted to agricultural activities - most of them are tree crops. Two major roads are crossed, E71 Central Peloponnese Highway and E961 Tripoli – Sparti National Road, and a few small, mainly agricultural roads connecting fields. One (1) settlement is close to the route; Karavas Soustianon lies approximately 220 m to the SW.

It is noted that according to the spatial planning of M.U. of Mistra, M. of Sparti, this route passes for approximately 0.5 km through the Evrota Protection Area ("PEP3") and for 1.5 km through an area of Agricultural Landscape and Activities Protection ("PEPD2").

Regarding cultural heritage, no engagement has been identified.

Regarding administrative jurisdiction, the route crosses one (1) Municipality (Sparti), one (1) R.U. (Arcadia) and one (1) Region (Peloponnese).

7 A.5.6.3. DESCRIPTION OF ALTERNATIVE CCS1_EVROTAS-ALT1

The section of CCS1 considered (CCS1_Evrotas-Alt1) is approximately 7 km long, from the starting point, crossing R. Evrotas and E71 Road (Central Peloponnese Highway) E of Karavas Logastras settlement before reaching the end point.

Regarding environmental sensitivities, this alternative crosses mainly through Sclerophyllous vegetation (13%) and Broad-leaved forest areas (3.5%) (based on CLC 2018 data). Similar to the base-case, 9 avifauna and 1 mammal species of conservation interest have been reported in the study area; R. Evrotas supports 4 endemic fish species (based on 2009 Greek Red List data). Only R. Evrotas is crossed (i.e. considering major surface water network). Most of the route passes through area dominated by tree crops (olive groves) with patches of natural areas (shrublands). Presence of A71 highway has increased human presence and nuisance. Although tree-crops are present, the general character of the area is natural (not pristine but mainly unaffected). As such, the naturalness of area is moderate. No protected area is crossed; it is noted that R. Evrotas is characterised as a Natura 2000 area more than 20 km downstream from the crossing point.

Regarding socioeconomic sensitivities and development, this alternative crosses mostly olive groves (65%) and Fruit tree and berry plantations (17%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development, restricted to agricultural activities - almost all of them are tree crops. Two major roads are crossed, E71 Central Peloponnese Highway and E961 Tripoli – Sparti National Road, and some small, mainly agricultural roads connecting fields. Two (2) settlements are close to the route, Karavas Soustianon and Karavas Logastras lie at approximately 80 m and 616 m, respectively, to the NE.

It is noted that according to the spatial planning of M.U. of Mistra, M. of Sparti, this alternative passes for approximately 1 km through the Evrota Protection Area ("PEP3") and for approximately 5 km through an area of Agricultural Landscape and Activities Protection ("PEPD2").

Regarding cultural heritage, a known (but not declared) area of cultural heritage significance was identified[31] at approximately 500 m to the SW at the “Pita” site.

Similar to the base-case, regarding administrative jurisdiction, the alternative crosses one (1) Municipality (Sparti), one (1) R.U. (Arcadia) and one (1) Region (Peloponnese).

7 A.5.6.4. ALTERNATIVES ASSESSMENT

The main differences of these two alternatives are the following:

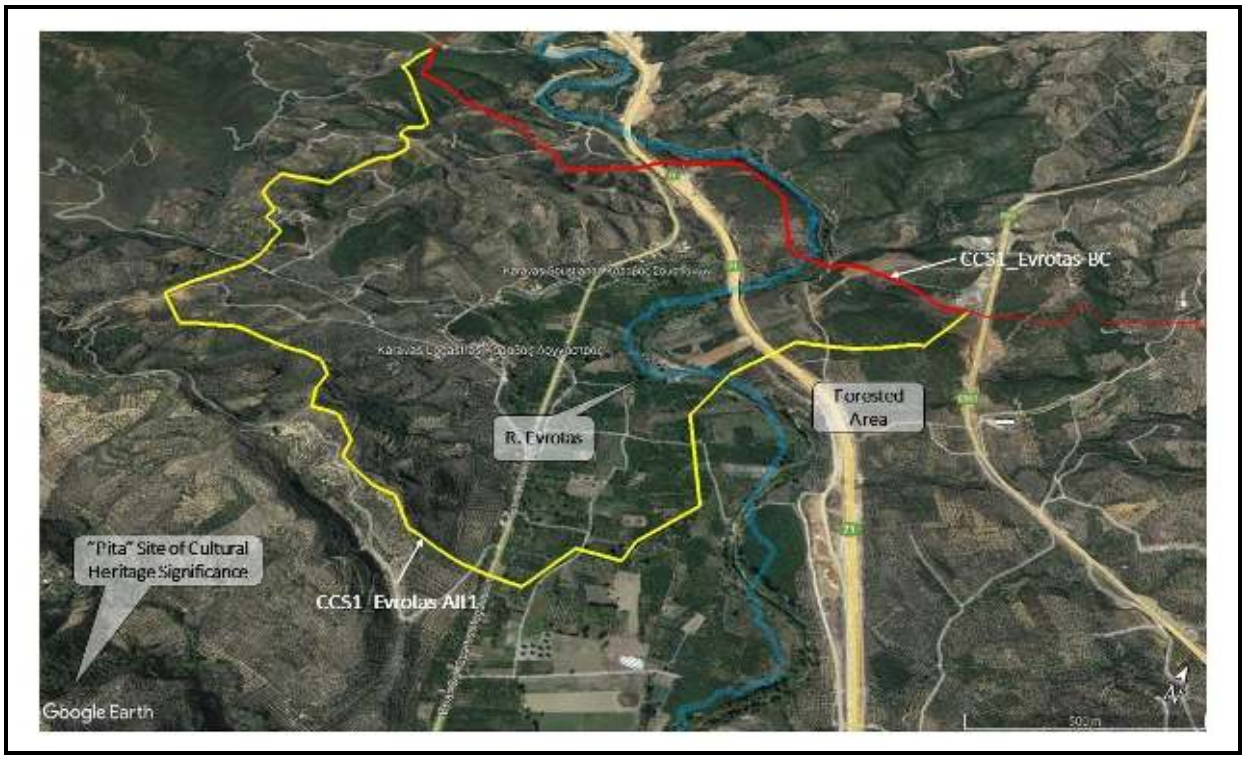
- Length. CCS1_Evrotas-Alt1 is significantly longer than CCS1_Evrotas-BC, and passes for greater length through areas of designated Spatial Planning;

[31] See Annex 8J.3, Ephorate of Antiquities of Lakonia, ΥΠΠΟΑ/ΓΔΑΠΚ/ΕΦΑΛΑΚ/ΤΒΜΑΜ/498209/352277/5690/2088/08-10-2020.

- **Forest areas**. CCS1_Evrotas-Alt1 crosses broad-leaved forest areas, whilst CCS1_Evrotas-BC does not; and
- **Cultural heritage**. An area of high archaeological potential was identified at the "Pita" site approximately 500 m SW of CCS1_Evrotas-Alt1, whilst no cultural heritage engagement was identified for CCS1_Evrotas-BC.

Table 7-7 summarizes the criteria where the alternatives present differences that play significant role and are important in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section7 A.7.4.

Based on the above, CCS1_Evrotas-BC is the preferable solution. Figure 7-16 supports the main arguments of this selection.



Prepared by: ASPROFOS, 2022.

Figure 7-16 Base-case Selection for Evrotas Area.

Table 7-7 High Level Comparison Matrix for Evrotas Alternatives.

General Parameter	CCS1_Evrotas-BC	CCS1_Evrotas-Alt1
Protected Areas	No protected areas are crossed.	

General Parameter	CCS1_Evrotas-BC	CCS1_Evrotas-Alt1
Biodiversity Hotspots	Almost half of the route passes through shrublands. Presence of A71 highway has increased human presence and nuisance. Most prominent features in the area are R. Evrotas and a mosaic of shrublands and tree-crops (olive groves). The general character of the area is natural (not pristine but, mainly unaffected).	Most of the route passes through area dominated by tree crops (olive groves) with patches of natural areas (shrublands) and few broad leaved forests. Presence of A71 highway has increased human presence and nuisance. Although tree-crops are present, the general character of the area is natural (not pristine but, mainly unaffected).
Land Uses	33% of the route crosses through agricultural areas whilst 64% from natural or semi-natural ones (3% from other types).	82% of the route crosses through agricultural areas whilst 17% from natural or semi-natural ones (1% from other types).
Economic Development	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Few small roads, mainly agricultural ones connecting fields, are crossed. Two major roads are crossed.	Alternative engages areas of limited economic development, restricted to agricultural activities - almost all of them are tree crops. Some small roads, mainly agricultural ones connecting fields, are crossed. Two major roads are crossed.
Development plans	0.270 km passes through the Evrota Protection Area ("PEP3") and 1.5 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of the Mistra SXOOAP.	0.960 km passes through the Evrota Protection Area ("PEP3") and 4.7 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of the Mistra SXOOAP.
Population centres	No significant population centres are identified in the study area.1 settlement has been identified within the study area (Karavas Soustianon at 220 m).	No significant population centres are identified in the study area. 2 settlements have been identified within the study area (Karavas Logastras at 616 m, Karavas Soustianon at 78 m).
Cultural heritage	No relevant data identified.	1 identified cultural heritage resources ("Pita" site) is located at approximately 500 m to the south.

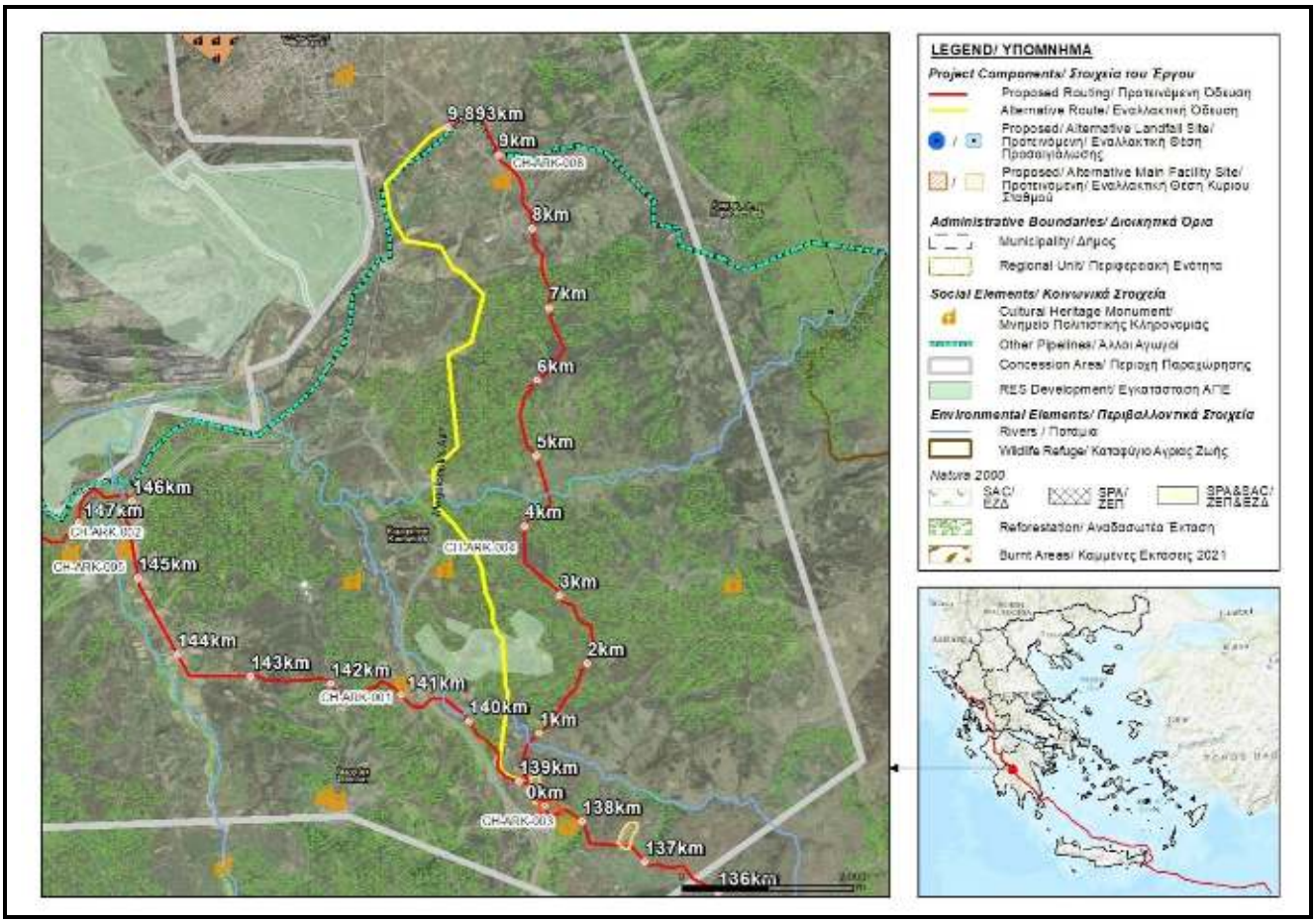
Prepared by: ASPROFOS, 2022.

7 A.5.7. MEGALOPOLI ALTERNATIVES

7 A.5.7.1. OVERVIEW

Megalopoli branch starts close to KP 140 of CCS1 base-case, near the Soulari Settlement, Municipality of Megalopoli, and has a length of approximately 10 km, ending close to the Perivolia settlement, Municipality of Megalopoli. Two (2) feasible alternatives are identified for the Megalopoli branch.[32]

Investigated alternatives in this area, are presented in Figure 7-17 (see Section 15.1.3 - Alternatives Map).



Prepared by: ASPROFOS, 2022.

Figure 7-17 Alternative Routes for Megalopoli Branch.

[32]These alternatives include the route that was presented in the Scoping Report as base-case and a new route that resulted from optimization of the latter route.

7 A.5.7.2. DESCRIPTION OF BASE-CASE

Megalopoli Base-case (Megalopoli-BC) is approximately 10 km from the starting point, crossing R. Alfios close to Provincial Road of Sparti – Megalopoli, SE of Gefyra settlement before reaching Perivolia settlement.

Regarding environmental sensitivities, this alternative crosses mainly through Transitional woodland/shrub vegetation (30.5%) and Broad-leaved forest (27%) (based on CLC 2018 data). Eight (8) avifauna species of conservation interest have been reported in the study area. Two (2) rather major rivers are crossed R. Kountifarina and R. Alfios. Almost half of the route passes through natural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields characterises the broader area north of R. Alfios; south the area is more natural. Most prominent features in the area are R. Alfios, PPC facilities, and a mosaic of natural and agricultural areas. The general character of the area is that of degraded natural environment. No engagement with protected areas is identified.

Regarding socioeconomic sensitivities and development, this alternative crosses land principally occupied by agriculture with significant areas of natural vegetation (23%) and Complex cultivation patterns (16%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development restricted to agricultural activities - most of them are annual crops. A7 Tripoli – Klamath highway and Sparti – Megalopoli regional road are crossed as well as numerous small, mainly agricultural roads connecting small rural settlements or simply fields. Three (3) settlements lie close to the route: Perivolia 225 m to the W, Megalopoli 710 m to the NW and Kato Makrisi 530 m to the N.

Megalopoli Power Plant (4.8 km to the W) and more importantly the lignite quarry fields (1.3 km to the W) of Megalopoli Lignite Centre of Public Power Cooperation characterise the broader area. Recent developments include a break in lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant. DESFA's pipeline is crossed whilst proximity to one (1) RES project (an application file for 120 MW photovoltaic is under evaluation) is noted.

Regarding cultural heritage, no engagement has been identified but two (2) areas of known cultural heritage significance lie within the study area: 345 m to the S (Agios Konstantinos, Soulari site) and 150 to the W (Perivolia-Moreas site).

Regarding administrative jurisdiction, the alternative crosses one (1) Municipality (Megalopoli), one (1) R.U. (Arcadia) and one (1) Region (Peloponnese).

7 A.5.7.3. DESCRIPTION OF ALTERNATIVE MEGALOPOLI-ALT1

Megalopoli Alt1 (Megalopoli-Alt1) is approximately 10 km from the starting point, crossing R. Alfios close to E71 Road (Central Peloponnese Highway), SE of Gefyra settlement, before reaching Perivolia settlement.

Regarding environmental sensitivities, this alternative crosses mainly through Transitional woodland/shrub vegetation (22%) and Broad-leaved forest (21.5%) (based on CLC 2018 data). Eight (8) avifauna species of conservation interest have been reported in the study area. Two (2) rather major rivers are crossed: R. Kountifarina and R. Alfios. Almost half of the route passes through natural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields characterises the broader area north of R. Alfios; the area is more natural to the south. Most prominent features in the area are R. Alfios, PPC facilities, and a mosaic of natural and agricultural areas. The general character of the area is that of degraded natural environment. No engagement with protected areas is identified.

Regarding socioeconomic sensitivities and development, this alternative crosses land principally occupied by agriculture, with significant areas of natural vegetation (35%) and Complex cultivation patterns (20.5%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development restricted to agricultural activities - most of them are annual crops. A7 Tripoli – Kalamata and A71 Lefktro – Sparti highways are crossed as well as numerous small, mainly agricultural roads connecting small rural settlements or simply fields. Four (4) settlements lie close to the route: Megalopoli 445 m to the N, Perivolia 300 m to the E, and Vrisoules 445 m and Kamaritsa 300 m to the W.

Megalopoli Power Plant (4.7 km to the W) and more importantly the lignite quarry fields (0.3 km to the W) of Megalopoli Lignite Centre of Public Power Cooperation characterise the broader area. Recent developments include a break in lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant. DESFA's pipeline is crossed whilst proximity to two (2) RES projects (11 MW and 39 MW, both of them have acquired installation permit) is noted. One (1) RES project (an application file for 120 MW photovoltaic is under evaluation) is crossed for 60 m.

Regarding cultural heritage, no engagement has been identified but three (3) areas of known cultural heritage significance lie within the study area: 345 m to the S (Agios Konstantinos, Soulari site), 350 m to the W (Kamaritsa (Moreas)) and 920 m to the E (Perivolia-Moreas site).

Regarding administrative jurisdiction, the alternative crosses one (1) Municipality (Megalopoli), one (1) R.U. (Arcadia) and one (1) Region (Peloponnese).

7 A.5.7.4. ALTERNATIVES ASSESSMENT

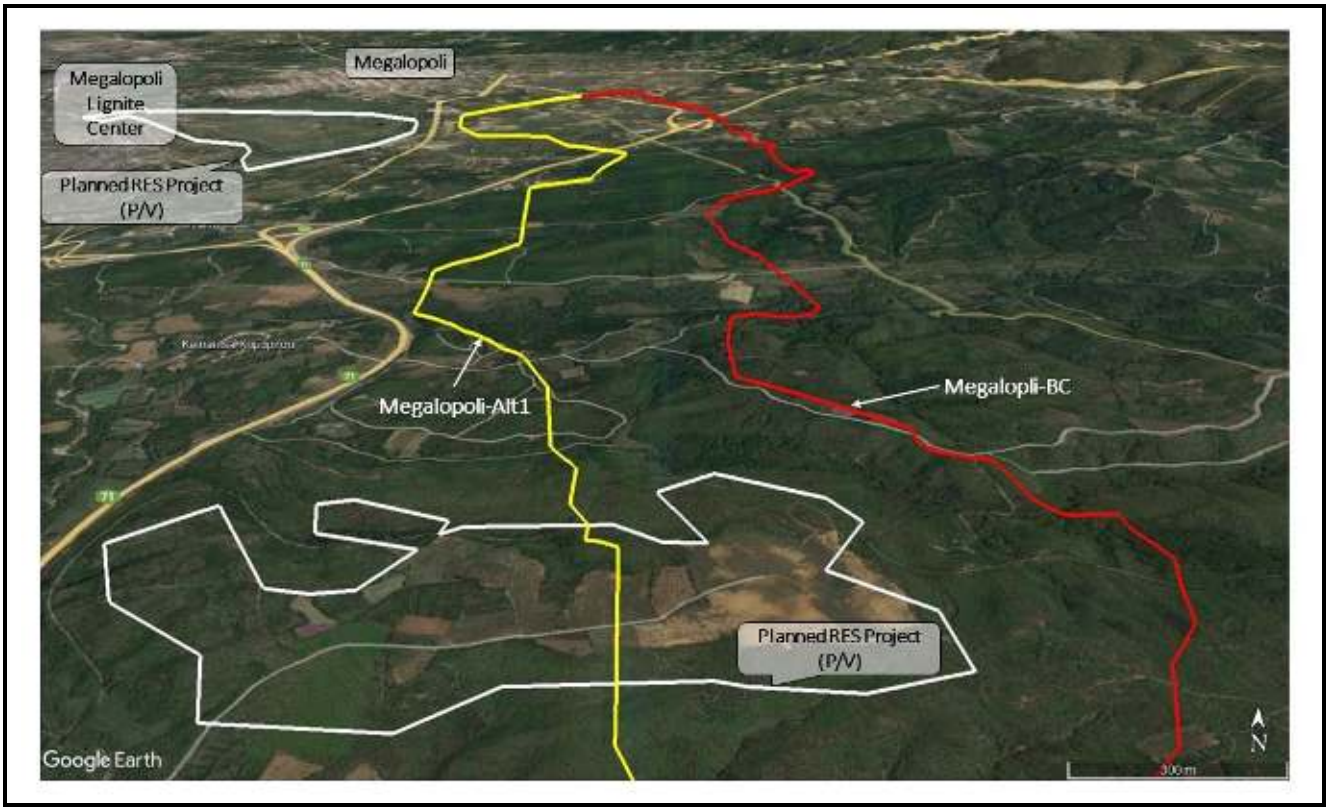
The main difference of these two alternatives is the following:

- Planned developments. Megalopoli-Alt1 is closer to the lignite quarry fields than Megalopoli-BC and engages with a RES project. It should be also considered that there was a route modification request from the Municipality of Megalopoli[33] (i.e. Megalopoli-Alt1) in order to avoid engagement with a planned industrial park.

Table 7-8 summarizes the criteria where the alternatives present differences that play significant role and are important in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.5.

Based on the above, Megalopoli-BC is the preferable solution. Figure 7-16 supports the main arguments of this selection.

[33] See official correspondence from Municipality of Megalopoli 1309/2021/12-02-2021 & 1310/22-04-2021, in Appendix 8J.3.



Prepared by: ASPROFOS, 2022.

Figure 7-18 Base-case Selection for Evrotas Area.

Table 7-8 High Level Comparison Matrix for Megalopoli Alternatives.

General Parameter	Megalopoli-BC	Megalopoli-Alt1
Protected Areas	No Intersection with Natura2000 Areas	
Biodiversity hotspots	Almost half of the route passes through natural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area, north of R. Alfios; south the area is more natural. Most prominent features in the area are R. Alfios, PPC's facilities, and a mosaic of natural and agricultural areas. The general character of the area is that of degraded natural environment.	
Land Uses	45% of the route crosses through agricultural areas whilst 35% from natural or semi-natural ones (20% from other types).	56% of the route crosses through agricultural areas whilst 44% from natural or semi-natural ones.

General Parameter	Megalopoli-BC	Megalopoli-Alt1
Economic Development	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are annual crops. Crossing of A7 and Sparti-Megalopoli regional road is noted. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area.	Alternative engages areas of limited economic development, restricted to agricultural activities - most of them are annual crops. Crossing of A7 and proximity to A71 highways is noted. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area.
Population Centers	Megalopoli population center is noted. In total, 3 settlements have been identified within the study area (Perivolia at 225 m, Megalopoli at 710 m, Kato Makrisi at 530 m)	Megalopoli population center is noted. In total, 4 settlements have been identified within the study area (Megalopoli at 445 m, Perivolia at 300 m, Vrisoules at 445 m, Kamaritsa at 300 m).
Cultural Heritage	2 identified cultural heritage resources have been identified: 345 m to the S (Agios Konstantinos, Soulari site) and 150 to the W (Perivolia-Moreas site)	3 identified cultural heritage resources have been identified: 345 m to the S (Agios Konstantinos, Soulari site), 350 m to the W (Kamaritsa (Moreas)) and 920 m to the E (Perivolia-Moreas site
Development plans	Proximity to 1 RES project; Megalopoli's Power Plant and Lignite Center of PPC in the broader area. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.	Engagement with 1 and proximity to 2 RES projects; Megalopoli's Power Plant and Lignite Center of PPC in the broader area. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.

Prepared by: ASPROFOS, 2022.

7 A.5.8. FOLOI PLATEAU ALTERNATIVES

7 A.5.8.1. OVERVIEW

For this section of CCS1, two (2) feasible alternatives are identified.[34]

[34]These alternatives are the same as the ones assessed during the Scoping Phase; given that no improved alternative was identified, they are still considered valid.

In the Municipality of Ancient Olympia, at the broader area of Lalas settlement, between the region of UNESCO site of Ancient Olympia to the west and Foloi Plateau Natura 2000 site to the east, CCS1 base-case crosses the protected area at its westernmost boundaries, NE of Lalas settlement, whilst alternative from the SW side of the settlement (avoiding the protected area, but decreasing the distance to Ancient Olympia site). The starting point of this set of alternatives lies NE of Vasilaki settlement, Municipality of Ancient Olympia (close to KP 213 of CCS1 base-case). The ending point lies close to Mouzaki settlement, Municipality of Pirgos (close to KP 246 of CCS1 base-case).

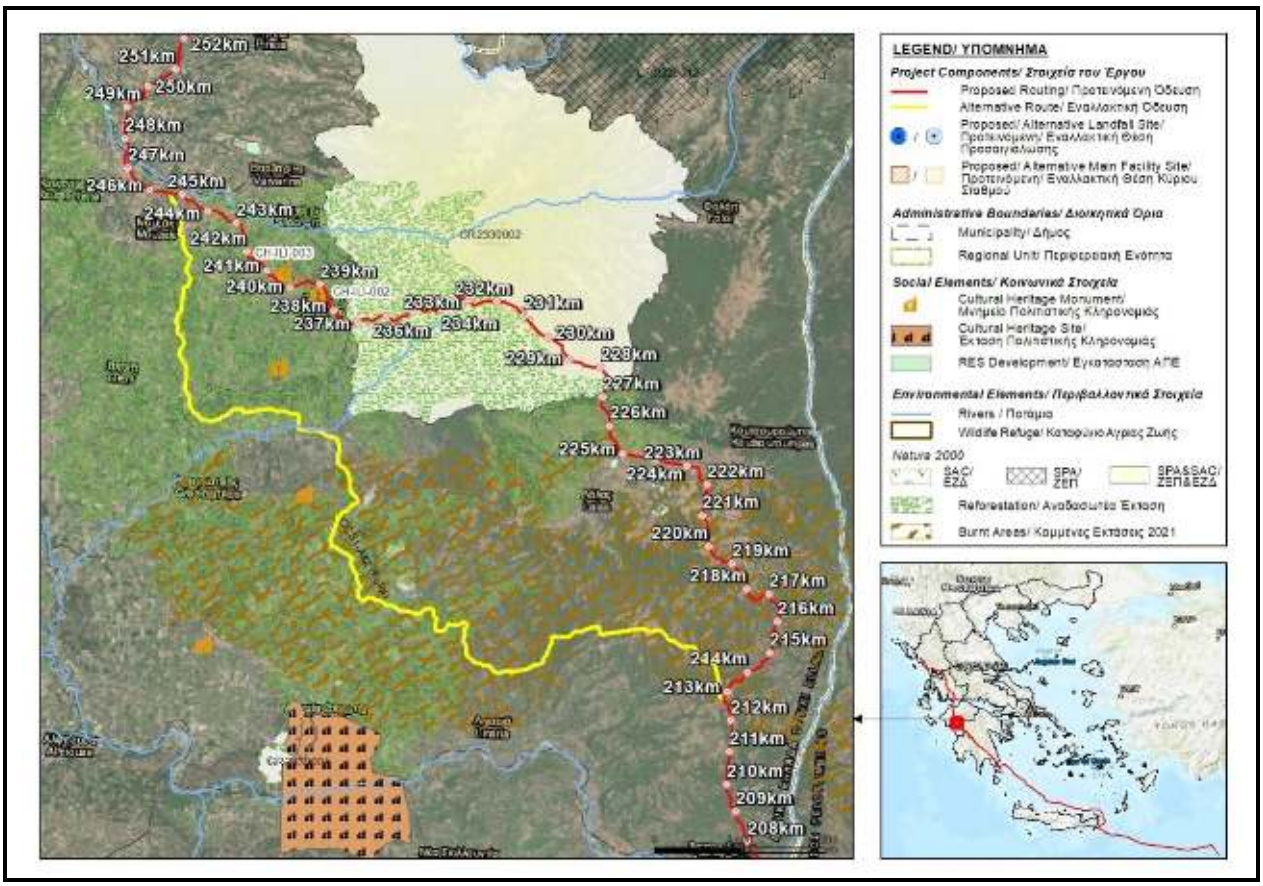
An important factor of the broader area are the wildfires that broke out in the summer of 2021; even more so considering that some areas had suffered from similar wildfires in the recent past (2007).

CCS1_Foloi-BC passes through Foloi municipality unit, crosses the Natura 2000 area "OROPEDIO FOLOIS" and ends at Oleni municipality unit. The route passes at the southern side of the forest where there are areas with one-year cultivations, avoiding forest trees as much as possible.

The effort was made to avoid continuous streams with steep slopes due to erosion.

CCS1_Foloi-Alt1 alternative crosses mainly the municipality unit of Ancient Olympia, south of Natura 2000 area "OROPEDIO FOLOIS" and meets CCS1 at the Oleni municipality unit. After approximately 35 km, the two alternatives converge to a corridor near Akropotamia settlement of Ilida municipality. It is noted that the CCS1_Foloi-Alt1 alternative presents great construction difficulties due to the presence of landslides and erosion.

The investigated sections are presented in Figure 7-19 (see Section 15.1.3 - Alternatives Map).



Prepared by: ASPROFOS, 2022.

Figure 7-19 Alternative Routes at Foloi Plateau for CCS1 – Peloponnese Pipeline Section.

7 A.5.8.2. DESCRIPTION OF BASE-CASE

The section of CCS1 (approximately 32.5 km) is situated in the north-western part of Peloponnese, at Vasilaki settlement, Ancient Olympia municipality, at an approximate distance of 10 km from Ancient Olympia. The nearest settlement is Abarion 120 m to the west.

The section of CCS1 base case crosses mainly agricultural areas. Specifically, the route crosses mainly heterogeneous agricultural areas and arable land.

Regarding protected areas, the route axis passes for approximately 10 km through the Natura 2000 area "OROPEDIO FOLOI", avoiding sensitive ecosystems (e.g. forested areas) subject to protected status or of conservation and ecological interest as much as possible.

Mt Foloi hosts the oak forest of Foloi (protected area), the only native broad-leaved oak forest in the Balkans, with old clusters of oaks. In general, environmental areas of interest lie only within the Natura 2000 site.

The route engages areas of limited economic development, restricted to agricultural activities, with only a few of them being tree crops. Numerous small, mainly agricultural roads are crossed connecting small rural settlements or simply fields. The broader area is considered a significant alternative (mainly eco) tourism venue, due to its proximity to the Foloi Forest (and the broader natural, landscape and cultural heritage settings). Numerous paths and areas of natural beauty are located in the broader area. Some such areas are crossed by the alternative, whilst paths may also be crossed. No significant tourism establishments are identified.

In addition, it is near to two (2) cultural heritage sites, while it is not engaged with surface water systems. The entire Foloi Plateau area is an Area of High Archaeological Potential. Foloi forest is also known as the Forest of Centaurs, a forest full of myths and traditions with the kingdom of the centaur Folos (son of Silinos and the nymph Melia), the good centaur who hosted the mythical hero Hercules when he chased the Erymanthios boar.

Regarding technical challenges, this route avoids most of the problematic areas, crosses areas presenting gentle to moderate slopes whilst crossing of steep ravines is significantly reduced (in comparison to the other alternative).

The section of CCS1 crosses two (2) municipalities (Pyrgos, Ancient Olympia). The study area of the route occupies approximately 1.17 km^2 of remotely identified settlement boundaries.

7 A.5.8.3. DESCRIPTION OF ALTERNATIVE CCS1_FOLOI-ALT1

CCS1_Foloi-Alt1 (approximately 35 km long) is situated in the north-western part of Peloponnese, near Vasilaki settlement, Ancient Olympia municipality, at least 5 km from the settlement of Ancient Olympia. The nearest settlement is Pefkes approximately 350 m to the north.

CCS1_Foloi-Alt1 alternative crosses mainly agricultural areas. Specifically, the route crosses mainly olive groves and heterogeneous agricultural areas.

Regarding protected areas, the route axis is not engaged with protected areas. The alternative crosses R. Lestenitsas and the area of Goumero Gorge (characterised as a monument of natural beauty by the Ministry of Culture). In general, the gorge is surrounded by lush vegetation and springs with cool water allowing for an impressive landscape.

This alternative engages areas of limited economic development restricted to agricultural activities; however, there are a significant number of tree crop cultivations. Numerous small, mainly agricultural roads connecting small rural settlements or simply fields are crossed.

The broader area is considered a significant tourism venue due to proximity to Ancient Olympia; alternative tourism is also very important in the area due to its proximity to the Foloi Forest (and the broader natural, landscape and cultural heritage settings). Numerous paths and areas of natural beauty are located in the broader area. Some such paths and areas are crossed by the alternative. No significant tourism establishments are identified; monasteries (visited for religious tourism) are noted (in the broader area).

Even though, there are no known cultural heritage sites in proximity, engagement with Goumero Gorge needs to be highlighted. The Goumero Gorge is characterised as a monument of natural beauty by the Ministry of Culture. The gorge's path includes (i) the cave of Askiti, in which the ancient oracle of the athletes was once officiated, (ii) the Holy Monastery of Askiti, which is characterised as an important monument of the Byzantine period, was built in the cave of Askiti, in more recent times, and (iii) the ancient cobblestone path starting from the Byzantine church of 1200 AD and ending in the village of Goumero. The oldest olive trees in Greece are rooted along the Goumero Gorge with branches from which the winners of the Olympic Games were crowned.

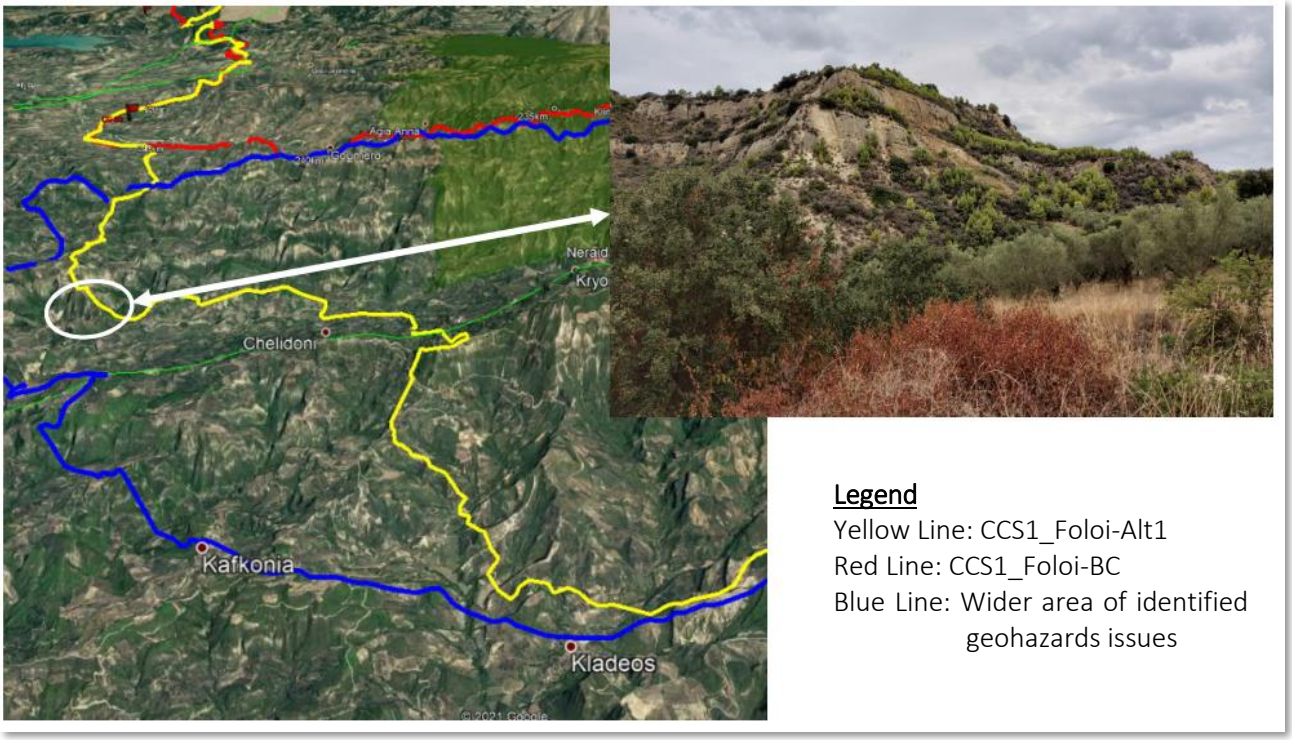
Regarding technical challenges, this route faces significant geotechnical issues regarding landslides and steep slopes. Almost the entire alternative passes through areas of erosion phenomena, as well as narrow passages, with numerous steep ravines. In order for the pipeline to be installed in this area, special construction techniques should be applied that have significant cost and time impacts. Especially in the area north of Kladas settlement, the geological formation that extends from west to east presents very steep slopes, limited space for the pipeline installation and significant geohazards. The geological formations comprise alternations of marls, conglomerates and sandstones. Their thickness is a few metres and their dip is very low. Different degrees of weathering and erosion caused by rock mass heterogeneity (lithology and mechanical properties) can trigger rock falls. In other words, even if some special and expensive techniques could be considered for the pipeline construction (e.g. microtunneling, Boring etc.) the risk for the pipeline integrity during operation phase would still remain very high, and could lead to serious safety issues. Moreover, the application of such special construction techniques (especially microtunneling) at areas presenting so risky geomorphological characteristics would cause more disturbance and delays during the construction period at the wider area considering also the accompanying works that should be constructed (e.g. access roads).

This route crosses two (2) municipalities (Pyrgos, Ancient Olympia). The study area of the route occupies approximately 0.20 km^2 of established settlement boundaries.

7 A.5.8.4. ALTERNATIVES ASSESSMENT

CCS1_Foloi-BC and CCS1_Foloi-Alt1 alternatives assessment critical points can be summarized as follows:

- Geotechnical issues. The selection of the proposed route needs to take into consideration additional constraints, e.g. geohazards and accessibility. In many cases, the impact from the geotechnical works for slope stabilization or the need for new access road construction is more significant than temporary impact on protected areas or biodiversity hotspots. As a consequence, geotechnical issues, such as slope stability and access[35] should also be taken into consideration. Such geotechnical issues pose more challenges in regard to construction; moreover, they pose significant operational hazards in terms of project vulnerability to mass earth movements that could be triggered and impact the Project. CCS1_Foloi-Alt1 faces much more significant geotechnical issues and challenges than the CCS1_Foloi-BC;

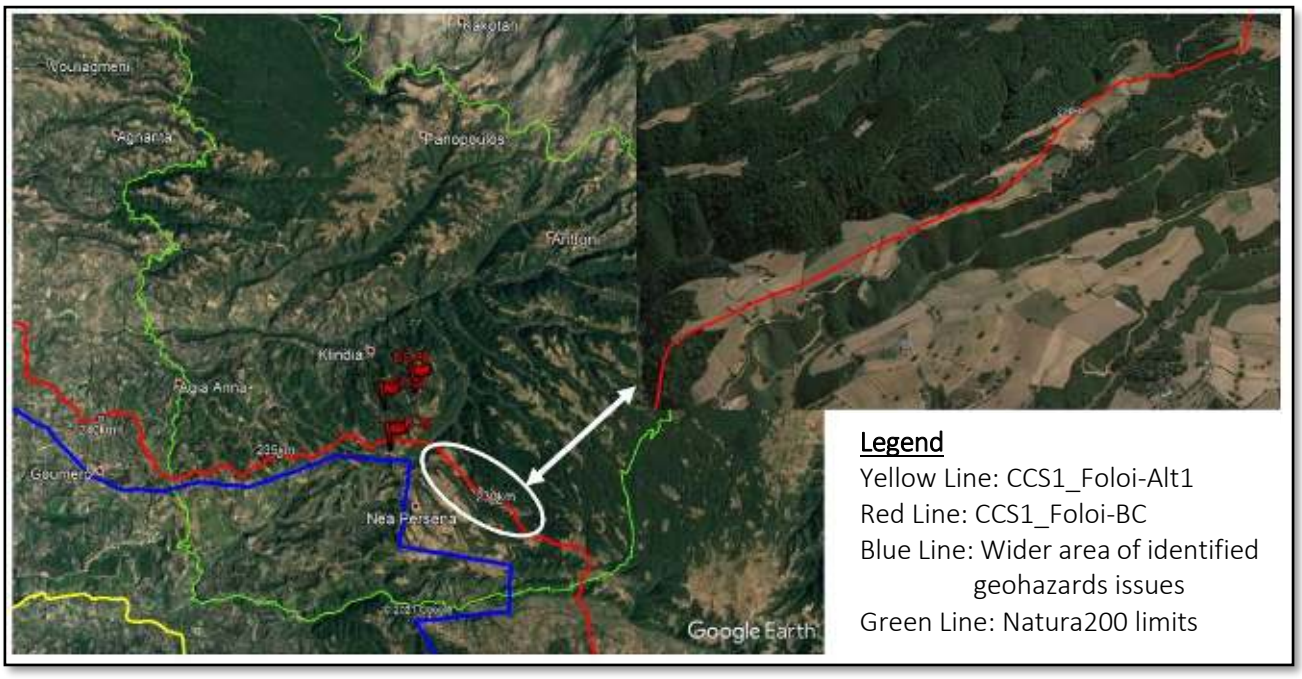


Prepared by: C&M, 2021, 2021. Base map from Google Earth. Picture from C&M, 2021.

Figure 7-20 Geotechnical Issues along CCS1_Foloi-Alt1.

[35] Geotechnical and accessibility issues are investigated within the context of the ongoing FEED of the project.

- Archaeological engagement. The broader area is very important regarding cultural heritage and should be considered an area of high archaeological potential. The area lies between the Foloi Forest (the Forest of Centaurs, a forest full of myths and traditions) and the Ancient Olympia UNESCO site (where the Olympic Games were held) and numerous related sites in the surrounding area. One of these surrounding sites is the Goumero Gorge, characterised as a monument of natural beauty by the Ministry of Culture. The gorge's path includes various cultural heritage sensitivities; the most relevant to the project's alternatives assessment are among the oldest olive trees in Greece, with branches from which the winners of the Olympic Games were crowned. Both alternatives are crossing such areas of high archaeological potential: CCS1_Foloi-BC crosses the Foloi Forest whilst CCS1_Foloi_Alt1 the Goumero Gorge. Nevertheless, potential impact on the ancient olive trees can be considered a more likely negative impact (i.e. for CCS1_Foloi_Alt1) than chance finding in the Foloi forest (i.e. for CCS1_Foloi-BC); and
- Naturalness of the broader area. Regarding CCS1_Foloi-BC, most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture with significant areas of natural vegetation. The most prominent feature in the area is the Foloi Plateau and Forest; the oak forest of Foloi is the only native broad-leafed oak forest in the Balkans, with old clusters of oaks. The base case does not affect the main core of the forest, passing mainly through cultivated areas. Regarding CCS1_Foloi-Alt1, most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Most prominent features in the area is R. Lestenitsas and Goumero Gorge. Goumero Gorge is a monument of natural beauty (Ministry of Culture) where some of the oldest olive trees in Greece can be found, with branches from which they crowned the Olympians. The gorge is surrounded by lush vegetation and springs with cool water. As previously mentioned, CCS1_Foloi-BC passes at the southern side of the forest where there are areas with one-year cultivations, avoiding as much as possible forest trees; CCS1_Foloi-Alt1 passes through an area characterised by the Ministry of Culture as of significant natural beauty.



Prepared by: C&M, 2021. Base map from Google Earth.

Figure 7-21 Affected Natural Areas along CCS1_Foloi-BC.

Table 7-9 summarises the criteria to which the alternatives present differences that play a significant role and are important in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.6.

It should be highlighted that, in order to verify that the CCS1_Foloi-BC is indeed more sustainable and preferable than the CCS1_Foloi-Alt1, during the ongoing FEED of the project, the area was investigated in great detail regarding geotechnical considerations, and the geotechnical issues were documented; most significant ones are presented in this document (see also Appendix 1 - FEED GEOTECHNICAL ASSESSMENT FOR FOLOI AREA).

Based on the above, CCS1_Foloi-BC is the preferable solution.

Table 7-9 High Level Comparison Matrix for Foloi Plateau Alternatives.

Code	CCS1_Foloi-BC	CCS1_Foloi-Alt1
Protected areas and species	GR2330002 (SPA & SAC) Foloi Plateau is crossed for approx. 10, at the outskirts of the protected area, with limited engagement to protected features	No Intersection with Natura 2000 Areas 13 avifauna species of conservation interest have been identified within the study area

Code	CCS1_Foloi-BC	CCS1_Foloi-Alt1
	9 avifauna species of conservation interest have been identified within the study area Route crosses Mt Foloi IBA for approx. 12 km.	
Biodiversity hotspots	Most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Crossing of Foloi Plateau and corresponding protected area. Most prominent features in the area is Foloi Plateau and Forest; the oak forest of Foloi is the only native broad-leaved oak forest in the Balkans, with old clusters of oaks. Intense morphology of rippled cultivated areas is dominant. The general character of the area is that of natural environment with significant agricultural activity.	Most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Most prominent features in the area is R. Lestenitsas and Goumero Gorge. Goumero Gorge is a monument of natural beauty (Ministry of Culture) where some of the oldest olive trees in Greece can be found, with branches from which they crowned the Olympians. The gorge is surrounded by lush vegetation and springs with cool water. Intense morphology of rippled cultivated areas is dominant. The general character of the area is that of natural environment with significant agricultural activity.
Land Uses	70% of the route crosses through agricultural areas whilst 18% from natural or semi-natural ones (12% from other types).	76% of the route crosses through agricultural areas whilst 24% from natural or semi-natural ones.
Economic Developme nt	Basecase engages areas of limited economic development, restricted to agricultural activities - few of them are tree crops. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed.	Alternative engages areas of limited economic development, restricted to agricultural activities - quite a few of them are tree crops. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed.
Cultural Heritage	The entire Foloi Plateau area is an Area of High Archaeological Potential. Foloi forest is also known as the Forest of Centaurs, a forest full of myths and traditions, in which had the kingdom of Centaur Folos (son of Silinos and the nymph Melia), the good Centaur who hosted the mythical hero Hercules when he chased the Erymanthios boar.	Proximity to Ancient Olympia UNESCO site is noted. Engagement with Goumero Gorge. Goumero Gorge is characterized as monument of natural beauty by Ministry of Culture. The gorge's path includes the cave of Askiti, the Holy Monastery of Askiti and an ancient cobblestone path. On the path you will find the oldest olive trees in Greece, with branches from which they crowned the Olympians.

Code	CCS1_Foloi-BC	CCS1_Foloi-Alt1
Development plans	The broader area is considered significant alternative (mainly eco) tourism venue. Numerous paths and areas of natural beauty are located and in the broader area. Some such areas are crossed by the alternative, whilst paths may also be crossed. No significant tourism establishments are identified.	The broader area is considered significant tourism venue due to proximity to Ancient Olympia; alternative tourism is also very important in the area. Numerous paths and areas of natural beauty are located and in the broader area. Some such paths and areas are crossed by the alternative. No significant tourism establishments are identified; monasteries (visited for religious tourism) are noted (in the broader area).
Technical Challenges	Avoids most of the problematic areas, crosses areas presenting gentle to moderate slopes whilst crossing of steep ravines is significantly reduced	Significant geotechnical issues regarding landslides and steep slopes. Almost the entire alternative passes through areas of erosion phenomena, as well as narrow passages, with numerous steep ravines. In order for the pipeline to be installed in this area, special construction techniques should be applied of significant cost and time impacts. Especially in the area north of Kladas settlement, the geological formation that extends from west to east presents very steep slopes, limited space for the pipeline installation and significant geohazards. The geological formations comprise alternations of marls, conglomerates and sandstones. Their thickness is a few metres and their dip is very low. Different weathering and erosion degree caused by rock mass heterogeneity (lithology and mechanical properties) can trigger rock falls.

Prepared by: ASPROFOS, 2022.

7 A.5.9. PATRAIKOS CROSSING ALTERNATIVES

7 A.5.9.1. OVERVIEW

For Patraikos Gulf crossing, two alternative landfall sites (LF4/LF4a and LF5/LF5a) connected through three alternative offshore route sections were assessed. The different landfall sites correspond to different onshore sections, connecting the landfall site to the proposed onshore pipeline route

(either CCS1, in Peloponnese, or CCS2, in Continental Greece). As such, the following alternatives have been assessed, starting from close to KP 286 of CCS1, W of Petrochori settlement, Municipality of Dytiki Achaia (Peloponnese section) (starting point) and ending close to KP 29 of CCS2, NW of Grammatiko Settlement, M. of Agrinio (Western Continental section) (ending point):

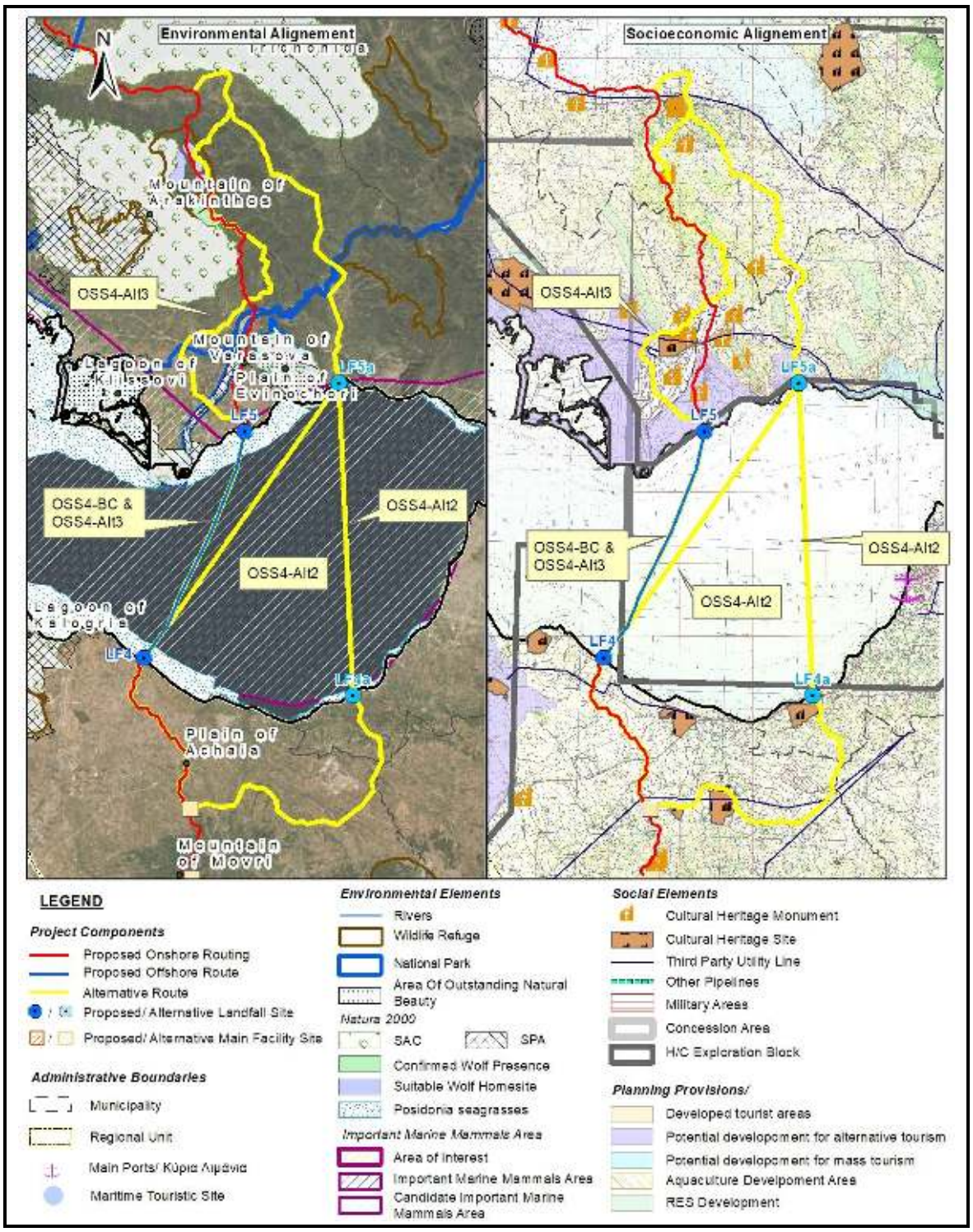
- OSS4 Base-case (OSS4-BC), connecting LF4 landfall site, at Kalamaki Beach, Municipality. of W. Achaia, R.U. of Achaia, and LF5 landfall site, south of Evinochori, Municipality of Nafpaktia, R.U. of Etoloakarnania, crossing R. Evinos north of Evinochori settlement;
- OSS4 Alternative 1 (OSS4-Alt1), connecting LF4 landfall site, at Kalamaki Beach, Municipalities of West Achaia, R.U. of Achaia, and LF5a landfall site, at Kato Vasiliki, Municipalities of Nafpaktia, R.U. of Etoloakarnania;
- OSS4 Alternative 2 (OSS4-Alt2), connecting LF4a landfall site, at Tsoukaleika, Municipality of Patra, R.U. of Achaia, and LF5a landfall site, at Kato Vasiliki, Municipalities of Nafpaktia, R.U. of Etoloakarnania; and
- OSS4 Alternative 3 (OSS4-Alt3), connecting LF4 landfall site, at Kalamaki Beach, Municipality. of W. Achaia, R.U. of Achaia, and LF5 landfall site, west of Evinochori, Municipality of Nafpaktia, R.U. of Etoloakarnania[36]; this is similar to OSS4-BC, with few modifications only in the onshore section upstream LF5 (i.e. CCS2)

Alternatives for Patraikos Gulf crossing are illustrated in Figure 7-8 (see Section 15.1.3 - Alternatives Map).

Assessment of the specific alternatives include three different elements: the onshore route, the offshore route and the landfall site. All these elements have been considered in a unified manner through a common study area of 1 km buffer (1 km on each side of the route axis). However, here below, the various sections have been presented separately allowing a more systematic approach. It is evident that the alternatives have identical sections. Nevertheless, it has been opted to present each alternative as a whole, as an integrated solution. This allows for alternatives to be assessed as a whole, and not just a section of the entire alternative to be compared to a corresponding part of a different alternative. Extensive fragmentation/ segmentation of an assessed project (in this case of the alternative routes assessment) could mislead to wrong results. For example, one segment of an alternative might be better than the corresponding section of another one, but the other segments not; however, one cannot simply choose one segment of this alternative and two other from a different one. On the other hand, taking small bits of information might obscure the broader picture.

[36]OSS4-Alt1 and OSS4-Alt2 are the same as the ones assessed during the Scoping Phase; they are still valid, due to the environmental considerations along the base-case. OSS4-Alt3 was presented in the Scoping Phase as the base-case; however, recent design developments resulted in optimization of the latter to OSS4-BC, current's phase base-case.

For example, a landfall site of a given alternative might be preferable (from environmental point of view) but the corresponding onshore section, might pose significant geotechnical issues and thus resulting in more severe impacts; as such, the entire alternative is not preferable, even though one of its elements is preferable from ESIA point of view.



Prepared by: ASPROFOS, 2022.

Figure 7-22 Alternatives Considered for Patraikos Gulf Crossing.

7 A.5.9.2. DESCRIPTION OF OSS4-BC

OSS4 Base-case (OSS4-BC) results from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia (length 14 km), crosses Patraikos Gulf (length 17 km), reaching base-case landfall site LF5 south of Evinochori settlement in the Municipality of Nafpaktia, crossing R. Evinos north of Evinochori settlement, starts climbing Mt Arakynthos in Municipality of I.P. of Messolonghi, before reaching ending point (length 28 km).

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: 2 (Achaia, Etoloakarnania); and
- Municipalities: 4 (D. Achaia, Nafpaktia, I.P. Messolonghi and Agrinio).

ONSHORE ALTERNATIVE SEGMENT

Regarding environmental sensitivities, this alternative crosses mainly through Broad-leaved or Mixed forest (mainly on Mt Arakynthos area at Western Continental Greece), and Sclerophyllous vegetation for 24%, 7% and 8%, respectively (of the total onshore length), whilst Transitional woodland/shrub vegetation, Beaches, dunes, sands and Inland marshes for <1% (based on CLC 2018 data). 30 avifauna and 5 mammal species of conservation interest have been reported in the study area (3 terrestrial). *Canis* lupus is highlighted given the fact that the route passes through areas of confirmed wolf presence (1800 m) and suitable home site (3400 m), at Mr. Arakynthos. The CCS1 section passes through the plain of Achaia (intense agricultural activity). Almost half of the CCS2 section passes through plain of Evinochori, in the estuary of R. Evinos; the rest of the CCS2 section passes through completely unfragmented forested areas of Mt. Arakynthos. Most prominent features include the plains of Achaia (intensively cultivated) and Evinochori (traditional cultivated), Patraikos Gulf, R. Evinos and its estuary, Mt Varasova and Mt. Arakynthos. 1 rather major river is crossed R. Evinos.

Specifically, regarding protected areas (terrestrial ones) the National Park of Messolonghi Aetoliko Lagoons (~0.5 km in total) is crossed, as well as the WR of Arakynthos. Other protected features lie in the study area in various distances, i.e. Natura 2000 sites (overlapping sites of GR2310001 SAC & GR2310015 SPA, approximately 70 m; GR2310005 SAC, approximately 700 m; and GR2310010 SPA, approximately 10 m) and Landscape of Outstanding Natural Beauty (Mt. Varasova, approximately 400 m). Onshore land cover is characterized mainly by agricultural crops. However, natural vegetation cover is crossed (for about 10 km) in the Mt. Arakynthos.

Regarding socioeconomic sensitivities and development, the basecase crosses mainly Permanently irrigated land, Complex cultivation patterns and Olive groves (42%, 12%, and 3%, respectively) (based on CLC 2018 data). In general, the CCS1 and CCS2 segments of this route passes through intensively

cultivated fields of Achaia Plain and Evinochori Plain, respectively. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section. The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at Lakopetra, significant touristic development is identified.

11 settlements have been identified within the study area: 6 settlements in the Peloponnese section (Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m, Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m) and 5 in the Western Continental Greece section (Paliostani 250 m, Perithorio 430 m, Evinochori 1000 m, Kokori 1000 m, Grammatiko 420 m).

Proximity to 2 RES projects is noted and engagement with the H/C exploration blocks of NW Peloponnese and Arta-Preveza (the entire onshore segments of this alternative).

Regarding cultural heritage, no engagement with known declared archaeological sites exist; relative proximity to two of them is noted (at 600 m and 300 m respectively). Two known cultural heritage resources (undeclared ones) are located at adequate distance (380 m and 300 m, respectively). It is expected that the neighbouring populated areas host numerous small churches.

LANDFALL LOCATION DESCRIPTION

Landfall LF4 is located in the area of Kalamaki beach, Lakopetra, in M. of Dytiki Achaia. LF4 is located in the NW part of Peloponnese, at the coastline of Achaia Plain. The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. The nearest settlement (Lakopetra) is located approximately 2 km m to the SW. The most prominent feature of LF4 area is that it hosts some significant tourism facilities whilst numerous smaller ones are expected in the surrounding scattered houses and cluster of houses. The most prominent touristic development is the Lakopetra Grecotel establishment at a distance of ~250 m (Casa Marron). LF4 is known to support *Posidonia* oceanica beds near the shore.

LF5 is located in the Evinochori designated for "Potential for alternative tourism"; however, the broader area is not presenting any significant facilities (only one at approximately 2,200 m to the E). LF5 is characterized by intensively cultivated fields of Evinochori Plain.

According the EUROSION Project i) The coast on LF4 characterised by a soft strand (less than 100 m) aggravating in front of a rocky coast ii) The coast on LF5 characterised by extensive beaches.

Both landfall sites are located in flat areas accessible through existing roads. No significant geohazards are identified (no evidence of landslides, minimal liquefaction risk). No extensive earthworks are expected.

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: LF4 at Achaia, LF5 at Etoloakarnania; and
- Municipalities: LF4 at D. Achaia, LF5 at Nafpaktia.

OFFSHORE ROUTE SECTION

The entire offshore route section corresponding to the specific alternative stretches for approximately 17 km, out of which 4.8 km in the euphotic zone (up to WD 40 m) and 13.2km in the epipelagic zone (up to WD 200 m).

It is important to note that the entire Patraikos Gulf is a very sensitive area for marine biodiversity, even though Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). Specifically, Patraikos Gulf is a candidate Important Marine Mammals Site (cIMMA); OSS4-BC crosses P. oceanica beds for 2720 m (1023 m at LF4 and 1697 m at LF5). 2 additional shallow water habitats are identified nearshore: A5.34 - Infralittoral fine mud for 1110 m at LF4 and 2130 m at LF5, Probability of existence of coralligenous outcrops*>50% for 1110 m at LF4 and 2150 m at LF5). Regarding deep-sea habitats, 5 have been identified: A5.46 - Mediterranean biocoenosis of coastal detritic bottoms (1600 m), A5.39 - Mediterranean biocoenosis of coastal terrigenous muds (10870 m), A5.34 - Infralittoral fine mud (820 m), A5.23 - Infralittoral fine sands (990 m) and Probability of existence of coralligenous outcrops* >50% (4190 m). Especially, regarding marine caves, according to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). 2 marine mammals of conservation interest have been identified in the area: *Delphinus delphis* and *Tursiops truncates*.

Based on the EMODNET data[37], marine traffic density in the area is very high whilst the port of Patra is located 22 km to the East. The entire offshore route passes through fishing grounds, given that Patraikos Gulf Sea is an area of high fishing effort. No engagement with aquaculture development or underwater infrastructure is identified.

Regarding technical challenges (that could lead to increased construction duration and hence impacts) based on the available data[38,39], beach and seabed intervention works are estimated as low. Sandy bottom terrain can be expected in the nearshore area; no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route in the intermediate waters. Patraikos gulf hosts indications for gas pockets whilst offshore route engages with Military area for approximately 6.5 km.

[37] https://www.emodnet-humanactivities.eu/view-data.php
[38] EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[39] EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

No third party interaction influences the offshore pipeline routing.

No engagement with known significant cultural heritage areas is identified.

7 A.5.9.3. DESCRIPTION OF OSS4-ALT3

OSS4 Alternative 3 (OSS4-Alt3) results from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia (length 14 km), crosses Patraikos Gulf (length 17 km), reaching base-case landfall site LF5 south of Evinochori settlement in the Municipality of Nafpaktia, crossing R. Evinos west of Evinochori settlement, starts climbing Mt Arakynthos in Municipality of I.P. of Messolonghi, before reaching ending point (length 35 km).

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: 2 (Achaia, Etoloakarnania); and
- Municipalities: 4 (D. Achaia, Nafpaktia, I.P. Messolonghi and Agrinio).

It is noted that this alternative varies from the OSS4-BC only in respect to its segment on Western Continental Greece.

ONSHORE ALTERNATIVE SEGMENT

Regarding environmental sensitivities, this alternative crosses mainly through Broad-leaved or Mixed forest (mainly on Mt Arakynthos area at Western Continental Greece), and Sclerophyllous vegetation for 20%, 8% and 7%, respectively (of the total onshore length), whilst Beaches, dunes, sands, Sparsely vegetated areas, and Inland marshes for <1% (based on CLC 2018 data). 30 avifauna and 5 mammal species of conservation interest have been reported in the study area (3 terrestrial). *Canis* lupus is highlighted given the fact that the route passes through areas of confirmed wolf presence (1,800 m) and suitable home site (960 m), at Mr. Arakynthos. The CCS1 section passes through the plain of Achaia (intense agricultural activity). Almost half of the CCS2 section passes through plain of Evinochori, in the estuary of R. Evinos; the rest of the CCS2 section passes mostly through unfragmented forested areas of Mt Arakynthos. Most prominent features include the plains of Achaia (intensively cultivated) and Evinochori (traditional cultivated), Patraikos Gulf, R. Evinos and its estuary, Mt Varasova and Mt. Arakynthos. 1 rather major river is crossed R. Evinos.

Specifically, regarding protected areas (terrestrial ones) the National Park of Messolonghi Aetoliko Lagoons (~5 km, in total) is crossed through the zones NR3 (Nature reserve) and RA2 (Regional area) and the included protected sites of GR2310001 “DELTA ACHELOOU, LIMNOTHALASSA

MESOLONGIOU - AITOLIKOU, EKVOLES EVINOU, NISOI ECHINADES, NISOS PETALAS" (~ 422 m) and the overlapping GR2310015 "DELTA ACHELOOU, LIMNOTHALASSA MESOLONGIOU - AITOLIKOU KAI EKVOLES EVINOU, NISOI ECHINADES, NISOS PETALAS, DYTIKOS ARAKYNTHOS KAI STENA KLEISOURAS" (~422 m), as well. It is clarified that the above mentioned lengths are overlapping and are not sum up. Onshore land cover is characterized mainly by agricultural crops. However, in the Arakynthos Mt, natural vegetation cover is crossed (for about 10 km).

Regarding socioeconomic sensitivities and development, this alternative crosses mainly Permanently irrigated land, Complex cultivation patterns, Olive groves, Non-irrigated arable land, and Land principally occupied by agriculture, with significant areas of natural vegetation (35%, 7%, 10%, 2%, and 3%, respectively) (based on CLC 2018 data). In general, the CCS1 and CCS2 segments of this alternative passes through intensively cultivated fields of Achaia Plain and Evinochori Plain, respectively. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section. The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at Lakopetra, significant touristic development is identified.

15 settlements have been identified within the study area: 6 settlements in the Peloponnese section (Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m, Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m) and 9 in the Western Continental Greece section (Nea Kalidona 300 m, Evinochori 1000 m, Kokori 1000 m, Agios Andreas 670 m, Agios Georgios 350 m, Koutsocheri 500 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m).

Proximity to 3 RES projects is noted and engagement with the H/C exploration blocks of NW Peloponnese and Arta-Preveza (the entire onshore segments of this alternative).

Regarding cultural heritage, no engagement with known archaeological sites takes place, but proximity to declared archaeological sites of "Kourtagas" at Evinochori is noted (100 m) and "Trichoniou" at Gavalou (315 m). Three known cultural heritage resources (undeclared ones) are located at adequate distance (240 m, 700 m, and 650 m respectively) but Zoodohos Pigi Church lies 20 m from the route axis. It is expected that the neighbouring populated areas host numerous small churches.

LANDFALL LOCATION DESCRIPTION

Description of LF4 and LF5 is identical to the one of OSS4-BC.

OFFSHORE ROUTE SECTION

The offshore section is identical to the OSS4-BC.

7 A.5.9.4. DESCRIPTION OF OSS4-ALT1

OSS4 Alternative 1 (OSS4-Alt1) results from the starting point, reaching base-case landfall site LF4 close to Lakopetra settlement (Kalamaki beach), in the Municipality of Dytiki Achaia (14 km), crosses Patraikos Gulf (23 km), reaching alternative landfall site LF5a east of Kato Vasiliki settlement, Municipality of Nafpaktia, crossing R. Evinos north of Trikorfo settlement, starts climbing Mt Arakynthos in Municipality of Agrinio, before reaching ending point (29 km).

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: 2 (Achaia, Etoloakarnania); and
- Municipalities: 3 (D. Achaia, Nafpaktia, and Agrinio).

ONSHORE ALTERNATIVE SEGMENT

Regarding environmental sensitivities, this alternative passes mainly through Broad-leaved or Coniferous forest (mainly on Mt Arakynthos area at Western Continental Greece), and Sclerophyllous vegetation for 10%, 2%, and 2%, respectively (of the total onshore length), whilst Mixed forest, and Beaches, dunes, sands and Inland marshes for <1% (based on CLC 2018 data). 30 avifauna and 4 mammal species of conservation interest have been reported in the study area (3 terrestrial). The CCS1 section passes through the plain of Achaia (intense agricultural activity). Most of the CCS2 section passes through agricultural lands; the rest of the CCS2 section passes through the eastern foothills of Mt Arakynthos, a mixed of natural and agricultural areas, S of Trichonida Lake. Most prominent features include the plain of Achaia (intensively cultivated), Patraikos Gulf, Mt. Varasova and Mt. Arakynthos, and L. Trichonida. 1 rather major river is crossed R. Evinos.

Specifically, regarding protected areas (terrestrial ones) the National Park of Messolonghi Aetoliko Lagoons (~0.3 km, in total) is crossed. Other protected features lie in the study area in various distances, i.e. Natura 2000 sites (GR2310005 SAC, approximately at 400 m; and GR2310009 SAC, approximately at 100 m), Wildlife Refuge ("Trikorfo" approximately at 90 m) and Landscape of Outstanding Natural Beauty (Mt. Varasova, approximately at 400 m). Onshore land cover is characterized mainly by agricultural crops. However, in the Arakynthos Mt, natural vegetation cover is crossed (for about 4 km).

Regarding socioeconomic sensitivities and development, this alternative crosses mainly Permanently irrigated land (26%), Non-irrigated arable land (9%), Complex cultivation patterns (23%), Olive groves (12%), Land principally occupied by agriculture, with significant areas of natural vegetation (8%) and

Discontinuous urban fabric (1%) (based on CLC 2018 data). In general, the CCS1 segment of this alternative passes through intensively cultivated fields of Achaia Plain. CCS2 is characterized by cultivated fields E of Mt Varasova. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section. The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at Lakopetra, significant touristic development is identified.

16 settlements have been identified within the study area: 6 settlements in the Peloponnese section (Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m, Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m) and 10 in the Western Continental Greece section (Trikorfo 930 m, Agios Andreas 670 m, Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m).

Proximity to 1 RES project is noted and engagement with the H/C exploration blocks of NW Peloponnese and Arta-Preveza (the entire onshore segments of this alternative).

Regarding cultural heritage, no engagement with known declared archaeological sites exist; proximity to 1 is noted (at 400 m). It is expected that the neighbouring populated areas host numerous small churches.

LANDFALL LOCATION DESCRIPTION

Description of LF4 is identical to the one of OSS4-BC (Section 7 A.5.9.2).

LF5a is not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism. LF5a is characterized by cultivated fields E of Mt Varasova, next to Kato Vasiliki settlement.

According the EUROSION Project i), the coast on LF4 characterized by a soft strand (less than 100 m) aggravating in front of a rocky coast. ii) The coast on LF5a characterized by extensive beaches.

Both landfall sites are located in flat areas accessible through existing roads. No significant geohazards are identified (no evidence of landslides, minimal liquefaction risk). No extensive earthworks are expected.

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: LF4 at Achaia, LF5 at Etoloakarnania; and
- Municipalities: LF4 at D. Achaia, LF5a at Nafpaktia.

OFFSHORE ROUTE SECTION

The entire offshore route section corresponding to the specific alternative stretches for approximately 23 km, out of which 3.5 km in the euphotic zone (up to WD 40 m) and 20 km in the epipelagic zone (up to WD 200 m).

It is important to note that the entire Patraikos Gulf is a very sensitive area for marine biodiversity, even though Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). Specifically, Patraikos Gulf is a candidate Important Marine Mammals Site (cIMMA); OSS4-Alt1 crosses P. oceanica beds for 1274 m (1023 m at LF4 and 251 m at LF5a). 2 additional shallow water habitats are identified nearshore: A5.34 - Infralittoral fine mud for 1110 m at LF4 and 1910 m at LF5a, Probability of existence of coralligenous outcrops* >50% for 1110 m at LF4 and 870 m at LF5a). Regarding deep-sea habitats, 5 have been identified: A5.46 - Mediterranean biocoenosis of coastal detritic bottoms (910 m), A5.39 - Mediterranean biocoenosis of coastal terrigenous muds (15060 m),A5.34 - Infralittoral fine mud (820 m), A5.23 - Infralittoral fine sands (3810 m) and Probability of existence of coralligenous outcrops* >50% (5850 m). Especially, regarding marine caves, according to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). 2 marine mammals of conservation interest have been identified in the area: *Delphinus delphis* and *Tursiops truncates*.

Based on the EMODNET data[40], marine traffic density in the area is very high whilst the port of Patra is located 22 km to the East. The entire offshore route passes through fishing grounds, given that Patraikos Gulf Sea is an area of high fishing effort. No engagement with aquaculture development or underwater infrastructure is identified.

Regarding technical challenges (that could lead to increased construction duration and hence impacts) based on the available data[41,42], beach and seabed intervention works are estimated as low. Sandy bottom terrain can be expected in the nearshore area; no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route in the intermediate waters. Patraikos gulf hosts indications for gas pockets whilst offshore route engages with Military area for approximately 3.4 km.

No third party interaction influences the offshore pipeline routing.

No engagement with known significant cultural heritage areas is identified.

[40] https://www.emodnet-humanactivities.eu/view-data.php
[41] EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[42] EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

7 A.5.9.5. DESCRIPTION OF OSS4-ALT2

OSS4 Alternative 2 (OSS4-Alt2), results from the starting point, reaching alternative landfall sites LF4a, at Tsoukaleika, Municipality of Patra, R.U. of Achaia (24 km), crosses Patraikos Gulf (22 km), reaching alternative landfall site LF5a east of Kato Vasiliki settlement, Municipality of Nafpaktia, crossing R. Evinos north of Trikorfo settlement, starts climbing Mt Arakynthos in Municipality of Agrinio, before reaching ending point (29 km).

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: 2 (Achaia, Etoloakarnania); and
- Municipalities: 4 (D. Achaia, Patra, Nafpaktia, and Agrinio).

ONSHORE ALTERNATIVE SEGMENT

Regarding environmental sensitivities, this alternative passes mainly through Broad-leaved (9%) or Mixed (5%) forest (mainly on Mt Arakynthos area at Western Continental Greece), Transitional woodland/shrub (3%) (of the total onshore length), whilst Coniferous forest, Sclerophyllous vegetation and Beaches, dunes, sands for <1% (based on CLC 2018 data). 30 avifauna and 4 mammal species of conservation interest have been reported in the study area (3 terrestrial). The CCS1 section passes through the plain of Achaia (intense agricultural activity). Most of the CCS2 section passes through agricultural lands; the rest of the CCS2 section passes through the eastern foothills of Mt Arakynthos, a mixed of natural and agricultural areas, S of Trichonida Lake. Most prominent features include the plain of Achaia (intensively cultivated), Patraikos Gulf, Mt. Varasova and Mt. Arakynthos, and L. Trichonida. One rather major river is crossed, R. Evinos, and few smaller ones (Parapeiros, Peiros).

Specifically, regarding protected areas (terrestrial ones) the National Park of Messolonghi Aetoliko Lagoons (~0.3 km, in total) is crossed. Other protected features lie in the study area in various distances, i.e. Natura 2000 sites (GR2310005 SAC, approximately at 400 m; and GR2310009 SAC, approximately at 100 m), Wildlife Refuge ("Trikorfo" approximately at 90 m) and Landscape of Outstanding Natural Beauty (Mt. Varasova, approximately at 400 m). Onshore land cover is characterized mainly by agricultural crops. However, in the Arakynthos Mt, natural vegetation cover is crossed (for about 4 km).

Regarding socioeconomic sensitivities and development, this alternative crosses mainly Permanently irrigated land (4%), Non-irrigated arable land (7%), Complex cultivation patterns (28%), Vineyards

(4%), Olive groves (22%), Land principally occupied by agriculture, with significant areas of natural vegetation (14%), Fruit tree and berry plantations (1%) and Discontinuous urban fabric (1%) (based on CLC 2018 data). In general, the CCS1 segment of this alternative passes through intensively cultivated fields of Achaia Plain and also very close to the Patra Industrial Area. CCS2 is characterized by cultivated fields E of Mt Varasova. Characteristic discontinuous urban fabric, of scattered rural settlements, summer houses and touristic facilities, especially along CCS1 section. Small, rural settlements at the end of CCS2 section. The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at Tsoukaleika, significant touristic development is identified.

20 settlements have been identified within the study area: 10 settlements in the Peloponnese section (Petrochori 260 m, Fostaina 550 m, Vrachneika 750 m, Zambeteika 550 m, Logothetis 400 m, Ano Achaia 270 m, Spaliareika 730 m, Avgereika 550 m, Chaikali 280 m, Tsoukaleika 450 m) and 10 in the Western Continental Greece section (Trikorfo 930 m, Agios Andreas 670 m, Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m).

Proximity to 3 RES project is noted and engagement with the H/C exploration blocks of NW Peloponnese and Arta-Preveza (the entire onshore segments of this alternative).

Regarding cultural heritage, there is engagement with known archaeological sites; specifically, in Peloponnese the Declared archaeological sites of "Skagia", "Achlada"& "Galaria" (HGG 796/B/30-8-1996) and "Kalamaki" (HGG 793/B/14-9-1995) are crossed for ~325 m and 615 m, respectively. Two more lie in proximity (at 150 m and 400 m). It is expected that the neighbouring populated areas host numerous small churches.

LANDFALL LOCATION DESCRIPTION

LF4a is located within natural areas with scattered houses (numerous summer houses) and significant touristic facilities between Tsoukaleika and Vrachneika settlements.

Description of LF5a is identical to the one of OSS4-Alt1.

According the EUROSION Project, the coasts of LF4a and LF5a are characterized by extensive beaches.

Both landfall sites are located in flat areas accessible through existing roads. No significant geohazards are identified (no evidence of landslides, minimal liquefaction risk). No extensive earthworks are expected.

Regarding local administration, the following are engaged:

- Region: 1 (Western Greece);
- Regional Unit: LF4a at Achaia, LF5 at Etoloakarnania; and
- Municipalities: LF4a at Patra, LF5a at Nafpaktia.

OFFSHORE ROUTE SECTION

The entire offshore route section corresponding to the specific alternative stretches for approximately 22 km, out of which 4 km in the euphotic zone (up to WD 40 m) and 18 km in the epipelagic zone (up to WD 200 m).

It is important to note that the entire Patraikos Gulf is a very sensitive area for marine biodiversity, even though Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). Specifically, Patraikos Gulf is a candidate Important Marine Mammals Site (cIMMA); OSS4-Alt2 crosses P. oceanica beds for 670 m (420 m at LF4 and 250 m at LF5). The following additional shallow water habitats are identified nearshore: A5.23 – Infralittoral fine sand for 1040 m at LF5a, A5.33 – Infralittoral sandy mud for 2110 m at LF4a, A5.39 – Mediterranean biocoenosis of coastal terrigenous muds for 410 m at LF4a, A5.34 - Infralittoral fine mud for 40 m at LF4a, Probability of existence of coralligenous outcrops* >50% for 1900 m at LF4a and 870 m at LF5a). Regarding deep-sea habitats, 5 have been identified: A5.46 - Mediterranean biocoenosis of coastal detritic bottoms (3050 m), A5.39 - Mediterranean biocoenosis of coastal terrigenous muds (1460 m), A5.34 - Infralittoral fine mud (820 m), A5.23 - Infralittoral fine sands (630 m) and Probability of existence of coralligenous outcrops* >50% (4190 m). Especially, regarding marine caves, according to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). 2 marine mammals of conservation interest have been identified in the area: *Delphinus delphis* and *Tursiops truncates*.

Based on the EMODNET data[43], marine traffic density in the area is very high whilst the port of Patra is located 10 km to the East. The entire offshore route passes through fishing grounds, given that Patraikos Gulf Sea is an area of high fishing effort. No engagement with aquaculture development or underwater infrastructure is identified.

Regarding technical challenges (that could lead to increased construction duration and hence impacts) based on the available data[44,45], beach and seabed intervention works are estimated as low. Sandy bottom terrain can be expected in the nearshore area; no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on

[43] https://www.emodnet-humanactivities.eu/view-data.php
[44] EM-630-20-HS-RPT-001, Rev3 -- Preliminary Environmental Report.
[45] EM-610-20-PL-RPT-001, Rev2 -- Route Feasibility Report.

the route in the intermediate waters. Patraikos gulf hosts indications for gas pockets whilst offshore route engages with Military area for approximately 6.5 km.

No third party interaction influences the offshore pipeline routing.

No engagement with known significant cultural heritage areas is identified.

7 A.5.9.6. ALTERNATIVES ASSESSMENT

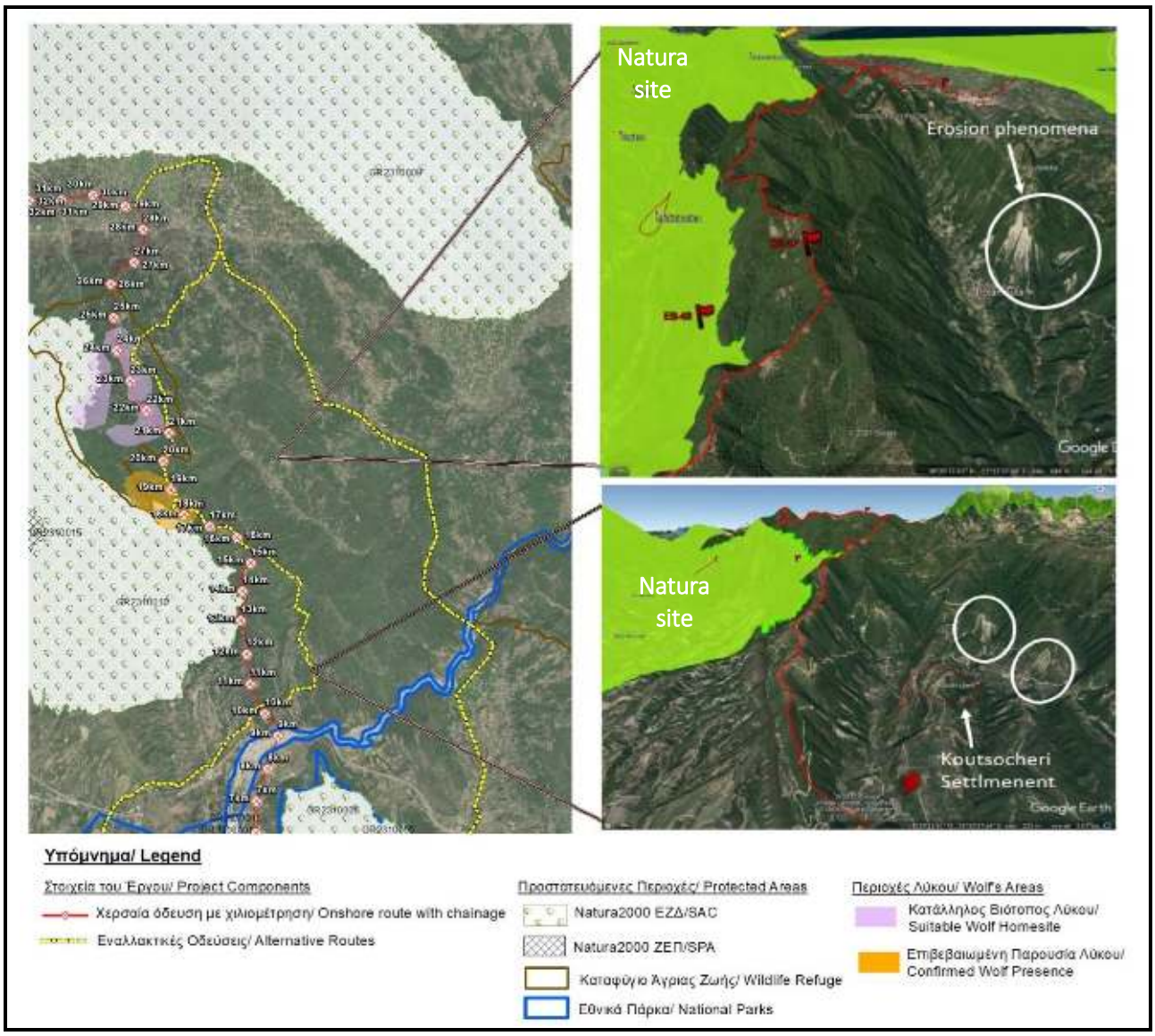
Patraikos Gulf crossing alternatives assessment critical points can be summarized as follows:

- Natural Environment. CCS1 segment of all alternatives passes through the Plain of Achaia, of rather limited ecological value. Regarding CCS2 segment, Mt Arakynthos supports an unfragmented forest; OSS4-Alt1 & OSS4-Alt2 length in the specific area is 6 km less;
- Protected species & habitats.

  Posidonia oceanica is present in all nearshore areas of the landfall sites and cannot be completely avoided; however, alternative landfalls (LF4a & LF5a) support seabeds to a smaller extent,

  Wolf's presence was confirmed at Mt Arakynthos; in fact, OSS4-BC and OSS4-Alt3 (to a smaller extent) cross through these areas.

  The selection of the proposed route needs to take into consideration geohazards and accessibility. In many cases, the impact from the geotechnical works for slopes stabilization or the need for new access roads construction is more significant than temporary impact on protected areas or biodiversity hotspots. The present assessment focuses on currently known environmental constraints, however geotechnical issues, such as slopes stability and access were also taken into consideration, as studied by the technical team. Such geotechnical issues pose more challenges on construction safety issues; moreover, they pose significant operational hazards, in terms of project `vulnerability to mass earth movements that could be triggered and impact the Project. Avoidance of the specific area sensitive for the wolf, would require construction in a much more challenging (from geotechnical point of view) substrate and morphology. Figure 7-23 is relevant.



Prepared by: ASPROFOS, 2022.

Figure 7-23 Wolf Presence in Arakynthos Area.

- **Social Environment:** Regarding the landfall sites, both landfall sites at NW Peloponnese support significant touristic activity. However, LF4a is in a much more densely populated area than LF4 and could pose greater social impacts; similar for LF5a.

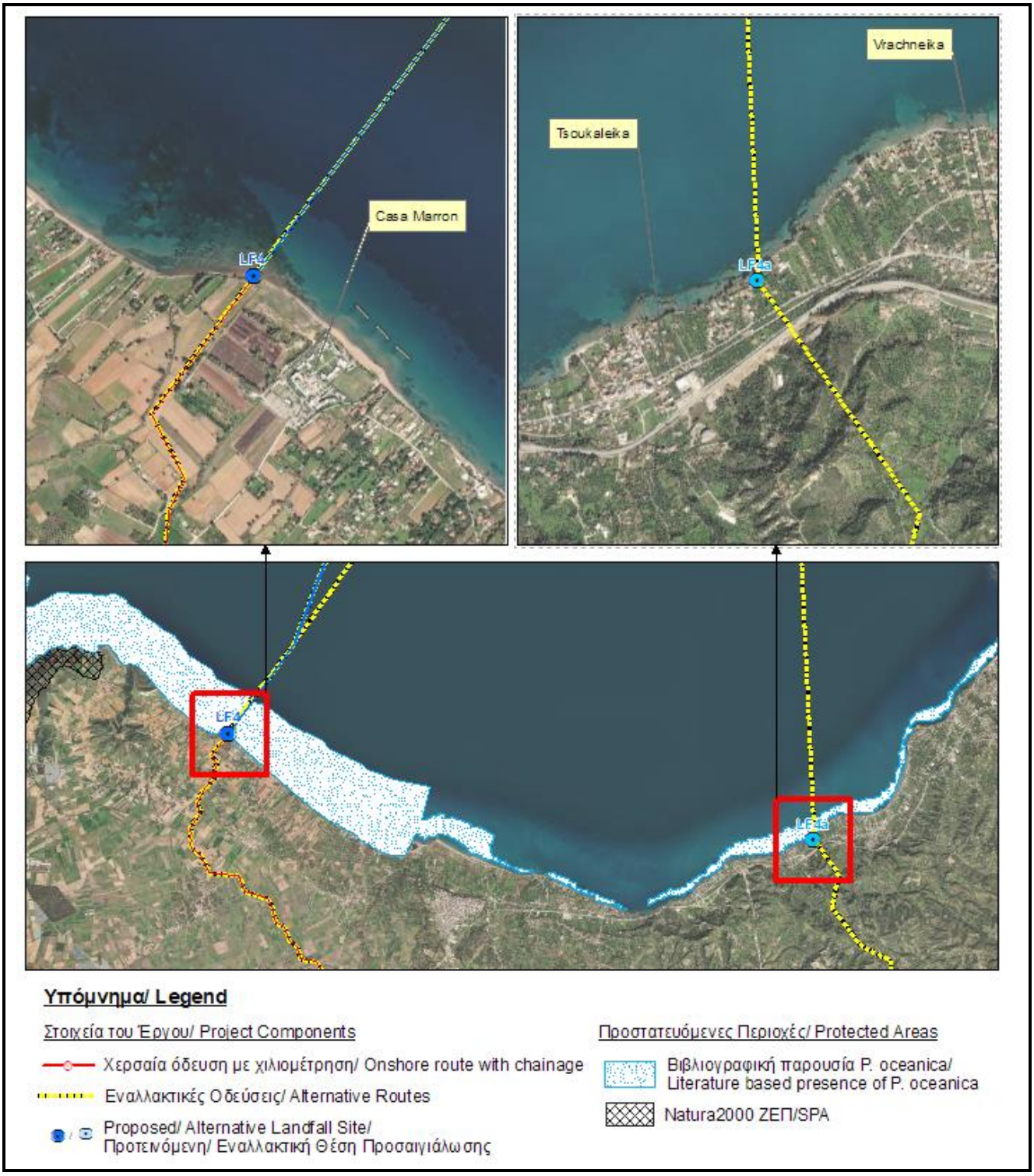


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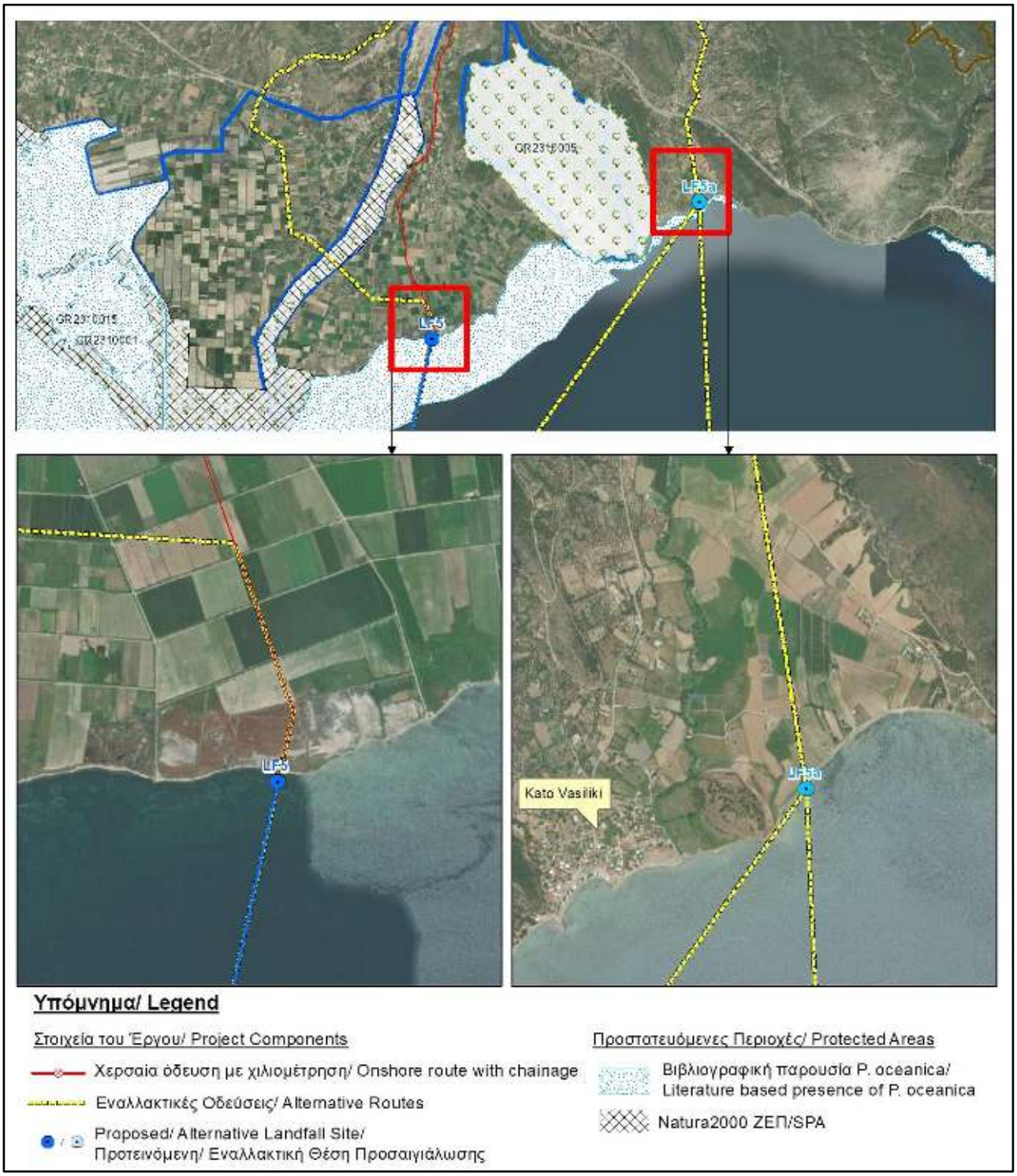
Figure 7-24 Tourist Development at NW Peloponnese.



Prepared by: ASPROFOS, 2022.

Figure 7-25 Tourist Development at SW Aetoloakarnania.

- Cultural heritage engagement. Out of all the alternatives only OSS4-Alt2 is engaged with declared archaeological sites (two are crossed). The other ones keep safe distances from cultural heritage resources.

Table 7-10 summarizes the criteria to which the alternatives present differences that play significant role, or are important, in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section7 A.7.7.

It should be highlighted, in order to identify the possibility of avoidance of the wolf's sensitive areas, during the ongoing FEED of the project, the area was investigated in great detail regarding geotechnical considerations, and the geotechnical issues were documented; most significant ones are presented in this document (see also Appendix 2 - FEED GEOTECHNICAL ASSESSMENT FOR MT ARAKYNTHOS AREA). Based on information acquired by the ongoing FEED, the following need to be noted:

- During the feasibility study of the project on 2015-2016, the wider area of the north Peloponnese was evaluated and the LF4a location was rejected due to the proximity to the Vrachneika and Tsoukaleika settlements which present high touristic development. Moreover, the crossings of the New and Old National road as well as the Railway line were evaluated as very challenging due to the terrain morphology of the area which present steep slopes and ground instabilities.
- Landfall LF5a at K. Vasiliki area is located too close to the declared archaeological area of Ag. Triada (ΦΕΚ: 527/B/1967-08-24 - ΦΕΚ: 618/B/1965-09-17 - ΦΕΚ: 25/B/1993-01-27). This area is more developed by a tourism point of view than the proposed LF5 location. In addition, the route after the LF5a would have more social impacts since there are a lot scattered settlements in the area and permanent cultivations. The only available area for the crossing of Ionia highway is at the limits of the settlement Chania Gavrolimnis at an area where a lot of scattered building are located. Moreover, the crossing of R. Evinos close to Paradisi settlement was considered very difficult from a technical point of view, since the active river bed is continuously modified (especially during winter period) presenting meanders due to the erodible geological formations and the water amount and velocity.

Based on the above, OSS4-BC is the preferable solution.

Table 7-10 High Level Comparison Matrix for Patraikos Crossing Alternatives.

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
Protected Areas and Species	• CCS1 section does not interfere with any protected area.			
	• LF4 and LF4a are located within P. oceanica seabed.			
	• Regarding offshore section, the entire routes crosses Patraikos Gulf. Patraikos Gulf is a very sensitive area for marine biodiversity; it hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities).			
	• LF5 is located within P. oceanica seabed		• LF5a is located close to P. oceanica seabed.	
	• 30 avifauna and 5 mammal species of conservation interest have been reported in the study area (3 terrestrial).		• 30 avifauna and 4 mammal species of conservation interest have been reported in the study area (3 terrestrial).	
	• CCS2 section crosses the National Park of Messolonghi Aetoliko Lagoons (~0.5 km, in total), as well as the WR of Arakynthos (~ 5.5 km). • Canis lupus is highlighted given the fact that the route passes through areas of confirmed wolf presence (1800 m) and suitable home site (3400 m), at Mr. Arakynthos	• CCS2 section crosses the National Park of Messolonghi Aetoliko Lagoons (5 km, in total), incl. GR2310001 (~ 422 m) GR2310015 (~422 m), as well as the WR of Arakynthos (~4.2 km). • *Canis* lupus is highlighted given the fact that the route passes through areas of confirmed wolf presence (1800 m) and suitable home	• CCS2 section crosses the National Park of Messolonghi Aetoliko Lagoons (~0.3 km, in total), as well as the WR of Arakynthos (~ 5.5 km).	

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
		site (960 m), at Mr. Arakynthos		
Biodiversity Hotspots	• CCS1 section passes through the plain of Achaia (intense agricultural activity).			
	• LF4 is located in the NW part of Peloponnese, at the coastline of Achaia Plain. The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. • The coast on LF4 characterized by a soft strand (less than 100 m) aggravating in front of a rocky coast.			• LF4a is located within natural areas with scattered houses (numerous summer houses) and significant touristic facilities between Tsoukaleika and Vrachneika settlements. • The coast on LF5 characterized by extensive beaches.
	• Patraikos Gulf is a very sensitive area for marine biodiversity; Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities).			
	• LF5 is characterized by intensively cultivated fields of Evinochori Plain. • The coast on LF5 characterized by extensive beaches.		• LF5a is characterized by cultivated fields E of Mt Varasova, next to Kato Vasiliki settlement. • The coast on LF5 characterized by extensive beaches.	
	• Almost half of the CCS2 section passes through plain of Evinochori, in the estuary of R. Evinos; the rest of the CCS2		• Most of the CCS2 section passes through agricultural lands; the rest of the CCS2 section passes through the eastern foothills of	

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
	section passes through completely unfragmented forested areas of Mt Arakynthos (~ 10 km).		Mt Arakynthos (~ 4 km), a mixed of natural and agricultural areas, S of Trichonida Lake.	
Land Uses	• 58% of the onshore route crosses through agricultural areas whilst 42% from natural or semi-natural ones.	• 65% of the onshore route crosses through agricultural areas whilst 35% from natural or semi-natural ones.	• 78% of the onshore route crosses through agricultural areas whilst 21% from natural or semi-natural ones and 1% from discontinuous urban fabric.	• 79% of the onshore route crosses through agricultural areas whilst 20% from natural or semi-natural ones and 1% from discontinuous urban fabric.
	• CCS1 segment of this alternative passes through intensively cultivated fields of Achaia Plain			• CCS1 segment of this alternative passes through intensively cultivated fields of Achaia Plain and also very close to the Patra Industrial Area.
	• CCS2 segment of this alternative passes through intensively cultivated fields of Evinochori Plain		• CCS2 is characterized by cultivated fields E of Mt Varasova	
Population Centres	• Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section			• Characteristic discontinuous urban fabric, of scattered rural settlements, summer houses and touristic facilities, especially along CCS1 section.

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
	• Numerous small, rural settlements hosting small touristic facilities are located, at the end of CCS2 section			
	• 6 settlements in the Peloponnese section (Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m, Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m)			• 10 settlements in the Peloponnese section (Petrochori 260 m, Fostaina 550 m, Vrachneika 750 m, Zambeteika 550 m, Logothetis 400 m, Ano Achaia 270 m, Spaliareika 730 m, Avgereika 550 m, Chaikali 280 m, Tsoukaleika 450 m)
	• 5 settlements in the Western Continental Greece section (Paliostani 250 m, Perithorio 430 m, Evinochori 1000 m, Kokori 1000 m, Grammatiko 420 m).	• 9 in the Western Continental Greece section (Nea Kalidona 300 m, Evinochori 1000 m, Kokori 1000 m, Agios Andreas 670 m, Agios Georgios 350 m, Koutsocheri 500 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m)	• 10 in the Western Continental Greece section (Trikorfo 930 m, Agios Andreas 670 m, Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m)	• 10 in the Western Continental Greece section (Trikorfo 930 m, Agios Andreas 670 m, Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m)

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
Development Plans	• LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected.			• LF4a is located within an area of numerous summer houses and significant touristic facilities.
	• LF5 is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.		• LF5a is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	
Economic Development (Touristic Activity)	• The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4 is located in the area of Kalamaki beach where scattered residents are evident. The most prominent development is the Lakopetra Grecotel establishment at a distance of ~250 m (Casa Maron).			• The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4a is located within natural areas with scattered houses (numerous summer houses) and significant touristic facilities between Tsoukaleika and Vrachneika settlements.
	• The entire offshore route passes through fishing grounds, given that Patraikos Gulf Sea is an area of high fishing effort. No engagement with aquaculture development or underwater infrastructure is identified. • Very high marine traffic density.			

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
	• LF5 & LF5a are not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism.			
	• Proximity to 2 RES projects.	• Proximity to 3 RES projects.	• Proximity to 1 RES project.	• Proximity to 3 RES projects. • Industrial area of Patra lies at approx. 900 m NW in Peloponnese
Cultural Heritage	• Regarding cultural heritage, no engagement with known declared archaeological sites exist;			• In Peloponnese the Declared archaeological sites of "Skagia", "Achlada"& "Galaria" (HGG 796/B/30-8-1996) and "Kalamaki" (HGG 793/B/14-9-1995) are crossed for ~325 m and 615 m, respectively.
	• Proximity to 2 declared archaeological sites is noted (at 600 m and 300 m respectively).	• Proximity to 2 Declared archaeological sites (at 100 m and 315 m respectively).	• Proximity to 1 Declared archaeological site (at 400 m)	• Proximity to 2 Declared archaeological sites (at 150 m and 400 m respectively).
	• 2 known cultural heritage resources (undeclared ones) are located at adequate	• 3 known cultural heritage resources (undeclared ones) are located at adequate	-	-

General Parameter	Base-case OSS4-BC (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-BC)	Alternative OSS4-Alt3 (CCS1-BC -> LF4 -> OSS4-BC -> LF5 -> CCS2-Alt3)	Alternative OSS4-Alt1 (CCS1-BC -> LF4 -> OSS4-Alt1 -> LF5a -> CCS2-Alt1)	Alternative OSS4-Alt2 (CCS1-Alt2 -> LF4a -> OSS4-Alt2 -> LF5a -> CCS2-Alt1)
	distance (380 m and 300 m, respectively).	distance (240 m, 700 m, and 650 m respectively)		
	• It is expected that the neighbouring populated areas host numerous small churches.			
Technical Challenges	• Beach and seabed intervention works are estimated as low. Sandy bottom terrain can be expected in the nearshore area; no significant constraints are identified that may impede open cut shore crossing construction method. Areas of potential geohazards lie on the route in the intermediate waters. Patraikos gulf hosts indications for gas pockets			
Military Areas	• Offshore route engages with Military area for approx. 6.5 km		• Offshore route engages with Military area for approx. 3.5 km	• Offshore route engages with Military area for approx. 6.5 km

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7 A.5.10. MENIDI ALTERNATIVES

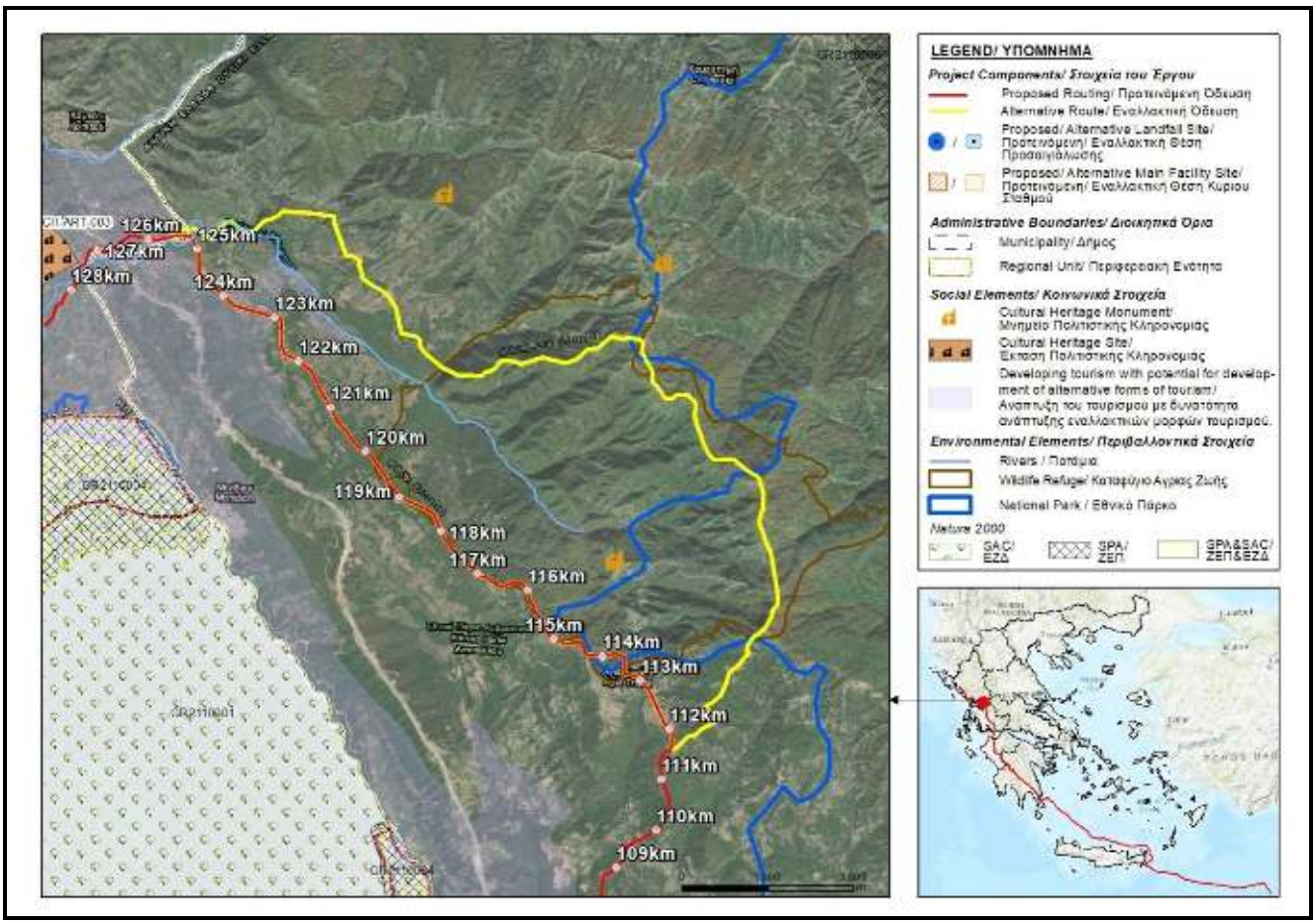
7 A.5.10.1. OVERVIEW

Uphill of the area of Menidi settlement, Mt. Makrinoros hosts the Wildlife Refuge of Monastery of Retha and Monastery of Loggos. For the section of CCS2, two (2) feasible alternatives are identified.[46]

In the southern limits of the Wildlife Refuge area of Monastery of Retha and Monastery of Loggos, at the western ridges of Mt Makrinoros, CCS2 base-case crosses the protected area at its westernmost boundaries, west of Monastery of Retha. Alternative CCS2-Alt1 (Menidi) crosses the same Wildlife Refuge Area from the other side of the monastery (and the easternmost boundaries of the protected area). The starting point of this set of alternatives lies SE of Agia Triada settlement, Municipality of Amfilochia (close to KP 112 of CCS2 base-case). The ending point lies close to Marlesi settlement, Municipality of Amfilochia (close to KP 126 of CCS2 base-case).

Investigated alternatives in this area, are presented in Figure 7-26 (see Section 15.1.3 - Alternatives Map).

[46]These alternatives include the route that was presented in the Scoping Report as base-case and a new route that resulted from optimization of the latter route.



Prepared by: ASPROFOS, 2022.

Figure 7-26 Alternative Routes at Menidi Area for CCS2 – West Greece Pipeline Section.

7 A.5.10.2. DESCRIPTION OF BASE-CASE

The section of CCS2 considered (CCS2_Menidi-BC) is approximately 14 km from the starting point running parallel to the coastline of Amvrakikos Gulf west of Retha Monastery on the west ridges of Mt Makrinoros at the westernmost boundaries of the Wildlife Refuge of "Iera Moni Retha and Iera Moni Loggos" before reaching the end point.

Regarding environmental sensitivities, this route crosses mainly through Mixed Forests (32%) and Sclerophyllous vegetation (23.5%) (based on CLC 2018 data). Twenty-eight (28) avifauna and 1 mammal species of conservation interest have been reported in the study area (based on 2009 Greek Red List data). In general, most of the route passes through lowland natural forest areas at the western foothills of Mt Makrinoros, whilst the rest through agricultural fields. One rather major river

is crossed (R. Mantani). The general character of the area is natural environment with limited, traditional agricultural activity. More specifically, regarding protected areas, Amvrakikos Gulf and its corresponding protected areas lie outside the study area. The route is somewhat parallel to the westernmost limit of the Wildlife Refuge, avoiding most of it, crossing only a small area (for approximately 3.5 km) near the Ionia Odos highway. Additionally, the area crosses the National Park of Amvrakikos (Zone C) for approximately 13.5 km.

Regarding socioeconomic sensitivities and development, this alternative crosses mainly through areas principally occupied by agriculture, with significant areas of natural vegetation (18.5%), olive groves (14%), and to a smaller percentage, complex cultivation patterns (6%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development close to road networks and few settlements. More specifically, 4 settlements are located within the study area; 2 SW of the route (Agia Triada 450 m and Eleochori 650 m) and 2 to the NE of the route (Lagada 220 m and Kastriotisa 550 m). It is noted that the alternative crosses 14 km through the H/C exploration block of Arta-Preveza. It should be noted that according to national plan for tourism, the area is engaged with an area designated for developing tourism with potential for development of alternative forms of tourism.

Regarding cultural heritage, no engagement has been identified.

Regarding administrative jurisdiction, the alternative crosses one (1) Municipality (Amfilochia), one (1) R.U. (Etoloakarnania) and one (1) Region (W. Greece).

7 A.5.10.3. DESCRIPTION OF ALTERNATIVE CCS2_MENIDI-ALT1

The section of CCS2 considered (CCS2_Menidi-Alt1) is approximately 20 km from the starting point passing east of Retha Monastery on the central ridges of Mt Makrinoros, at the easternmost boundaries of the Wildlife Refuge of “Iera Moni Retha and Iera Moni Loggos” before reaching the ending point.

Regarding environmental sensitivities, this alternative crosses mainly through Broad-leaved or Mixed Forests (33% and 16%, respectively) and Sclerophyllous vegetation (15.5%) (based on CLC 2018 data). Twenty-eight (28) avifauna and 1 mammal species of conservation interest have been reported in the study area (based on Greek Red List 2009 data). Almost the entire route passes through the central forested ridges of Mt Makrinoros, through the Wildlife Refuge of Retha and Loggos Monasteries, whilst only a small part through agricultural fields. One rather major river is crossed (R. Mantani). The general character of the area is that of natural environment with very limited, traditional agricultural

activity. More specifically, regarding protected areas, Amvrakikos Gulf and its corresponding protected areas lie way outside the study area. The route crosses the Wildlife Refuge for approx. 10 km through largely unfragmented natural areas close to the Ionia Odos highway. Additionally, the area crosses for approximately 16.5 km of the National Park of Amvrakikos (Zone C).

Regarding socioeconomic sensitivities and development, this alternative crosses mainly through olive groves (20.5%), and to a smaller percentage, through areas principally occupied by agriculture, with significant areas of natural vegetation (15.5%) (based on CLC 2018 data). In general, this alternative engages remote areas of no economic development with almost no proximity to road network and proximity to only one settlement. More specifically, 4 settlements are located within the study area, 1 SW of the route (Kastriotisa 750 m) and 3 to the NE of the route (Valmada 350 m, Eleofito 1000 m, and Katharovouni 720 m). It is noted that the alternative crosses through the H/C exploration block of Arta-Preveza for 20 km. It should be noted that, according to the national plan for tourism, the area is engaged with an area designated for developing tourism with potential for development of alternative forms of tourism (B2).

Regarding cultural heritage, no engagement has been identified.

Regarding administrative jurisdiction, the alternative crosses one (1) Municipality (Amfilochia), one (1) R.U. (Etoloakarnania) and one (1) Region (W. Greece).

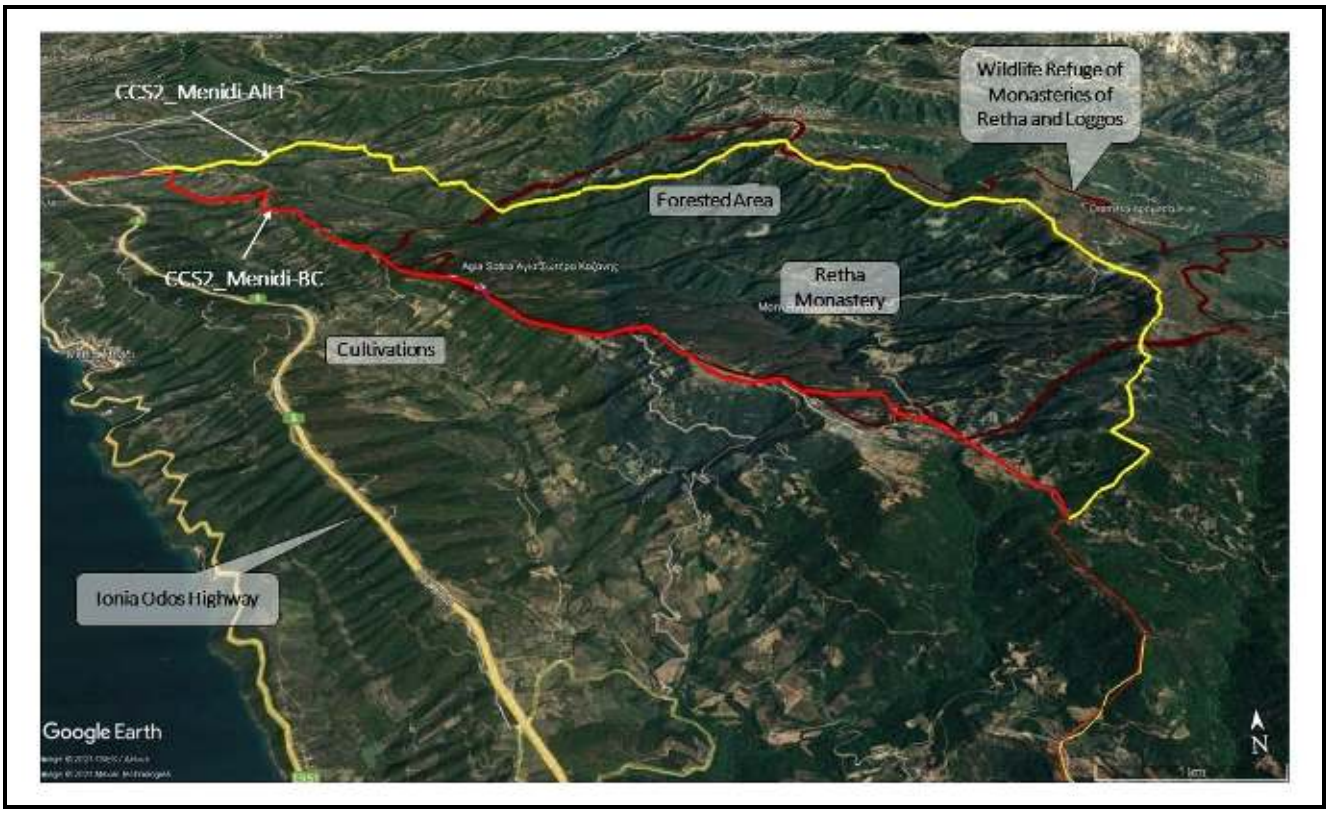
7 A.5.10.4. ALTERNATIVES ASSESSMENT

The main differences between these two alternatives are the following:

- Wildlife refuge area of Retha and Loggos Monasteries. CCS2_Menidi-Alt1 crosses the protected area for approximately 6.5 km more than CCS2_Menidi-BC; even more significant is the fact that the alternative passes through largely unfragmented natural areas in the central ridges of Mt. Makrinoros hosting the protected area;
- Forest areas. Based on CLC 2018 data, CCS2_Menidi-Alt1 crosses forest area for approximately 10 km (48.5%), whilst CCS2_Menidi-BC for approximately 5.5 km (38.5%). In general, the naturalness of CCS2_Menidi-Alt1 is very high in comparison to CCS2_Menidi-BC.

Table 7-11 summarizes the criteria where the alternatives present differences that play a significant role and are important in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.8.

Based on the above, CCS2_Menidi-BC is the preferable solution. Figure 7-27 supports the main arguments of this selection.



Prepared by: ASPROFOS, 2022.

Figure 7-27 Base-case Selection for Menidi Area.

Table 7-11 High Level Comparison Matrix of Alternatives in the Area of Menidi (WR of Monasteries Retha and Loggos).

General Parameter	CCS2_Menidi-BC	CCS2_Menidi-Alt1
Protected Areas	Wildlife Refuge Area of Retha & Logos Monasteries is crossed for 3.8 km, as well as Zone C of National Park of Amvrakikos for 13.5 km	Wildlife Refuge Area of Retha & Logos Monasteries is crossed for 10 km, as well as Zone C of National Park of Amvrakikos for 16.5 km
Biodiversity Hotspots	Most of the route passes through lowland natural forest areas at the western foothills of Mt Makrinoros, whilst the rest through agricultural fields. Proximity to Amvrakikos Gulf and corresponding protected areas is noted. The route is parallel to the	Almost the entire route passes through the central forested ridges of Mt Makrinoros, through the Wildlife Refuge of Retha and Loggos Monasteries, whilst only a small part through agricultural fields. Most prominent features in the area is R.

General Parameter	CCS2_Menidi-BC	CCS2_Menidi-Alt1
	westernmost limit of Wildlife Refuge. Ionia Odos highway is also almost parallel to the alternative. Most prominent features in the area is Amvrakikos Gulf, Ionia Odos, WR of Retha and Loggos Monasteries, and Mt Makrinoros. The general character of the area is that of natural environment with limited, traditional agricultural activity. Alternative crosses forests for ~5.5 km, in total.	Mantani and Mt Makrinoros which host the WR. The general character of the area is that of natural environment with very limited, traditional agricultural activity. Alternative crosses forests for ~ 10 km, in total.
Social Sensitivities	38% of the route crosses through agricultural areas whilst 62% from natural or semi-natural ones.	36% of the route crosses through agricultural areas whilst 64% from natural or semi-natural ones.
Economic Development	Basecase engages areas of limited economic development, close to road networks and few settlements.	Alternative engages remote areas, of no economic development; almost no proximity to road network; limited proximity to only one settlement.

Prepared by: ASPROFOS, 2022.

7 A.5.11. MARGARITI ALTERNATIVES

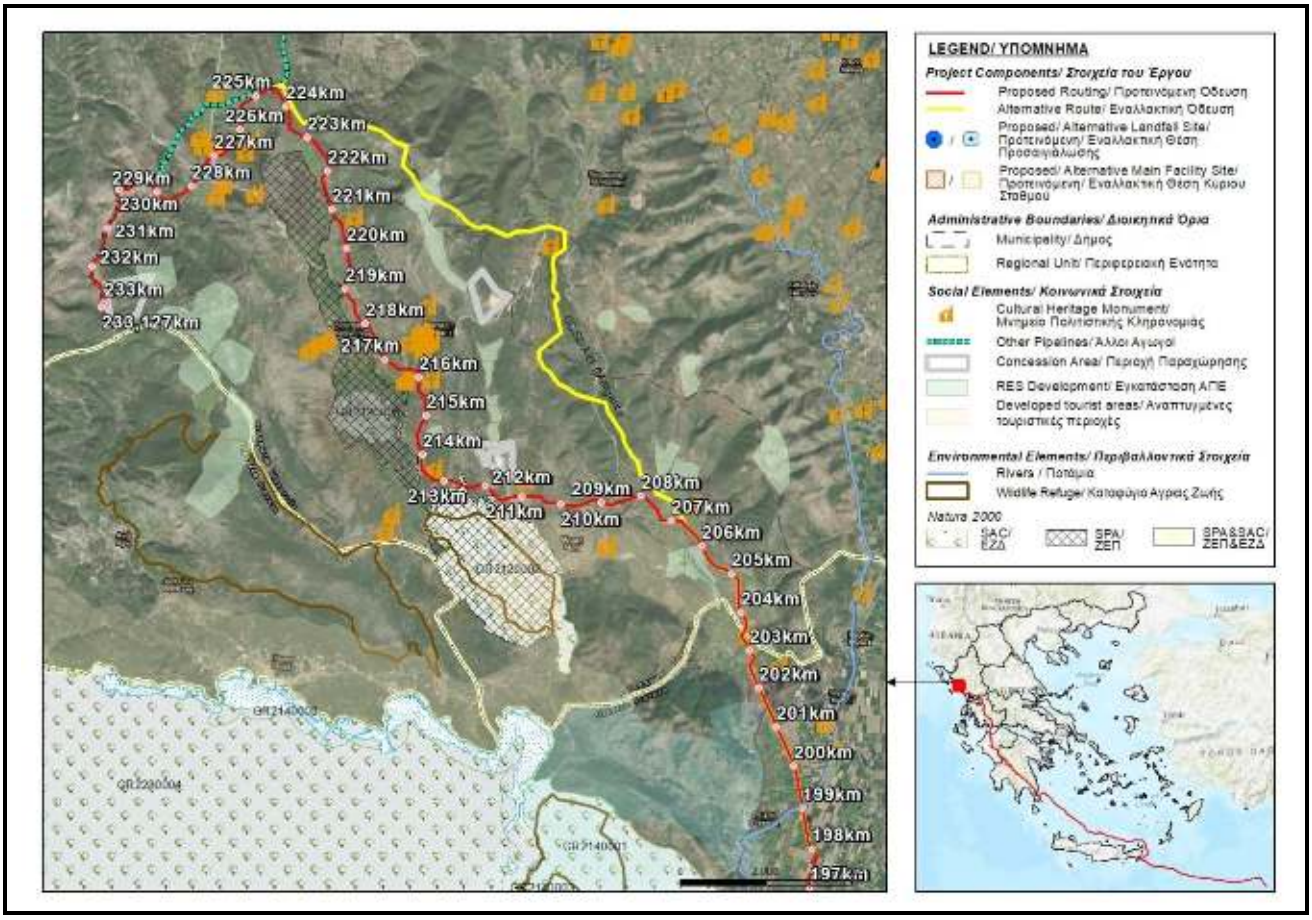
7 A.5.11.1. OVERVIEW

In the broader area of Margariti, two (2) feasible alternatives are identified crossing the broader area of Margariti marshlands and the valley formed between the mountain ranges of Parga and Paramythia.[47]

The starting point of these alternatives lies close to KP 198 of CCS2 base-case W of Kastri settlement, Municipality of Parga. The ending point is close to KP 225 of CCS2 NW of Karteri settlement, Municipality of Igoumenitsa. CCS2 Margariti base-case passes west of Kipseli settlement, whilst CCS2 Alt1 (CCS1_Margariti-Alt1) passes east.

Investigated alternatives in this area, are presented in Figure 7-28 (see Section 15.1.3 - Alternatives Map).

[47]These alternatives include the route that was presented in the Scoping Report as base-case and a new route that resulted from optimization of the latter route.



Prepared by: ASPROFOS, 2022.

Figure 7-28 Alternative Routes at Margariti Area for CCS2 – West Greece Pipeline Section.

7 A.5.11.2. DESCRIPTION OF BASE-CASE

The section of CCS2 considered (CCS2_Margariti-BC) is approximately 29 km from the starting point, passing west of Kipseli settlement, Municipality of Parga, and running parallel to the marshlands of Kalodiki, Margariti and Karteri, before reaching the end point.

Regarding environmental sensitivities, this route crosses mainly through Sclerophyllous vegetation (16%), Natural Grasslands (8.5%) and Inland Marshes (3%) (based on CLC 2018 data). Thirty-six (36) avifauna, 2 mammals and 1 fish species of conservation interest have been reported in the study area (based on Greek Red List 2009 data). Most of the route passes through wet meadows in the broader area of Margariti marshlands, whilst the rest passes through forest areas. The route runs parallel for some extent to the Provincial Road Preveza-Igoumenitsa. Most prominent features in the area are

the Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. One rather major river is crossed (R. Vouvos).

Regarding protected areas, the route crosses for approximately 140 m the Natura 2000 sites GR2120006 (SAC) *Marshlands of Kalodiki, Margariti, Karteri and Lake Prontani* and GR2120002 (SPA) *Marshland of Kalodiki* (the two areas are overlapping) at their eastern limits. Wildlife Refuge of Marshland of Kalodiki lies 500 m to the W. The route crosses for approximately 1150 m the Landscape of Outstanding Natural Beauty of "R. Acherontas and Nekromantion". Almost half of the route lies on the western avifauna migration corridor. The route crosses IBA "Lake of Kalodiki, Marshes of Margariti and Karteri" for 3.2 km.

Regarding socioeconomic sensitivities and development, this alternative crosses mainly agricultural areas (64%), namely Non-irrigated arable land (25%), Permanently irrigated land (18%), Areas principally occupied by agriculture with significant areas of natural vegetation (12%), and to a smaller percentage, Complex cultivation patterns (6%) and Olive groves (3%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development close to road networks and few settlements. Mostly annual crops are cultivated; there is very limited quarry activity. Ten (10) settlements are located within the study area; seven (7) SW of the route (Themelo 1000 m, Tzara 150 m, Spatharei 66 m, Morfi 780 m, Kalodiki 480m, Katavothra 650 m, and Milokokkia 911 m) and 3 to the NE (Koroni 590 m, Margariti 570 m, Palaiokastro 325 m).

It is noted that the route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 7.77 km (25.49%), through Areas of Special Uses for 0.39 km (1.27%) and for 22.32 km (73.24%) through Areas of Building Control - Check ("PEPD") in total and 29 km through the H/C exploration block of Ioannina. It should be noted that according to the national plan for tourism, the route crosses for approximately 1 km through areas designated as "Developed Tourism" according to the national plan for tourism; however, no major touristic establishments were identified.

The study area hosts ten (10) RES projects. Most importantly, the broader area hosts the facilities of the Poseidon Pipeline Project at Florovouni where the EastMed project ends.

Regarding cultural heritage, the pipeline crosses Acheron river east of Themelon settlement, and according to MD ΥΠΠΕ/ΑΡΧ/Α/Φ31/37633/74/22.12.1976 (GG 7/Β/13.01.1977), the riverbed of Acheron and its tributaries, Kokytos and Vouvopotamos, are declared sites of particular historical interest and natural beauty. The pipeline crosses this area at two points of approximately 72 m length in total. In addition, according to officially published data and based on the results of public

consultation so far with the archaeological authorities, there are ten (10) more declared archaeological sites (mainly monuments and temples) and five (5) sites of archaeological interest located within the study area, i.e. within 1 km from the pipeline route.

Regarding administrative jurisdiction, the alternative crosses two (2) municipalities (Igoumenitsa, Parga), two (2) Regional Units (Preveza, Thesprotia) and one (1) Region (Epirus).

7 A.5.11.3. DESCRIPTION OF CCS2_MARGARITI-ALT1

The section of CCS2 considered (CCS2_Margariti-Alt1) is approximately 27 km from the starting point passing east of Kipseli settlement, Municipality of Parga, and south-west of Paramythia settlement, Municipality of Souli, south of Lake Prontani, before reaching the end point.

Regarding environmental sensitivities, this alternative passes mainly through Sclerophyllous vegetation (50%), Natural Grasslands (6%) and Inland Marshes (3%) (based on CLC 2018 data). Thirty-six (36) avifauna, two (2) mammals and one (1) fish species of conservation interest have been reported in the study area (based on Greek Red List 2009 data). Almost half of the route passes through agricultural areas in the broader area of Mt Paramythia and the rest through forest areas. Most prominent features in the area are Mt Paramythia and downhill from the route, the plain of Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. One rather major river is crossed (R. Vouvos).

Regarding protected areas, the route passes approximately 650 m E of the Natura 2000 site GR2120006 (SAC) Marshlands of Kalodiki, Margariti, Karteri and Lake Prontani at its northern limits. The route crosses the Landscape of Outstanding Natural Beauty of “R. Acherontas and Nekromantion” for approximately 1,150 m. Almost half of the route lies on the western avifauna migration corridor. The route crosses IBA "Lake of Kalodiki, Marshes of Margariti and Karteri" for 0.5 km.

Regarding socioeconomic sensitivities and development, this alternative crosses through agricultural areas for 41.5%, namely Permanently irrigated land (16%), Non-irrigated arable land (11%), Areas principally occupied by agriculture, with significant areas of natural vegetation (6%), and to a smaller percentage, Complex cultivation patterns (2%) and Olive groves (2%) (based on CLC 2018 data). In general, this alternative engages areas of limited economic development close to road networks and few settlements. Mostly annual crops are cultivated, and there is very limited quarry activity. Five (5)

settlements are located within the study area; 3 SW of the route (Themelo 1000 m, Tzara 150 m, Spatharei 530 m) and 2 to the NE (Koroni 590 m, Karvounari 580 m).

It is noted that the route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 3.77 km (16.64%) and for 18.88 km (83.36%) through Areas of Building Control - Check ("PEPD"), in total; also for 27 km, through the H/C exploration block of Ioannina.

The study area hosts ten (10) RES projects, one of which (a planned 50 MW photovoltaic facility with acquired installation permit) is crossed by the alternative for approximately 800 m. Most importantly, the broader area hosts the facilities of Poseidon Pipeline Project at Florovouni, where the EastMed project ends.

Regarding cultural heritage, the pipeline crosses the Acheron river east of Themelon settlement, and according to ΜΔ ΥΠΠΕ/ΑΡΧ/Α/Φ31/37633/74/22.12.1976 (GG 7/Β/13.01.1977) the riverbed of Acheron and its tributaries, Kokytos and Vouvopotamos, are declared sites of particular historical interest and natural beauty. The pipeline crosses this area at two points of approximately 72 m length in total. In addition, according to officially published data and based on the results of the public consultation with archaeological authorities to date, there are 2 more declared archaeological sites and 2 sites of archaeological interest located within the study area, i.e. within 1 km from the pipeline route.

Regarding administrative jurisdiction, the alternative crosses three (3) municipalities (Igoumenitsa, Parga, Souli), two (2) Regional Units (Preveza, Thesprotia) and one (1) Region (Epirus).

7 A.5.11.4. ALTERNATIVES ASSESSMENT

The main differences between these two alternatives are the following:

- Natural areas. Although, CCS2_Margariti-BC crosses a protected Natura 2000 marshlands site, it passes through agricultural areas, on the edges of the protected features, parallel for some extent to Provincial Road Preveza-Igoumenitsa. On the other hand, CCS2_Margariti-Alt1 does not cross any protected feature but passes through more natural areas, namely it passes for approximately 9 km more through Sclerophyllous vegetation, than CCS2_Margariti-BC. Additionally, it involves more construction works on hilly areas (Mt Paramythia);
- Spatial planning. Both routes are engaged with spatial planning provisions, including Areas of Special Protection ("PEP"), Areas of Special Uses or Areas of Building Control - Check ("PEPD"), (CCS2_Margariti-BC for 31 km and CCS2_Margariti-Alt1 for 22 km, in total). CCS2_Margariti-BC

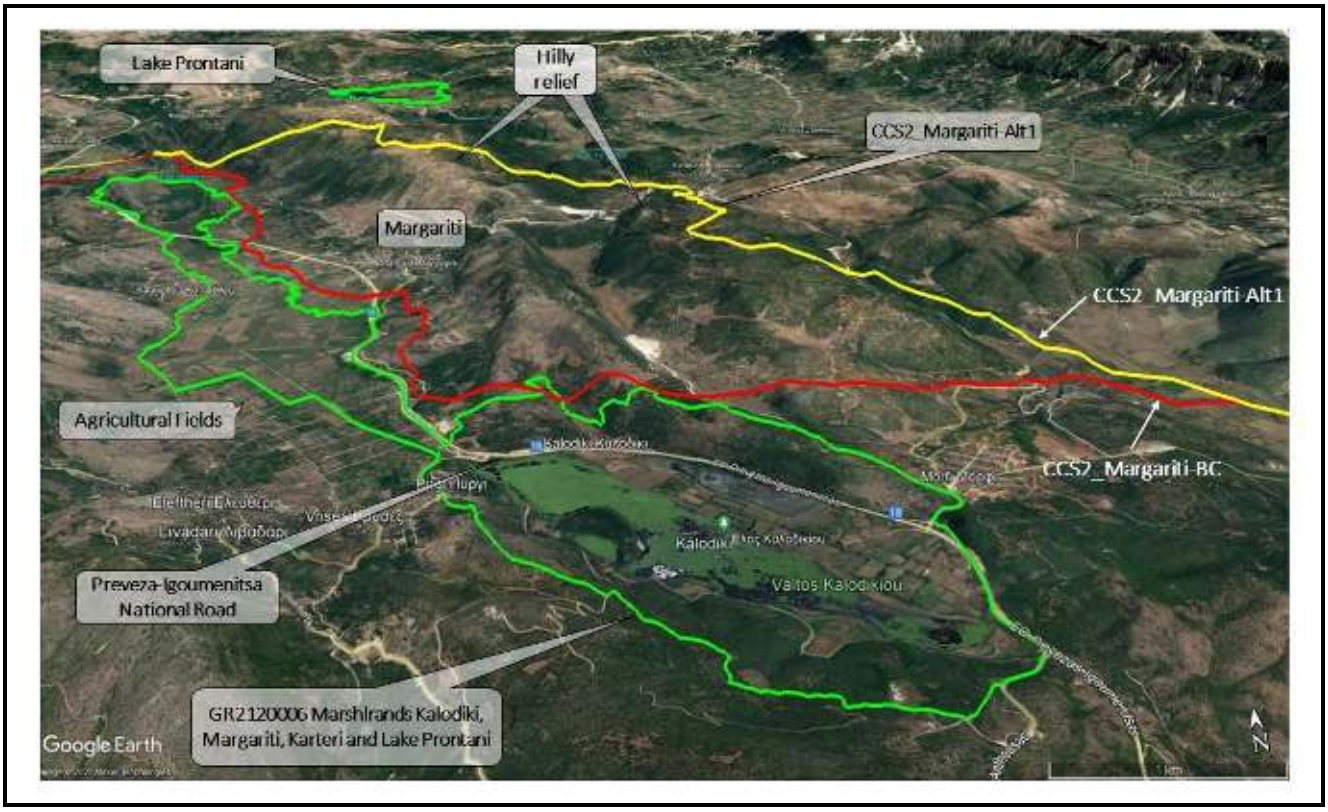
passes for 0.985 km through areas designated as "Developed Tourism" according to the national plan for tourism; however, no major tourism activity is recorded;

- Engaged settlements. Within the study area for CCS2_Margariti-BC and CCS2_Margariti-Alt1 lie 10 and 5 settlements, respectively;
- Cultural heritage. Both alternatives cross the R. Acherontas cultural heritage site. In total, within the study area for CCS2_Margariti-BC and CCS2_Margariti-Alt1 lie 19 and 6 sites of cultural heritage interest (incl. declared or not and religious sites), respectively. However, none of the 19 resources of CCS2_Margariti-BC is located within 200 m from the pipeline axis (a distance considered as adequate to minimize impacts to cultural heritage resources), whilst 1 resource of CCS2_Margariti-Alt1 lies approximately 150 m from the pipeline axis; and
- Planned developments. The main difference between the two alternatives is that CCS2_Margariti-Alt1 crosses a planned REP project (P/V) for approximately 800 m.

Table 7-12 summarizes the criteria where the alternatives present differences that play a significant role and are important in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.9.

Based on the above, CCS2_Margariti-BC is the preferable solution. Figure 7-29 supports the main arguments of this selection, illustrating the intense relief in some areas of the alternative and the engagement of agricultural areas along the basecase.

It should be highlighted, that upon selection of CCS2_Margariti-BC, during the ongoing FEEED of the project, the area was investigated in great detail regarding geotechnical considerations in order to identify potential areas of further optimization. Most significant of the geotechnical issues documented are presented in this document (see also Appendix 3 - FEED GEOTECHNICAL ASSESSMENT FOR MARGARITI AREA.



Prepared by: ASPROFOS, 2022.

Figure 7-29 Base-case Selection for Margariti Area.

Table 7-12 High Level Comparison Matrix of Alternatives in the Area of Margariti.

General Parameter	CCS2_Margariti-BC	CCS2_Margariti -Alt1
Biodiversity hotspots	Most of the route passes through wet meadows in the broader area of Margariti marshlands, whilst the rest through forest areas. Proximity to 3 marshlands and the corresponding protected area is noted. The route runs parallel to some extent to a Provincial Road (Preveza-Igoumenitsa). Most prominent features in the area is the Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. The basecase crosses bushlands for 4.25 km	Almost half of the route passes through agricultural areas in the broader area of Mt Paramythia, whilst the rest through forest areas. Most prominent feature in the area is Mt Paramythia and downhill of the route, the plain of Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. The alternative crosses bushlands for 13.5 km

General Parameter	CCS2_Margariti-BC	CCS2_Margariti -Alt1
Protected Areas	Overlapping GR2120002 (SAC) & GR2120006 (SPA) are crossed for 100 m.	No Intersection with Natura Areas
Land Uses	64% of the route crosses through agricultural areas whilst 27% from natural or semi-natural ones (9% through other land uses).	41.5% of the route crosses through agricultural areas whilst 58.5% from natural or semi-natural ones.
Development plans	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 7,77 km (25.49%), through Areas of Special Uses for 0.39 km (1.27%) and for 22.32 km (73.24%) through Areas of Building Control - Check ("PEPD"), in total. 0.985 km through areas designated as of "Developed Tourism" according to national plan for tourism.	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 3.77 km (16.64%) and for 18.88 km (83.36%) through Areas of Building Control - Check ("PEPD"), in total.
Population Centres	10 settlements are identified within the study area (Themelo 1000 m, Tzara 150 m, Spatharei 66 m, Morfi 780 m, Kalodiki 480m, Katavothra 650 m, Milokokkia 911 m, Koroni 590 m, Margariti 570 m, Palaiokastro 325 m)	5 settlements are identified within the study area (Themelo 1000 m, Tzara 150 m, Spatharei 530 m, Koroni 590 m, Karvounari 580 m)
Cultural heritage criteria	11 declared archaeological sites are located within the study area. 1 is crossed (R. Acheron) 5 identified cultural heritage resources and 3 religious sites	3 declared archaeological sites are located within the study area. 1 is crossed (R. Acheron) 2 identified cultural heritage resources and 1 religious site
Economic Development	10 RES project are located within the study area (1 at 30 m, 1 at 210 m, 1 at 280 m, 2 at 290 m, 3 at 320 m, 2 at 600 m)	1 RES project is crossed for 793 m whilst 9 more are located within the study area (1 at 30 m, 1 at 40 m, 1 at 290 m, 2 at 370 m, 2 at 440 m, 2 at 820 m, 1 at 851 m)

Prepared by: ASPROFOS, 2022.

7 A.6. ALTERNATIVES ASSESSMENT FOR MAIN FACILITIES

This section presents the alternatives for the main facilities of the EastMed Pipeline Project. As summarized in Table 7-2, the alternative site locations evaluated combine a total of (9) different sites as follows[48]:

- For the Compressor and Metering Stations at Crete (CS2/MS2-CS2/MS2N), three alternative locations were investigated (see section 7 A.6.1);
- For the Compressor Station at Peloponnese (CS3), three alternative locations were investigated (see section 7 A.6.2); and
- For the Metering, Pressuring and Heating Station (MS4/PRS4) at Peloponnese, three alternative locations were investigated (see section 7 A.6.3).

7 A.6.1. CS2/MS2-CS2/MS2N ALTERNATIVES

In Crete, three alternative locations for the compressor station were investigated, corresponding to three alternative landfall locations:

- Base-case solution of station CS2/MS2-CS2/MS2N in the area of Atherinolakkos;
- Alternative solution of station CS2a/MS2a-CS2a/MS2aN in the area of Livari; and
- Alternative solution of station CS2b/MS2b-CSb/MS2bN in the Skinia area.

The investigated solutions are presented in the figure below.

[48]The alternatives presented in the Scoping Phase are still applicable and viable, since no new design data have been acquired. The alternatives are presented anew, enriched with some environmental and socioeconomic information.

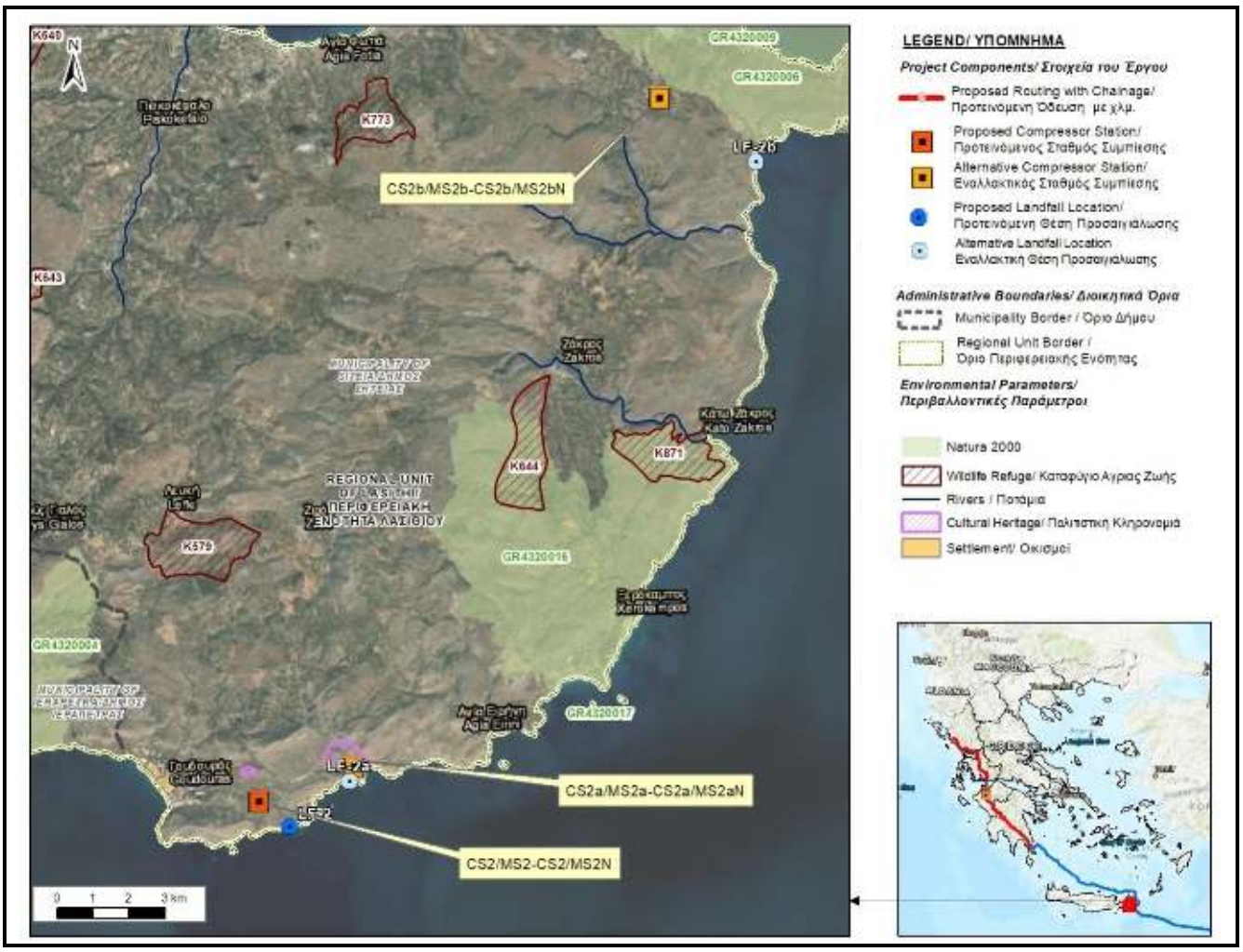


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Figure 7-30 Alternative locations for CS2/MS2-CS2/MS2N station investigated in Crete.

7 A.6.1.1. DESCRIPTION OF CS2/MS2-CS2/MS2N STATION LOCATION (BASE CASE)

CS2/MS2-CS2/MS2N station is located in the area of Atherinolakkos in the Municipal Entity of Lefki of the Municipality of Sitia, in the south-eastern part of Crete, 35 km east of Ierapetra and 22 km south of Sitia. It occupies an area of 168905 m². The nearest settlement is Goudouras, about 2 km to the west.

The broader area is characterized by gentle slopes and is covered by pastures, barren areas and plots of arable land, mainly with permanent crops such as olive groves. Specifically, the plot occupies

almost entirely Olive groves (95%) (according to CLC and Satellite images). No engagement exists with protected areas (closest one at approximately 4.5 km).

Regarding air quality and noise levels, the presence of Atherinolakkos Power Plant (550 m to the E) has no impact on the quality of these parameters.

Regarding landscape, the area is located on flat Olive groves between hilly ranges to the NW and Cretan Sea to the SE; surrounding natural areas are covered by phrygana vegetation. Despite the nearby presence of Atherinolakkos Power Plant, the aesthetic value of the landscape is not decreased. As such, landscape absorption capacity is considered moderate. Gentle slopes and the overall morphology of the plot would require small to moderate earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

It is noted that Atherinolakkos Power Plant and the small fishing shelter, being the only anthropogenic presence in the area, do not seem to impose significant pressure on the natural environment.

The location of the CS2/MS2-CS2/MS2N station is located in a designated “Zone of Agricultural Land”, in the northern boundary of Atherinolakkos Power Plant. The area of the Power Plant is designated “Heavy Industry Area” according to the Plan of Spatial and Housing Organization of Open City (SXOAAP) of Lefki (*GG 539 / AAP / 2009*). Only Goudouras settlements is noted whilst no touristic development (apart from the fishing shelter) was recorded.

The site is adjacent to 3 RES Projects: 1 wind farm 380 to the West (Status: Production Permit); 1 wind farm 570 m to the East (Status: Under Evaluation); and 1 solar thermal 200 to the NE (Status: Installation Permit).

Regarding cultural heritage, 3 declared sites are within the study area: “Kastri of Goudoura” at 690 m and “Dasonari of Lefki” at 590 m, to the North; "Favolies and Livari of Agia Triada" at 1900 m to the Southeast.

7 A.6.1.2. DESCRIPTION OF CS2A/MS2A-CS2A/MS2AN STATION LOCATION

CS2a/MS2a-CS2a/MS2aN station is located in the Livari area, in the Municipal Entity of Lefki of the Municipality of Sitia, in the south-eastern part of Crete, 36.5 km east of Ierapetra and 21 km south of Sitia. It occupies an area of 168905 m². The nearest settlement is Agia Triada, about 3 km north.

The broader area is characterized by sparse phrygana vegetation with small parts of crops, mainly olive groves, as well as pastures. Specifically, the plot occupies phrygana vegetation for about 80%

(according to CLC and Satellite images). No engagement exists with protected areas (closest one at approximately 4 km). However, the plot lies in front of the gorge formed by "Kato Steno" stream discharging to the sea.

Regarding air quality and noise levels, the presence of Atherinolakkos Power Plant (1300 m to the W) has no impact on the quality of these parameters.

Regarding landscape, the area is located on Phrygana vegetation with few Olive groves in the entrance of a gorge. The area is secluded by Atherinolakkos Power Plant and Fishing shelter, by the surrounding hills. Landscape has a high aesthetic value, but the plot is not visible by any sensitive receptor. As such, landscape absorption capacity is considered moderate. Given the overall morphology of the plot, moderate to high earthworks are expected to be required for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

It is noted that Atherinolakkos Power Plant and the small fishing shelter, being the only anthropogenic presence in the broader area, do not seem to impose significant pressure on the natural environment.

Alternative plot is located in designated Grazing areas and small parts on "Zone of Agricultural Land", according Lefki SXOOAP (*GG 539 / AAP / 2009*). Only Agia Triada settlements is noted whilst no touristic development (apart from the fishing shelter) was recorded.

This alternative is adjacent to 3 RES Projects: one (1) wind farm 340 to the West (Status: Under Evaluation); one (1) wind farm 1000 m to the East (Status: Production Permit); and one (1) solar thermal 570 to the NW (Status: Installation Permit).

Regarding cultural heritage, plot is located within "Favolies and Livari of Agia Triada" site.

7 A.6.1.3. DESCRIPTION OF CS2B/MS2B-CS2B/MS2BN STATION LOCATION

CS2b/MS2b-CS2b/MS2bN station is located in the area of Skinias, in the local community of Zakros in the Municipality of Sitia. It occupies an area of 244728 m². The broader area is characterized mainly by bushlands with meadows and pastures.

The broader area is characterized by Sclerophyllous vegetation and a complex surface water system (of small streams). Specifically, the plot occupies agricultural lands (mainly olive groves) for about 80% (according to CLC and Satellite images).

The Natura 2000 area "Vorio Anatoliko Akro Kritis Dionisades" (North-east end of Crete Dionysades) (GR*4320006*) is located about 100 m to the east. In addition, the CS2b/MS2b station is located within the Sitia Natural Geological Park, which is a world-class park and is under UNESCO protection. The World Geological Park of Sitia is located at the easternmost tip of Crete, in the Municipality of Sitia. It contains abundant fossils of mammals of the Pleistocene era (2,588,000 to 11,700 years, the final part of the Quaternary Period). The discovery of three fossils of the elephant species *Deinotherium giganteum* in the area, the intricate cave complex and the coastlines around Zakros are characterised as unique to Crete. The abundant karst structures of the limestone environment of the area are its best known feature. More than 170 caves and many ravines are located in the area.

No anthropogenic pressures are identified in the area.

Regarding landscape, the area is located on a hilly mosaic of maquis vegetation and olive groves. It allows for an excellent view of the seascape to the E. Landscape's absorption capacity is considered low. The area is characterized by a gentle slope plateau of olive groves. Small to moderate earthworks are expected to be required for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

According to Itanos SXOOAP, the plot is located in an area "Outside Spatial Planning", where no heavy industry is allowed. 2 settlements are close to the alternative: Agkathis, approximately 1500 m NE, and Paleokastro, approximately 1400 m N.

This alternative is adjacent to 2 RES Projects: 1 wind farm 1400 to the West and 1 solar thermal 160 to the SW (both with Production Permit).

7 A.6.1.4. ALTERNATIVES ASSESSMENT

From the point of view of environmental, social, economic and cultural heritage characteristics as well as based on the information available at this stage of the study, CS2a/MS2a-CS2a/MS2aN and CS2b/MS2b-CS2b/MS2bN alternatives include significant limitations which are:

- Cultural Heritage. The CS2a/MS2a-CS2a/MS2aN solution is placed in declared archaeological zone and installation of any facility might face permitting problems. It is also engaged with a gorge and a stream discharging to the sea; and
- Natural Environment. The CS2b/MS2b-CS2b/MS2bN solution is located within a pristine natural environment area. Apart from that, it is very close to a Natura 2000 site and within a UNSESCO Geopark of Sitia.

Therefore, **the CS2/MS2-CS2/MS2N base-case solution among the alternatives is the preferred solution** and is the proposed solution for the installation of a compressor and metering station in Crete.

Table 7-13 summarizes the criteria to which the alternatives present differences that play significant role, are important, in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.10.

Table 7-13 High Level Comparison Matrix of Alternatives for CS2/MS2-CS2/MS2N.

General Parameter	CS2/MS2-CS2/MS2N (Base Case)	CS2a/MS2a-CS2a/MS2aN	CS2b/MS2b-CS2b/MS2bN
Protected areas	No engagement.	No engagement.	Alternative is located within the Sitia Natural Geological Park, which is a world-class park and is under UNESCO protection.
Biodiversity Hotspots	The broader area is characterized by gentle slopes and is covered by pastures, barren areas and plots of arable land, mainly with permanent crops such as olive groves. Specifically, the plot occupies almost entirely Olive groves (95%)	The broader area is characterized by sparse phrygana vegetation with small parts of crops, mainly olive groves, as well as pastures. Specifically, the plot occupies phrygana vegetation for about 80% The plot lays in front of the gorge formed by "Kato Steno" stream discharging to the sea.	The broader area is characterized by Sclerophyllous vegetation and a complex surface water system (of small streams). Specifically, the plot occupies agricultural lands (mainly olive groves) for about 80%
Air Quality	Atherinolakkos Power Plant is located ~550 m to the E.	Atherinolakkos Power Plant is located ~1300 m to the W.	No pressures.
Noise Background	Atherinolakkos Power Plant is located ~550 m to the E, but the background noise is very low.	Atherinolakkos Power Plant is located ~1300 m to the W, but the background noise is very low.	No noise sources identified.
Landscape	A flat area of Olive groves between hilly ranges to the NW and SE Cretan Sea. Surrounding natural areas are covered by phrygana vegetation. Despite the nearby presence of Atherinolakkos Power Plant, the aesthetic value of the landscape is not decreased.	Phrygana vegetation with few Olive groves in the entrance of a gorge. The area is secluded by Atherinolakkos Power Plant and Fishing shelter, by the surrounding hills. High aesthetic value but not visible by any sensitive	Area located in a hilly mosaic of maquis vegetation and olive groves. Vantage view of the seascape to the E. Low absorption capacity.

General Parameter	CS2/MS2-CS2/MS2N (Base Case)	CS2a/MS2a-CS2a/MS2aN	CS2b/MS2b-CS2b/MS2bN
	Moderate absorption capacity.	receptor. Moderate absorption capacity.	
Morphology	Area located on a gentle slope plateau of olive groves. Small to moderate earthworks for levelling.	Area located on slopes of the "Kato Steno" stream delta. Moderate to high earthworks for levelling.	Area located on a gentle slope plateau of olive groves. Small to moderate earthworks for levelling.
Land Uses	95% on agricultural area (Olive groves) and 5% on natural-semi natural areas (phrygana vegetation)	20% on agricultural area (Olive groves) and 80% on natural-semi natural areas (phrygana vegetation)	83% on agricultural area (mainly Olive groves) and 17% on natural-semi natural areas (sclerophyllous vegetation)
Spatial planning and development provisions	According to Lefki SXOOAP, the facility is located on Zone of Agricultural Land. Atherinolakkos Power Plant is designated as Heavy Industry Zone.	According to Lefki SXOOAP, the facility is located on Grazing lands and few small sections on Zone of Agricultural Land.	According to Itanos SXOOAP, the facility is located on area Outside Spatial Planning, where no heavy industry is allowed.
Economic development	Presence of Atherinolakkos Power Plant is the only significant economic activity		No engagement.
Cultural Heritage	3 sites are located within the study area (Kastri of Goudoura at 690 m and Dasonari of Lefki at 590 m, to the North; "Favolies and Livari of Agia Triada" at 1900 m to the Southeast)	Facility is located within "Favolies and Livari of Agia Triada" archaeological site	No data available.

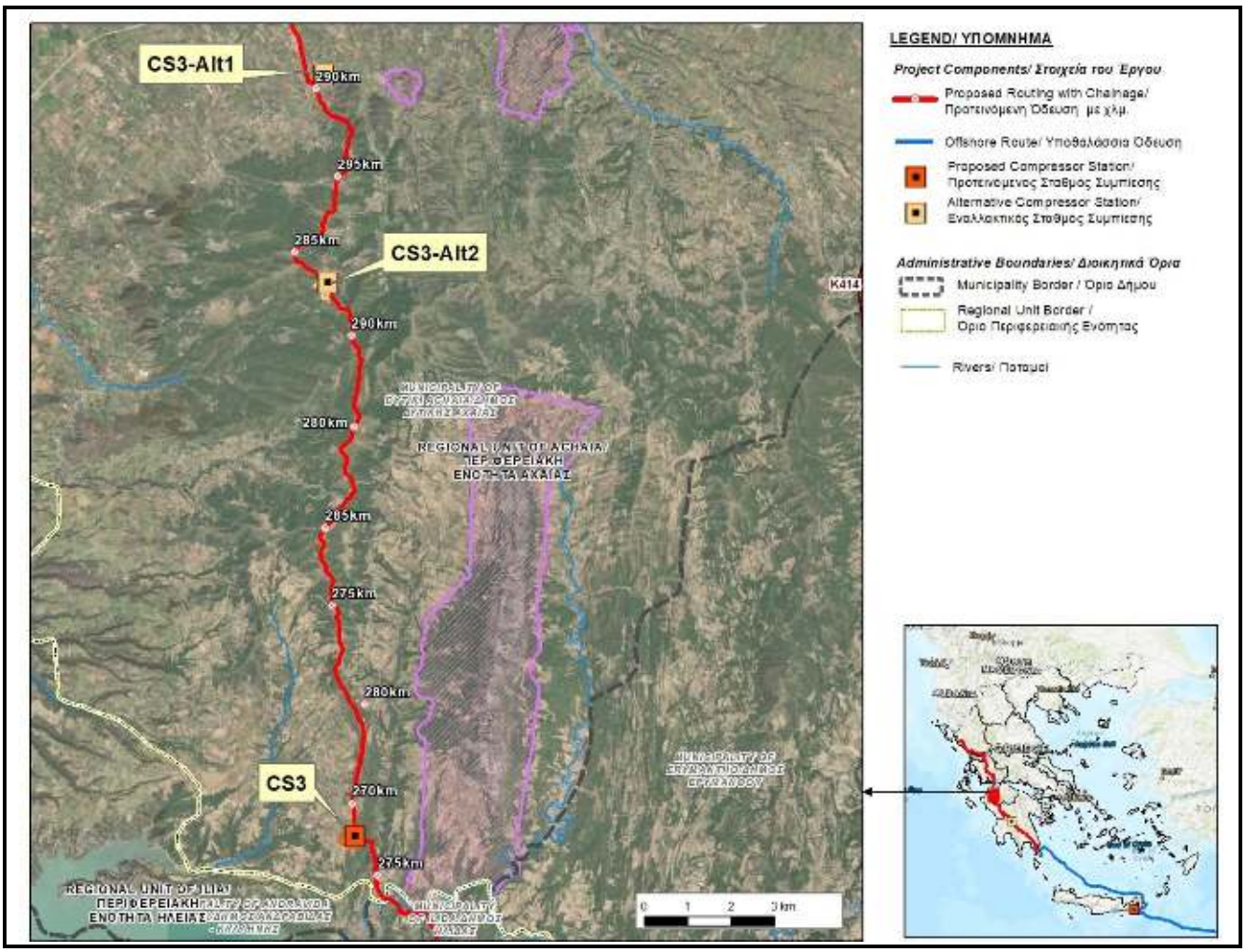
Prepared by: ASPROFOS, 2022.

7 A.6.2. CS3 ALTERNATIVES

In Peloponnese, three alternatives for the installation of a CS3 compressor station were considered:

- Base case CS3 (CS3-BC) compressor station in the area of Kato Velitses, M. of W. Achaia;
- Alternative CS3-Alt1 compressor station in the area of Lampreika, M. of W. Achaia; and
- Alternative CS3-Alt2 compressor station in the area of Vithoulka, M. of W. Achaia

Investigated alternatives are illustrated in the figure below.



Prepared by: ASPROFOS, 2022.

Figure 7-31 Alternative locations for CS3 station considered for Western Greece.

7 A.6.2.1. DESCRIPTION OF CS3 COMPRESSOR STATION LOCATION

The CS3 (base case) compressor station is located in the area of Kato Velitses, in the local community of Larissou, of the Municipality of Western Achaia of the regional unit of Achaia, in Peloponnese and occupies an area of 110365 m². The nearest settlement is Kato Velitses, at a distance of 1600 m to the north.

The broader area is characterized by agricultural land, mainly irrigated and non-irrigated land, as well as land with permanent crops such as olive groves. In the broader area there are also meadows and pastures as well as areas covered with sclerophyllous vegetation. Most cultivations are tree-crops

giving out a sense of semi-natural area. Specifically, the plot occupies entirely agricultural lands (according to CLC and Satellite images); however, it is noted that according to official forest data, the area occupies for almost 48% forest or forested areas. No engagement exists with protected areas (closest one at approximately 12 km).

Based on a 2020 study of MEE on exceeding of Limit Values[49], limited exceedance has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

No noise sources are identified within the study area.

Regarding landscape, as previously described, the area is located on agricultural area surrounded by a mosaic of agricultural and natural areas whilst most cultivations are tree-crops giving out a sense of semi-natural area. As such, the landscape absorption capacity is considered moderate in comparison to other options. Additionally, the area will require small earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

No spatial provisions are recorded. In total 3 settlements lie at distances greater than 1.5 km. No tourism development is noted, but proximity to the artificial lake of Pinios could potentially imply some tourist activity in the broader area. This alternative is adjacent to a 5 MW P/V development site (Status: Production Permit).

In the broader area of the compressor station, at a distance of 1.5 km is the declared archaeological site of Mount Skolis (HGG 817/B/2-6-2004).

7 A.6.2.2. DESCRIPTION OF CS3-ALT1 COMPRESSOR STATION LOCATION

The CS3-Alt1 compressor station is located in the area of Lampreika, in the local community of Dymi of the Municipality of Western Achaia of the regional unit of Achaia and occupies an area of 79385 m². The nearest settlement is Lampreika, approximately 0.5 km to the north.

The wider area is characterized by agricultural land, mainly irrigated and non-irrigated land, as well as land with permanent crops such as olive groves. The broader area also features meadows and pastures. Specifically, the plot occupies almost entirely agricultural lands (93%) (according to CLC and Satellite images); however, it is noted that according to official forest data, the area occupies for

[49] Annual Report on Atmospheric Quality, 2020. Available at https://ypen.gov.gr

almost 75% forest or forested areas. No engagement exists with protected areas (closest one at approximately 11 km).

Based on 2020 study of MEE (same for the other alternatives) on exceeding of Limit Values, limited exceedance has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

No noise sources are identified within the study area. Nevertheless, site is located in a more anthropogenic environment than any other option.

Regarding landscape, as previously described, the area is located on the foot of a mountainous forest. The remaining area is completely covered by agricultural crops and settlements. Many cultivations are tree-crops. As such, the landscape absorption capacity is considered high in comparison to other options. Additionally, the area will require small earthworks for levelling.

Regarding vulnerability to natural disasters, the area is located for approximately 50% within EL02RAK0008 area of high potential risk for flooding.

Regarding spatial provisions, the area is included in "Indicative broader zone of high priority agricultural land". In total four (4) settlements lie at distances greater than 0.5 km; in general, the area is surrounded by agricultural activity, close to population centres. No touristic development is noted. This alternative is adjacent to a 5 MW P/V site (Status: Production Permit).

In the broader area of the compressor station, at a distance of 1.6 km, there is a declared archaeological site of the ancient city of Kalydona.

7 A.6.2.3. DESCRIPTION OF CS3-ALT2 COMPRESSOR STATION LOCATION

The CS3-Alt2 compressor station is located in the area of Vithoulka, in the local community of Dymi of the Municipality of Western Achaia of the regional unit of Achaia in Peloponnese and occupies an area of 102,573 m². The nearest settlement is Pournari, approximately 2.8 km to the north.

The broader area is characterized by many hills and is covered mainly by sclerophyllous vegetation, as well as forested areas (bushlands) and meadows. Specifically, the plot occupies for most of its part agricultural lands (according to CLC and Satellite images); however, it is noted that according to official forest data, the area occupies for almost 25% forest or forested areas. No engagement exists with protected areas (closest one at approximately 12 km).

Based on 2020 study of MEE (same for the other alternatives) on exceeding of Limit Values (or target values), limited exceedance has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

No noise sources are identified within the study area

Regarding landscape, the area is located on a plateau at 550 m altitude, surrounded by mountainous forest. As such, the landscape absorption capacity is considered minimum in comparison to other options. Additionally, the area will require small to moderate earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

No spatial provisions are recorded. In total 3 settlements lie at distances greater than 1.5 km. No touristic development is noted, but proximity to artificial lake of Pinios could potentially imply some touristic activity in the broader area. This alternative is adjacent to a 5 MW P/V site (Status: Production Permit).

The closest declared archaeological site-monument (Monastery of Agios Dimitrios – HGG B' 476/1987) is located at a distance of approximately 1.5 km.

7 A.6.2.4. ALTERNATIVES ASSESSMENT

Based on the available information, there are no significant environmental, socio-economic and cultural heritage restrictions on all alternative sites considered for the installation of a compressor station in Western Greece.

From a natural environment point of view, Base-case CS3 is preferable than the others. CS3-Alt2 is in a more remote and isolated location (in a less anthropogenic environment) compared to CS3 (Base-case) and CS3-Alt1 solutions. CS3-Alt1 is less appropriate (based on available data) due mainly to the proximity to residential area while it's included in an area characterized as high productivity agricultural land; furthermore, the area presents flooding risk.

Therefore, the location of the CS3 compression station is the preferred solution and is the basic choice for the installation of a compression station in Continental Greece.

Table 7-14 summarizes the criteria to which the alternatives present differences that play significant role, or are important, in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.11.

Table 7-14 High Level Comparison Matrix of Alternatives for CS3.

Criteria	Base Case	Alternative CS3-Alt1	Alternative CS3-Alt2
Protected Areas	Closest protected area (GR2330002 SAC&SPA) is located at approx. 12 km	Closest protected area (GR2320011 SPA) is located at approx. 11 km	Closest protected area (GR2330022 SPA) is located at approx. 13 km
Biodiversity Hotspots	Plot is located in an area surrounded by a mosaic of agricultural and semi-natural (and natural) areas; close to the artificial lake of Pinios, in an otherwise seemingly completely undisturbed environment. According to Official Forest Maps, 53,373 m² (48%) are protected by forest legislation. Based on satellite images, forest or forested areas cover 0%.	Plot is located in an area surrounded by agricultural activity, close to population centers. According to Official Forest Maps, 60,177 m², 75.5% are protected by forest legislation. Based on satellite images, forest or forested areas cover 7%	Plot is located in an area surrounded by natural vegetation, mainly forests and forested areas (bushlands), in a seemingly completely undisturbed environment. According to Official Forest Maps, 26,879.45 m², approx. 26.21% are protected by forest legislation. Based on satellite images, forest or forested areas cover: 20%
Noise Background	No noise sources identified.	No significant noise sources identified. Nevertheless, site is located in a more anthropogenic environment than any other option.	No noise sources identified.
Landscape	Area located on agricultural area surrounded by a mosaic of agricultural and natural areas. Most cultivations are tree-crops giving out a sense of semi-natural area. Moderate absorption capacity, in comparison to other options.	Area located on the foot of a mountainous forest. The remaining area is completely covered by agricultural crops and settlements. Many cultivations are tree-crops. High absorption capacity, in comparison to other options.	Area located on a plateau at 550 m altitude, surrounded by mountainous forest. Minimum absorption capacity, in comparison to other options.
Morphology	Area located on a plane surface of agricultural land use. Small earthworks for leveling.	Area located on a plane surface of agricultural land use. Small earthworks for leveling.	Area located on a plane surface of agricultural land use and/ or grasslands. Small to moderate earthworks for leveling.

Criteria	Base Case	Alternative CS3-Alt1	Alternative CS3-Alt2
Vulnerability to Climate Change - Flooding Risk	No flood risk identified.	~50% is located within EL02RAK0008 flooding area	No flood risk identified.
Land Uses	100% on agricultural area.	93% on agricultural area and 7% on natural-semi natural areas (sclerophyllous vegetation)	81% on agricultural areas and 19% on natural-semi natural areas (4% on forests)
Spatial planning and development provisions	No spatial provision	Area included in "Indicative broader zone of high priority agricultural land".	No spatial provision
Population centers	No population centers in the broader area. 3 settlements are identified in the broader area (Kato Velitses at 1,600 m, Kalivakia at 2000 m and Portes at 2600 m))	No population centers in the broader area. 4 settlements are identified in the broader area (Lampreika at 550 m, Petrochori at 650 m, Pournari at 1200 m and Mirto at 1,200 m)	No population centers in the broader area. 4 settlements are identified in the broader area (Pournari at 2800 m, Krinos at 3,200 m, Petras at 4,000 m and Vithoulkas at 2,600 m)
Cultural Heritage	Basecase is located 1500 m from the closest Declared A.S. Proximity to declared A.S. "Santameri - Mount Skolis" gives ground to increased chance finding of cultural heritage resource.	Alternative is located 1100 m from the closest Declared A.S. Alternative is surrounded by numerous settlements with churches and cemeteries.	No engagement identified

Prepared by: ASPROFOS, 2022.

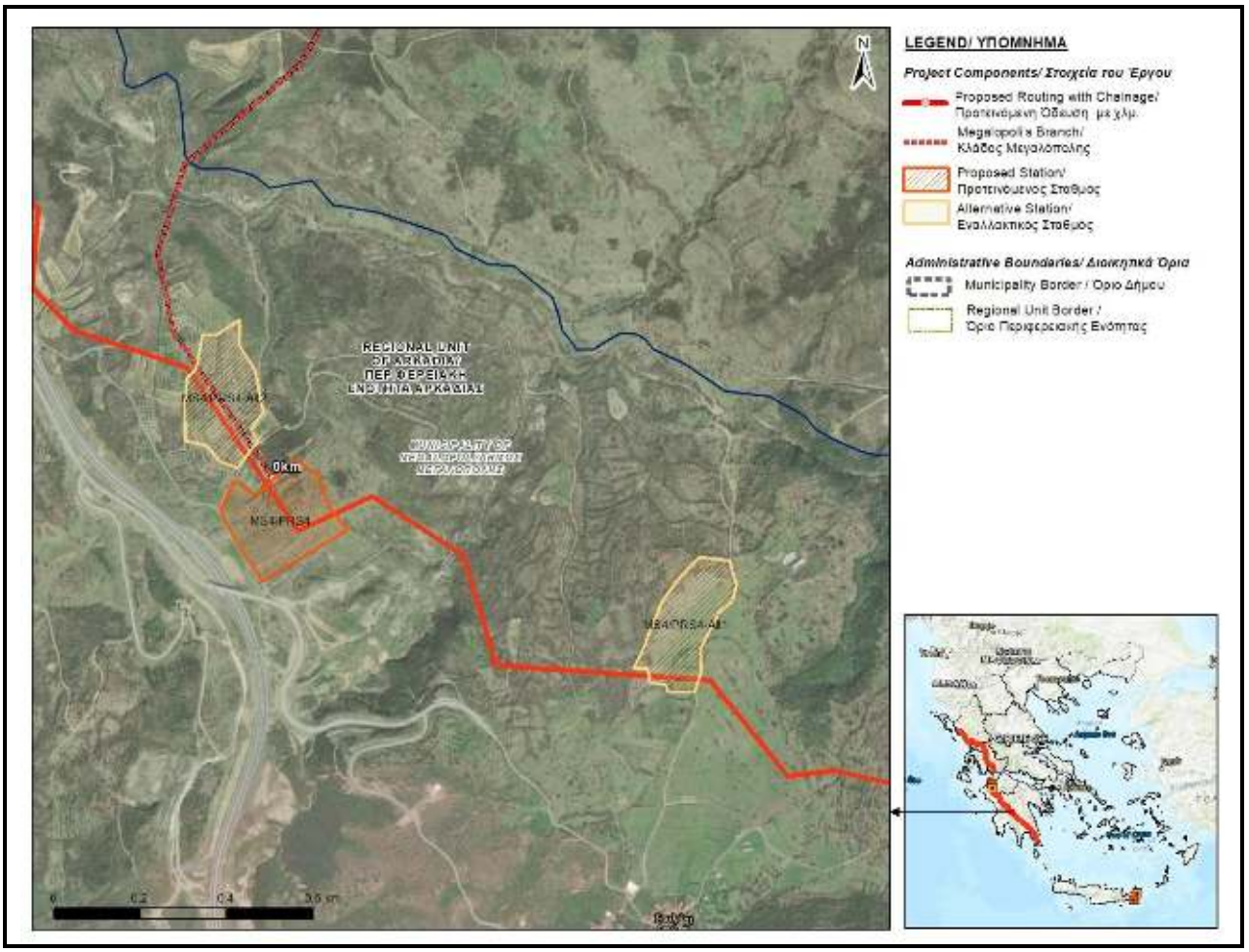
7 A.6.3. MS4/PRS4 AND HEATING STATION ALTERNATIVES

In Soulari area, M. of Megalopoli, three alternatives for the installation of a Metering Station (MS4), Pressure Regulating Station (PRS4) and Heating station were considered:

- Base case MS4/PRS4 & Heating station (BC);
- Alternative 1 (MS4/PRS4 ALT1); and
- Alternative 2 (MS4/PRS4 ALT2).

It is reminded that the Metering Station (MS4), Pressure Regulating Station (PRS4) and the Heating Station shall be all placed in the same plot.

Investigated alternatives are illustrated in the figure below.



Prepared by: ASPROFOS, 2022.

Figure 7-32 Alternative locations for MS4/PRS4 & Heating station considered.

7 A.6.3.1. DESCRIPTION OF MS4/PRS4 AND HEATING STATION BASE-CASE LOCATION

The MS4/PRS4 & Heating station (Base-case) is located 900 m North of Soulari, in the broader area of Megalopoli, of M. of Megalopoli, Regional Unit of Arcadia, in Peloponnese and occupies an area of 52761 m².

Base case location is not engaged with any environmental protected area. It is located at significant distance from any identified environmental constrain (min distance 4.5 km). No engagement with watercourses. Minimum engagement with areas subject to forest legislation exists, according to official data (5%); remote sensing indicates almost 25% of the plot to be covered by forest land cover. Megalopoli Power Plant and Coal Mines are at significant distance (~5.3 km).

Based on 2020 study of MEE no exceedance of any Limit Values has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

Regarding noise sources, proximity (60 m) to Highway Tripoli-Sparti should be noted; as such some, limited noise should be expected. Due to the discontinuous noise source of the highway, no significant cumulative noise impact is estimated.

Regarding landscape, the area is a plateau of agricultural pattern with no structures in front of a hilly range near the newly built highway with a background of natural sclerophyllous vegetation. The broader area is characterized by natural elements included in a landscape of clearly agricultural character. The plot is located in an area surrounded by a mosaic of agricultural and natural areas; close to the new highway of Tripoli-Sparti. Highway's presence fragments an otherwise typical and excellent mosaic of agricultural and natural areas. As such, the landscape absorption capacity is considered high in comparison to other options. Additionally, the area will require small earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

Current land use is agricultural with no spatial provisions and adequate distance from the surrounding settlements. No engagement with industrial activity, touristic development, planned projects is identified. However, recent developments include stopping of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant. The plot is located within the concession area of PPC and close to active PPC's coal mine (~5 km). Accessibility through existing paved roads. In general, site is located in hilly areas of limited human activity, restricted to the highway and live stocking shanties, proximity to PPC facilities is noted and the Megalopoli population centre. In total 3 settlements lie at distances greater than 0.9 km.

Regarding cultural heritage, no engagement with declared archaeological sites or areas of high archaeological potential is identified, but proximity to worship places is noted.

7 A.6.3.2. DESCRIPTION OF MS4/PRS4 & HEATING STATION -ALT1 LOCATION

The MS4/PRS4 and Heating station- Alt1 is located 300 m North of Soulari, in the broader area of Megalopoli, of M. of Megalopoli, Regional Unit of Arcadia, in Peloponnese and occupies an area of 39,941 m².

Alternative is not engaged with any environmental protected area and is located at significant distance from any identified environmental constrain (min. distance 4.5 km). Indications of riverine within the plot are present. Approximately 4% of the area is subject to forest legislation, according to official data; remote sensing indicates almost 25% of the plot to be covered by forest land cover. Megalopoli Power Plant and Coal Mines are located at a significant distance (~6.3 km).

Based on 2020 study of MEE no exceedance of any Limit Values has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

No noise sources have been identified.

Regarding landscape, the area is located on a plain surrounded by a hilly range mainly occupied by agricultural use with limited livestock shanties. Interaction with the Highway of Tripoli-Sparti (~1000 m to the south) is interrupted by the agricultural settlements of Soulari. As such, landscape's absorption capacity is considered low, in comparison to other options. Additionally, the area will require small earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

Current land use is agricultural with no spatial provisions. Short distance from Soulari (~300m). No engagement with industrial activity, touristic development, planned projects is identified. However, recent developments include stopping of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant. The plot is located within the concession area of PPC and close to the active PPC coal mine (~6 km). Accessibility through existing paved roads. In general, site is located in hilly areas of limited human activity, restricted to the highway and live stocking shanties, proximity to PPC facilities and Megalopoli population centre is noted. In total 2 settlements lie within a 2 km radius of the alternative (Soulari at 300 m and Voutsaras at 1900 m) at distances greater than 0.3 km.

Regarding cultural heritage, no engagement with declared archaeological sites, areas of high archaeological potential is identified, but close proximity to worship places is noted (the closest one is approx. at 0.5 km).

7 A.6.3.3. DESCRIPTION OF MS4/PRS4 & HEATING STATION- ALT2 LOCATION

The MS4/PRS4 & Heating station -Alt2 is located 1,100 m North of Soulari, in the broader area of Megalopoli, of M. of Megalopoli, Regional Unit of Arcadia, in Peloponnese, and occupies and area of 41,789 m².

This Alternative is not engaged with any environmental protected area. It is located at significant distance from any identified environmental constrain (min. distance 4.5 km). No engagement with watercourses has been identified. Approximately 4.5% of the area is subject to forest legislation according to official data; however, remote sensing indicates almost 60% of the plot to be covered by forest land cover. Megalopoli Power Plant and Coal Mines should be noted, at significant distance (~5 km).

Based on 2020 study of MEE no exceedance of any Limit Values has been recorded for O_3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.

Regarding noise sources, proximity (200 m) to Highway Tripoli-Sparti should be noted; as such some, limited noise should be expected. Due to the discontinuous noise source of the highway, no significant cumulative noise impact is assessed.

Regarding landscape, the area is a plateau of agricultural pattern with no structures in front of a hilly range near the newly built highway with a background of natural sclerophyllous vegetation. The broader area is characterized by natural elements included in a landscape of clearly agricultural character. The plot is located in an area surrounded by a mosaic of agricultural and natural areas; close to the new highway of Tripoli-Sparti. Highway's presence fragments an otherwise typical and excellent mosaic of agricultural and natural areas. As such, landscape's absorption capacity is considered high, in comparison to other options. Additionally, the area will require small earthworks for levelling.

Regarding vulnerability to natural disasters, the area is not located within high potential risk for flooding.

Current land use is agricultural with no spatial provisions and adequate distance from the surrounding settlements. No engagement with industrial activity, touristic development, planned projects is identified. However, recent developments include stopping of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant. The plot is located within the concession area of PPC and close to the active PPC coal mine (~5 km). Accessibility through existing paved roads. In general, site is located in hilly areas of limited human activity, restricted to the

highway and live stocking shanties, proximity to PPC facilities is noted and Megalopoli population centre. In total 3 settlements lie at distances greater than 1.1 km.

Regarding cultural heritage, no engagement with declared archaeological sites or areas of high archaeological potential is identified, but proximity to worship places is noted.

7 A.6.3.4. ALTERNATIVES ASSESSMENT

Based on the available information available at this stage of the study, there are no significant environmental, socio-economic and cultural heritage restrictions on base case and alternative sites considered for the installation of a station in the area.

In conclusion, MS4/PRS4 & Heating BC is slightly preferable to MS4/PRS4 and Heating Alt2. For almost all aspects, the two alternatives are identical (due to the close proximity to each other). Proximity to more settlements for MS4/PRS4 & Heating Alt2 is another reason to give advantage to the base-case. Apart from that, MS4/PRS4 & Heating BC and MS4/PRS4 & Heating Alt2 are similar. MS4/PRS4 & Heating Alt1 is not recommended (based on available data) due mainly of social concerns, i.e. close proximity to settlement and also close proximity to 2 worshiping places. It is noted that all options are sited within concession area of PPC and in the broader area (<6km) from the active coal mine of PPC.

Therefore, MS4/PRS4 & Heating BC is the recommended solution and is the basic choice for the installation of a specific station in Peloponnese.

Table 7-15 summarizes the criteria to which the alternatives present differences that play significant role, or are important, in the selection process. Detailed matrix with the complete environmental and social criteria for these alternatives is presented in Section 7 A.7.12.

Table 7-15 High Level Comparison Matrix of Alternatives for MS4/PRS4 and Heating Station

General Parameter	Base Case	Alternative 1	Alternative 2
Development plans	No spatial provision. Recent developments include break of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.		
Population centres	Megalopoli is a significant population centre of the broader area. 3 settlements are identified in the broader area (Soulari at 900 m, Leontari at 1,650	Megalopoli is a significant population centre of the broader area. 2 settlements are identified in the broader area (Soulari	Megalopoli is a significant population centre of the broader area. 3 settlements are identified in the broader area (Soulari at 1,100 m, Leontari at

General Parameter	Base Case	Alternative 1	Alternative 2
	m and Voutsaras at 2,700 m))	at 300 m and Voutsaras at 1900 m)	1,450 m and Voutsaras at 2,900 m)
Economic development	Within concession area of PPC. ~5,5 km from existing coal mining area of PPC.	Within concession area of PPC. ~6 km from existing coal mining area of PPC.	Within concession area of PPC. ~5 km from existing coal mining area of PPC.
Cultural Heritage	Basecase is located 550 m from Agios Konstantinos Church and 1,200 m from Profitis Ilias Church.	Alternative is located 700 m from Agios Konstantinos Church and 370 m from Profitis Ilias Church.	Alternative is located 550 m from Agios Konstantinos Church and 1,350 m from Profitis Ilias Church.

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7 A.7. ALTERNATIVES ASSESSMENT MATRICES

As described in Section 7 A.3.2, the criteria used for the pipeline route alternatives assessment are presented in Table 7-3, whilst the main facilities assessment criteria are presented in Table 7-4.

7 A.7.1. OSS2/OSS2 N REACHING CRETE ALTERNATIVES ASSESSMENT MATRIX

	OSS2/OSS2 N Atherinolakkos Landing		
Code	**OSS2-BC**	**OSS2-Alt1**	**OSS2-Alt2**
L1	109.38 km	No available data	No available data
L2	0.91 km	No available data	No available data
L3	108.47 km	108.84 km	114.11 km
ES			
ES1	0 (0%)	No available data	No available data
ES2	0 (0%)	No available data	No available data
ES3	0 (0%)	No available data	No available data
ES4	0 (0%)	No available data	No available data
ES5	0 (0%)	No available data	No available data
ES6	0 (0%)	No available data	No available data
ES7	0 (0%)	No available data	No available data

	OSS2/OSS2 N Atherinolakkos Landing		
ES8	0 (0%)	No available data	No available data
ES9	0.505 (54%)	No available data	No available data
ES10	0 (0%)	No available data	No available data
ES11	Total number 1: 0.34 km Infralittoral sandy mud (A5.33 - Eunis2012 code)	Total number 2: 0.69 km Infralittoral sandy mud (A5.33 - Eunis2012 code) 0.12 km *Posidonia* Oceanica beds (1120 Annex I code)	Total number 3: 1.95 km Infralittoral sandy mud (A5.33 - Eunis2012 code) 1.13 km *Posidonia Oceanica beds (1120 Annex I code)* 0.59 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)
ES12	Total number 4: 95 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012) 13 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012) 0.19 km Mediterranean biocoenosis of muddy detritic bottoms (A5.38 - Eunis 2012) (VU - European Red List of Habitats) 0.05 km Mediterranean communities of shelf-edge detritic bottoms (A5.47 - Eunis 2012) (DD - European Red List of Habitats)	Total number 3: 95 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012) 13 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012) 0.24 km Mediterranean biocoenosis of muddy detritic bottoms (A5.38 - Eunis 2012) (VU - European Red List of Habitats)	Total number 4: 63 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012) 37 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 4.89 km Mediterranean biocoenosis of muddy detritic bottoms (A5.38 - Eunis 2012 code) (VU - European Red List of Habitats) 0.05 km Infralittoral sandy mud (A5.33 - Eunis 2012 code) 11.66 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)

	OSS2/OSS2 N Atherinolakkos Landing		
ES13	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). Moreover, the coastline of the study area was surveyed and no caves potentially suitable for the use by the Mediterranean Monk Seals (*Monachus monachus*) have been located.	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). However, the coastline of the study area was surveyed and a Mediterranean Monk Seal resting marine cave complex was located.	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC).
ES14	Amphibians: 1 species | *Pelophylax cretensis (EN/EN);* Reptiles: 4 species | *Dermochelys coriacea(CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species |*Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC);*	Amphibians: 1 species |*Pelophylax cretensis (EN/EN);* Reptiles: 4 species |*Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species |*Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Pyrrhocorax phyrrhocoras (EN/LC); Tadorna*	Amphibians: 1 species | *Pelophylax cretensis (EN/EN);* Reptiles: 5 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chamaeleo chamaeleon (EN/LC); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC);*

	OSS2/OSS2 N Atherinolakkos Landing		
	Pyrrhocorax phyrrhocoras (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Hoplopterus spinosus (VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC); Mammals: 6 species | *Monachus monachus(CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*	*tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Hoplopterus spinosus (VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species |*Monachus monachus (CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*	*Pyrrhocorax phyrrhocoras (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Hoplopterus spinosus (VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species | *Monachus monachus (CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*

	OSS2/OSS2 N Atherinolakkos Landing		
ES15	Route: - 7,979.9 m from Small Isl Wetland Y432KRI267 LF: - 7,948.9 m from Small Isl Wetland Y432KRI267	Route: - 6,790.9 m from Small Isl Wetland Y432KRI267 LF: - 6,774 m from Small Isl Wetland Y432KRI267	- 4 Small Isl Wetlands in a radius of 4,000 m (Route & LF) - 7,740 m from Aesthetic Forest of "Vai" (Route & LF)
ES16	The landfall site is located outside protected areas/ habitats, next to the limits of Atherinolakkos Power Plant. The study area is located within a completely isolated area of Crete of pristine environment. Alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is moderate.	The landfall site is located outside protected areas/ habitats, next to the limits of Atherinolakkos Power Plant. The study area is located within a completely isolated area of Crete of pristine environment. Alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is moderate.	The study area is located within a completely isolated area of Crete of pristine environment, very close to protected areas/ habitats. Alien invasive fish fauna species are increasingly reported in the marine area of S/SE Crete (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is high.
ES17	Proximity to PPC power plant is noted.	Proximity to PPC power plant is noted.	No relevant data identified.
OC			
OC1	0.34	0.68	1.953
OC2	1.94	2.736	9.711
OC3	3.62	5.927	19.185
OC4	102.57	99.49	83.26
P			

	OSS2/OSS2 N Atherinolakkos Landing		
P1	No intersection	No intersection	No intersection
P2	Route: - 2,627.4 m (from SAC GR4320008 and SPA GR4320017 - overlapping) LF: - 4,120 m (from SAC GR4320008 and SPA GR4320017 - overlapping)	Route: - 2,008 m (from SAC GR4320008 and SPA GR4320017 - overlapping) LF: - 5,754 m (from SAC GR4320008 and SPA GR4320017 - overlapping)	Route: - 255 m (from SAC GR4320006) LF: - 316 m (from SAC GR4320006)
P3	No intersection	No intersection	No intersection
P4	Route: - 4,184.6 m from WR "Koufonisi isl" LF: - 5,661 from WR "Koufonisi isl"	Route: - 4,300.5 m from WR "Koufonisi isl" LF: - 7,265 m from WR "Koufonisi isl"	'- 7,660 from WR "Zakros Dimou Itamou" (Route & LF)
P5	No intersection	No intersection	No intersection
P6	Route: - 7,979.9 m from Small Isl Wetland Y432KRI267 LF: - 7,948.9 m from Small Isl Wetland Y432KRI267	Route: - 6,790.9 m from Small Isl Wetland Y432KRI267 LF: - 6,774 m from Small Isl Wetland Y432KRI267	- 4 Small Isl Wetlands in a radius of 4,000 m (Route & LF) - 7,740 m from Aesthetic Forest of "Vai" (Route & LF)
P7	No intersection	No intersection	No intersection
P8	No engagement	No engagement	- 106 m from Landscape of Outstanding Natural Beauty "AT6011002" (Route & LF)
P9	No intersection	No intersection	No intersection

	OSS2/OSS2 N Atherinolakkos Landing		
P10	No intersection	0.152	3,454.6
P11	Offshore Route and LF: 0.78 km	Offshore Route and LF: 0.54 km	No engagement
P12	The Route crosses for 62km (57.16 % of OSS2 BC total length) the Hellenic Trench IMMA	The Route crosses for 62.12km (57.07 % of OSS2 Alt1 total length) the Hellenic Trench IMMA	The Route crosses for 71.03km (62.24 % of OSS2 Alt1 total length) the Hellenic Trench IMMA
P13	No engagement	No engagement	No engagement
P14	No engagement	No engagement	No engagement
P15	No engagement	No engagement	No engagement
S			
S1	41% of the onshore route crosses through agricultural areas whilst 54% from natural or semi-natural ones (5% from other types).	No available data	No available data
S1.1	0.000 km (0.00%)	No available data	No available data
S1.2	0.05 (5%)	No available data	No available data
S1.3	0.000 km (0.00%)	No available data	No available data
S1.4	0.000 km (0.00%)	No available data	No available data
S1.5	0.000 km (0.00%)	No available data	No available data
S1.6	0.000 km (0.00%)	No available data	No available data
S1.7	0.000 km (0.00%)	No available data	No available data
S1.8	0.000 km (0.00%)	No available data	No available data

	OSS2/OSS2 N Atherinolakkos Landing		
S1.9	0.37 (41%)	No available data	No available data
S1.10	0.000 km (0.00%)	No available data	No available data
S1.11	0.000 km (0.00%)	No available data	No available data
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are olive groves. Presence of PPC Power Plant is the main characteristics as well as the fishing shelter.	Alternative engages areas of limited economic development, restricted to agricultural activities - most of them are olive groves. Presence of PPC Power Plant is the main characteristics as well as the fishing shelter.	Alternative engages areas of no economic development, restricted to natural areas.
S3	Area is characterized by the industrial facility of PPC, and mosaic of natural and agricultural areas.	Area is characterized by the industrial facility of PPC, and mosaic of natural and agricultural areas.	Area is completely covered by natural vegetation.
S4	LF area is designated as "Potential for mass tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	Half of the LF area is designated as "Potential for mass tourism" and the other one as "Potential for alternative tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	LF area is designated as "Potential for alternative tourism"; some relevant activity is known to take place in the broader area.
S5	None	None	None
S6	None	None	None
S7	No population centres in the study area. Closest settlements at >2500 m (Goudouras).	No population centres in the study area. Closest settlements at >2,500 m (Goudouras).	No evidence of population presence in the broader area.

	OSS2/OSS2 N Atherinolakkos Landing		
S8		0	0
S9	0	0	0
S10	Low marine traffic density.	Low marine traffic density.	Low marine traffic density.
S11	1000 m from existing PPC port facilities (entrance route not engaged).	1300 m from existing PPC port facilities (entrance route engaged).	No anchorage in the broader area
S12	Area of Low to Medium Fishing Effort (2015 data)	Area of Low to Medium Fishing Effort (2015 data)	Area of Low Fishing Effort (2015 data)
S13	No engagement	No engagement	No engagement
S14	No engagement	No engagement	No engagement
CH			
CH1	No engagement	LF lies within declared archaeological site	No engagement
CH2	No engagement	No engagement	No engagement
CH3	No engagement	No engagement	No engagement
CH4	No engagement	No engagement	No engagement
CH5	No engagement	No engagement	No engagement
D			
D1	2. 1 WF and 1 Solar Thermal (750 to the N of the LF)	1	No engagement
D1.1	No engagement	No engagement	No engagement
D1.2	1 (830 to the N of the LF)	1 (680 to the W of the LF)	No engagement

	OSS2/OSS2 N Atherinolakkos Landing		
D1.3	No engagement	No engagement	No engagement
D2	No engagement	No engagement	No engagement
D3	No touristic development is identified in the area. Area is adjacent to industrial facility, hence not expected to attract tourism.	No touristic development is identified in the area. Area is adjacent to industrial facility, hence not expected to attract tourism.	No touristic development is identified in the area. Area is characterized as area of "Developing tourism with potential for development of alternative forms of tourism"
D4	Area is adjacent to PPC Power Plant, designated industrial area.	Area is close to PPC Power Plant, designated industrial area.	None
D5	LF area is designated as "Potential for mass tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	Half of the LF area is designated as "Potential for mass tourism" and the other one as "Potential for alternative tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	LF area is designated as "Potential for alternative tourism"; some relevant activity is known to take place in the broader area.
A			
A1	1 (Crete)	1 (Crete)	1 (Crete)
A2	1 (Lasithi)	1 (Lasithi)	1 (Lasithi)
A3	1 (Sitia)	1 (Sitia)	1 (Sitia)

7 A.7.2. OSS3 DEPARTING CRETE ALTERNATIVES ASSESSMENT MATRIX

	OSS3 Atherinolakkos Departing		
Code	OSS3_Cr-BC	OSS3_Cr-Alt1	OSS3_Cr-Alt2
L1	59.04 km	No available data	No available data
L2	0.96 km	No available data	No available data
L3	58.08 km	58.35 km	18.31 km
ES			
ES1	N/A	N/A	N/A
ES2	N/A	N/A	N/A
ES3	N/A	N/A	N/A
ES4	N/A	N/A	N/A
ES5	N/A	N/A	N/A
ES6	N/A	N/A	N/A
ES7	N/A	N/A	N/A
ES8	N/A	N/A	N/A
ES9	N/A	N/A	N/A
ES10	N/A	N/A	N/A
ES11	Total number 1: 0.33 km Infralittoral sandy mud (A5.33 - Eunis2012 code)	Total number 2: 0.69 km Infralittoral sandy mud (A5.33 - Eunis2012 code)	Total number 3: 1.95 km Infralittoral sandy mud (A5.33 - Eunis2012 code)

	OSS3 Atherinolakkos Departing		
		0.12 km *Posidonia* Oceanica beds (1120 Annex I code)	1.13 km *Posidonia* Oceanica beds (1120 Annex I code) 0.59 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)
ES12	Total number 4: 24.5 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 4.5 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012 code) 0.12 km Mediterranean biocoenosis of muddy detritic bottoms (A5.38 - Eunis 2012 code) (VU - European Red List of Habitats) 0.12 km Mediterranean communities of shelf-edge detritic bottoms (A5.47 - Eunis 2012 code) (DD - European Red List of Habitats)	Total number 3: 24.3 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 4.5 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012 code) 0.24 km Mediterranean biocoenosis of muddy detritic bottoms (A5.38 - Eunis 2012 code) (VU - European Red List of Habitats)	Total number 4: 13.35 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 2.53 km Mediterranean biocoenosis of muddy detritic bottoms (Eunis 2012 code) (A5.38 - VU - European Red List of Habitats) 0.51 km Infralittoral sandy mud (A5.33 - Eunis 2012 code) 3.65 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)
ES13	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). Moreover, the coastline of the study area was surveyed and no caves potentially suitable for the use by the Mediterranean Monk Seals (*Monachus monachus*) have been located.	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). However, the coastline of the study area was surveyed and a Mediterranean Monk Seal resting marine cave complex was located.	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC).

	OSS3 Atherinolakkos Departing		
ES14	Amphibians: 1 species | *Pelophylax cretensis (EN/EN);* Reptiles: 4 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species |*Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Pyrrhocorax phyrrhocoras (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Hoplopterus spinosus	Amphibians: 1 species | *Pelophylax cretensis (EN/EN);* Reptiles: 4 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Pyrrhocorax phyrrhocoras (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Hoplopterus spinosus	Amphibians: 1 species | *Pelophylax cretensis (EN/EN);* Reptiles: 5 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chamaeleo chamaeleon (EN/LC); Chelonia mydas (EN/EN); Podarcis cretensis (VU/EN);* Avifauna: 37 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Gypaetus barbatus (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chysaetos (EN/LC); Hieraaetus pennatus (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Pyrrhocorax phyrrhocoras (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola

	OSS3 Atherinolakkos Departing		
	(VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC); Mammals: 6 species | *Monachus monachus (CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*	*(VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species | *Monachus monachus (CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*	*pratincola (VU/LC); Hoplopterus spinosus (VU/VU); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Larus audouinii (VU/NT); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/NT); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species | *Monachus monachus(CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Pipistrellus hanaki (VU/DD); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*
ES15	Route: - 7,979.9 m from Small Isl Wetland Y432KRI267 LF: - 7,948.9 m from Small Isl Wetland Y432KRI267	Route: - 6,790.9 m from Small Isl Wetland Y432KRI267 LF: - 6,774 m from Small Isl Wetland Y432KRI267	The route does not cross the Hellenic Trench IMMA (Important Marine Mammals Area)
ES16	The landfall site is located outside protected areas/ habitats, next to the limits of Atherinolakkos Power Plant. The study area is located within a completely isolated area of Crete of pristine environment. Alien invasive fish fauna species are increasingly	The landfall site is located outside protected areas/ habitats, next to the limits of Atherinolakkos Power Plant. The study area is located within a completely isolated area of Crete of pristine environment. Alien invasive fish fauna species are increasingly	The study area is located within a completely isolated area of Crete of pristine environment, very close to protected areas/ habitats. Alien invasive fish fauna species are increasingly reported in the marine area of

	OSS3 Atherinolakkos Departing		
	reported in the marine area of S/SE Crete (Lagocephalus sceleratus, Pterois miles).	reported in the marine area of S/SE Crete (Lagocephalus sceleratus, Pterois miles).	S/SE Crete (Lagocephalus sceleratus, Pterois miles).
ES17	Proximity to PPC power plant is noted.	Proximity to PPC power plant is noted.	No relevant data identified.
OC			
OC1	0.34	0.68	1.953
OC2	1.94	2.736	4.312
OC3	3.62	5.927	6.542
OC4	52.18	49.01	5.503
P			
P1	No intersection	No intersection	2190 m (from SAC GR4320006) (in deep water)
P2	Route: - 2627.4 m (from SAC GR4320008 and SPA GR4320017 - overlapping) - 2069 m (from SAC GR4320006) LF: - 4120 m (from SAC GR4320008 and SPA GR4320017 - overlapping)	Route: - 2008 m (from SAC GR4320008 and SPA GR4320017 - overlapping) - 2069 m (from SAC GR4320006) LF: - 5754 m (from SAC GR4320008 and SPA GR4320017 - overlapping)	Route: - 255 m (from SAC GR4320006) LF: - 316 m (from SAC GR4320006)
P3	No intersection	No intersection	No intersection
P4	Route: - 4184.6 m from WR "Koufonisi isl"	Route: - 4300.5 m from WR "Koufonisi isl"	- 7660 from WR "Zakros Dimou Itamou" (Route & LF)

	OSS3 Atherinolakkos Departing		
	LF: - 5661 from WR "Koufonisi isl"	LF: - 7265 m from WR "Koufonisi isl"	
P5	No intersection	No intersection	No intersection
P6	Route: - 7979.9 m from Small Isl Wetland Y432KRI267 LF: - 7948.9 m from Small Isl Wetland Y432KRI267	Route: - 6790.9 m from Small Isl Wetland Y432KRI267 LF: - 6774 m from Small Isl Wetland Y432KRI267	- 4 Small Isl Wetlands in a radius of 4000 m (Route & LF) - 7740 m from Aesthetic Forest of "Vai" (Route & LF)
P7	No intersection	No intersection	No intersection
P8	No engagement	No engagement	- 106 m from Landscape of Outstanding Natural Beauty "AT6011002" (Route & LF)
P9	No intersection	No intersection	No intersection
P10	No intersection	0.152	1209.81
P11	Offshore Route and LF: 0.78 km	Offshore Route and LF: 0.54 km	No engagement
P12	The Route crosses for 62km (57.16 % of OSS2 BC total length) the Hellenic Trench IMMA	The Route crosses for 62.12km (57.07 % of OSS2 Alt1 total length) the Hellenic Trench IMMA	No engagement
P13	No engagement	No engagement	No engagement
P14	No engagement	No engagement	No engagement
P15	No engagement	No engagement	No engagement

	OSS3 Atherinolakkos Departing		
S			
S1	41% of the onshore route crosses through agricultural areas whilst 54% from natural or semi-natural ones (5% from other types).	No available data	No available data
S1.1	0.000 km (0.00%)	No available data	No available data
S1.2	0.05 (5%)	No available data	No available data
S1.3	0.000 km (0.00%)	No available data	No available data
S1.4	0.000 km (0.00%)	No available data	No available data
S1.5	0.000 km (0.00%)	No available data	No available data
S1.6	0.000 km (0.00%)	No available data	No available data
S1.7	0.000 km (0.00%)	No available data	No available data
S1.8	0.000 km (0.00%)	No available data	No available data
S1.9	0.37 (41%)	No available data	No available data
S1.10	0.000 km (0.00%)	No available data	No available data
S1.11	0.000 km (0.00%)	No available data	No available data
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are olive groves. Presence of PPC Power Plant is the main characteristics as well as the fishing shelter.	Alternative engages areas of limited economic development, restricted to agricultural activities - most of them are olive groves. Presence of PPC Power Plant is the main characteristics as well as the fishing shelter.	Alternative engages areas of no economic development, restricted to natural areas.

	OSS3 Atherinolakkos Departing		
S3	Area is characterized by the industrial facility of PPC, and mosaic of natural and agricultural areas.	Area is characterized by the industrial facility of PPC, and mosaic of natural and agricultural areas.	Area is completely covered by natural vegetation.
S4	LF area is designated as "Potential for mass tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	Half of the LF area is designated as "Potential for mass tourism" and the other one as "Potential for alternative tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	LF area is designated as "Potential for alternative tourism"; some relevant activity is known to take place in the broader area.
S5	None	None	None
S6	None	None	None
S7	No population centres in the study area. Closest settlements at >2500 m (Goudouras).	No population centres in the study area. Closest settlements at >2,500 m (Goudouras).	No evidence of population presence in the broader area.
S8	Goudouras settlement at distance of approx. 2.6 km.	0	0
S9	0	0	0
S10	Low marine traffic density.	Low marine traffic density.	Low marine traffic density.
S11	1000 m from existing PPC port facilities (entrance route not engaged).	1300 m from existing PPC port facilities (entrance route engaged).	No anchorage in the broader area
S12	Area of Low to Medium Fishing Effort (2015 data)	Area of Low to Medium Fishing Effort (2015 data)	Area of Low Fishing Effort (2015 data)

	OSS3 Atherinolakkos Departing		
S13	No engagement	No engagement	No engagement
S14	No engagement	No engagement	No engagement
CH			
CH1	No engagement	LF lies within declared archaeological site	No engagement
CH2	No engagement	No engagement	No engagement
CH3	No engagement	No engagement	No engagement
CH4	No engagement	No engagement	No engagement
CH5	No engagement	No engagement	No engagement
D			
D1	1	No engagement	No engagement
D1.1	No engagement	No engagement	No engagement
D1.2	1 (680 to the W of the LF)	No engagement	No engagement
D1.3	No engagement	No engagement	No engagement
D2	No engagement	No engagement	No engagement
D3	No touristic development is identified in the area. Area is adjacent to industrial facility, hence not expected to attract tourism.	No touristic development is identified in the area. Area is characterized as area of "Developing tourism with potential for development of alternative forms of tourism"	No touristic development is identified in the area. Area is characterized as area of "Developing tourism with potential for development of alternative forms of tourism"

	OSS3 Atherinolakkos Departing		
D4	Area is close to PPC Power Plant, designated industrial area.	None	None
D5	LF area is designated as "Potential for mass tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	Half of the LF area is designated as "Potential for mass tourism" and the other one as "Potential for alternative tourism". However, the broader area is characterized by the industrial facility of PPC and no such facility was identified.	LF area is designated as "Potential for alternative tourism"; some relevant activity is known to take place in the broader area.
A			
A1	1 (Crete)	1 (Crete)	1 (Crete)
A2	1 (Lasithi)	1 (Lasithi)	1 (Lasithi)
A3	1 (Sitia)	1 (Sitia)	1 (Sitia)

7 A.7.3. OSS3 REACHING PELOPONNESE ALTERNATIVES ASSESSMENT MATRIX

	OSS3 SE Peloponnese Landing		
Code	OSS3_Pel-BC	OSS3_Pel-Alt1	OSS3_Pel-Alt2
L1	84.95 km	91.71 km	85.56 km
L2	65.36 km	44.17 km	64.91 km
L3	19.59 km	47.53 km	20.65 km

	OSS3 SE Peloponnese Landing		
ES			
ES1	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES2	0.000 (0.00%)	6.182 (13.99% of onshore length/6.74% of total length)	0.000 (0.00%)
ES3	1.940 (2.96% of onshore length/2.29% of total length	0.000 (0.00%)	3.408 (5.25% of onshore length /3.98% of total length)
ES4	0.000 (0.00%)	10.763 (24.36% of onshore length/11.74% of total length)	0.000 (0.00%)
ES5	25.460 (38.95% of onshore length/29.97% of total length)	18.136 (41.46% of onshore length/19.97% of total length)	24.801 (38.22% of onshore length/28.98% of total length)
ES6	0.000 (0.00%)	3.074 (6.96% of onshore length/3.35% of total length)	0.000 (0.00%)
ES7	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.142 (0.32% of onshore length/0.15% of total length)	0.000 (0.00%)
ES10	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES11	Total number 3: 0.83 km Infralittoral seabed (Na - Eunis 2012 code) 0.66 km *Posidonia* Oceanica beds (1120)	Total number 2: 0.40 km Infralittoral seabed (Na - Eunis 2012 code)	Total number 4: 0.36 km Infralittoral seabed (Na - Eunis 2012 code) 0.50 km Circalittoral seabed (Na - Eunis 2012

	OSS3 SE Peloponnese Landing		
	0.47 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	0.39 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	code) 0.75 km *Posidonia* Oceanica beds (1120 Annex I code) 0.88 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)
ES12	Total number 6: 10.62 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 6.87 Km Bathyal seabed (Na - Eunis 2012 code) 1.31 km Circalittoral seabed (Na - Eunis 2012 code) 0.18 km Infralittoral seabed (Na - Eunis 2012 code) 0.09 km *Posidonia Oceanica* beds (1120 Annex I code) 1.42 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	Total number 6: 34.8 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 7.71 km Mediterranean communities of bathyal muds (A6.51 - Eunis 2012 code) 3.13 Km Bathyal seabed (Na - Eunis 2012 code) 0.87 km Circalittoral seabed (Na - Eunis 2012 code) 0.50 km Infralittoral seabed (Na - Eunis 2012 code) 1.42 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	Total number 4: 10.52 km Facies of sandy muds with Thenea muricata (A6.511 - Eunis 2012 code) 7.41 Km Bathyal seabed (Na - Eunis 2012 code) 1.02 km Circalittoral seabed (Na - Eunis 2012 code) 1.38 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)
ES13	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). Moreover, the coastline of the study area was surveyed and no caves potentially	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC).	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC).

	OSS3 SE Peloponnese Landing		
	suitable for the use by the Mediterranean Monk Seals (*Monachus monachus*) have been located.		
ES14	Reptiles: 5 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Hellenolacerta graeca (VU/NT); Testudo hermanni (VU/NT)* Avifauna: 29 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species | *Monachus monachus (CR/CR); Canis aureus (EN/LC); Physeter*	Reptiles: 5 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Hellenolacerta graeca (VU/NT); Testudo hermanni (VU/NT)* Avifauna: 30 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Alectoris graeca (VU/LC); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 5 species | *Monachus monachus*	Reptiles: 5 species | *Dermochelys coriacea (CR/CR); Caretta caretta (EN/EN); Chelonia mydas (EN/EN); Hellenolacerta graeca (VU/NT); Testudo hermanni (VU/NT)* Avifauna: 29 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Platalea leucorodia (VU/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 6 species | *Monachus monachus (CR/CR); Canis aureus (EN/LC); Physeter*

	OSS3 SE Peloponnese Landing		
	macrocephalus (EN/VU); Grampus griseus (VU/LC); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);	*(CR/CR); Physeter macrocephalus (EN/VU); Grampus griseus (VU/LC); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*	*macrocephalus (EN/VU); Grampus griseus (VU/LC); Stenella coeruleoalba (VU/LC); Tursiops truncatus (VU/LC);*
ES15	Loggerhead sea turtle (*Caretta caretta*) has been recorded in the Area. Based on data provided by ARCHELON The Sea Turtle Protection Society of Greece about 4-5 nests of the species are recorded annually at the beach of Ag.Fokas (less than 500m from the LF3).	No nesting beaches have been recorded in the wider area of LF3a. Sea turtles have been recorded offshore during the nesting season (May - October).	Loggerhead sea turtle (*Caretta caretta*) has been recorded in the Area. Based on data provided by ARCHELON The Sea Turtle Protection Society of Greece about 25 nests of the species are recorded annually at the beach of Xifias (less than 2km from the LF3b).
ES16	Landfall is located within protected areas/ habitats. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment. Alien invasive fish fauna species are increasingly reported in the marine area of Aegean (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is very high.	Landfall is located outside protected areas/ habitats. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment of Mt. Parnonas. Alien invasive fish fauna species are increasingly reported in the marine area of Aegean (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is high.	Landfall is located inside protected areas/ habitats. The study area crosses mainly isolated areas (onshore and offshore) of pristine environment. Alien invasive fish fauna species are increasingly reported in the marine area of Aegean (Lagocephalus sceleratus, Pterois miles). As such, the naturalness of area is very high.
ES17	No relevant data identified.	No relevant data identified.	No relevant data identified.
OC			
OC1	0.73	0.06	1.69
OC2	2.03	2.76	1.85
OC3	16.88	44.71	17.17

	OSS3 SE Peloponnese Landing		
OC4	0	0	0
P			
P1	Total Number : 2 3. 849 km (1.896 km through offshore section of GR2540001 (SAC), 1.953 km through GR2540007 (SPA).	No Intersection with Natura Areas	Total Number : 2 4.573 km (2.620 km through offshore section of GR2540001 (SAC), 1.953 km through GR2540007 (SPA))
P2	Total number: 1 0.607 km (GR2540007 (SPA)	None within the study area	Total number: 1 0.607 km (GR2540007 (SPA)
P3	Total number : 1 1.025 km (Pratagos-Aeotofolia area)	No intersection with Wild Life Refuge areas	Total number : 1 1.025 km (Pratagos-Aeotofolia area)
P4	No additional area	No additional area	No additional area
P5	No intersection with National Parks	No intersection with National Parks	No intersection with National Parks
P6	None within the study area	None within the study area	None within the study area
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	None within the study area	None within the study area	None within the study area
P9	1 (Mariorema river)	0	1 (Mariorema river)
P10	0.612	No intersection	0.743
P11	No additional area	Offshore Route and LF: 0.1 km	No additional area
P12	No intersection	No intersection	No intersection

	OSS3 SE Peloponnese Landing		
P13	No intersection	No intersection	No intersection
P14	The entire offshore length to LF3 lies in "Area of Interest" and a "candidate IMMA".	The entire offshore length to LF3 lies in "Area of Interest" and a "candidate IMMA".	The entire offshore length to LF3b lies in "Area of Interest" and a "candidate IMMA".
P15	No engagement	No engagement	No engagement
S			
S1	58% of the route crosses through agricultural areas whilst 42% from natural or semi-natural ones.	13% of the route crosses through agricultural areas whilst 87% from natural or semi-natural ones.	58% of the route crosses through agricultural areas whilst 42% from natural or semi-natural ones.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	2.340 km (3.58% of onshore length/2.75% of total length)	0.000 km (0.00%)	2.342 km (3.61% of onshore length/2.73% of total length)
S1.6	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.9	23.090 km (35.33% of onshore length/27.18% of total length)	1.867 km (4.23% of onshore length/2.03% of total length)	23.954 km (36.91% of onshore length/27.99% of total length)

	OSS3 SE Peloponnese Landing		
S1.10	4.800 km (7.34% of onshore length/5.65% of total length)	0.000 km (0.00%)	4.801 km (7.39% of onshore length/5.61% of total length)
S1.11	7.720 km (11.81% of onshore length/9.09% of total length)	3.828 km (8.66% of onshore length/4.17% of total length)	5.573 km (8.59% of onshore length/6.51% of total length)
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Many small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. Four major roads are crossed.	Alternative engages areas of almost no economic development; any development is restricted to agricultural activities - most of them are tree crops. Few (considering the length of the alternative) small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. 3 major roads are crossed.	Alternative engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Many small roads, mainly agricultural ones connecting fields and rural settlements, are crossed. Four major roads are crossed.
S3	The area is characterized by a mosaic of natural and semi-natural areas, bush land and scrubland merged with areas mainly occupied by agricultural activity. In general, the landfall site area is characterized by absence of anthropogenic pressures or developments.	The area is completely covered by natural vegetation (sclerophyllous vegetation) and is characterized by no anthropogenic pressures, whatsoever.	The area is characterized by a mosaic of natural and semi-natural areas, bush land and scrubland merged with areas mainly occupied by agricultural activity. In general, the landfall site area is characterized by absence of anthropogenic pressures or developments.

	OSS3 SE Peloponnese Landing		
S4	9 km through Natural Environment Protection Area ("PEP3"), 8 km through "Elliniko" Area of Building Control and Check ("PEPD5"), 2 km through Suburban Green Zone of Agios Nikolaos ("PEP4"), 5 km through "Velies", "Agios Dimitrios" Area of Building Control and Check ("PEPD3") of Monemvasia SXOOAP.	No data available	9 km through Natural Environment Protection Area ("PEP3"), 8 km through "Elliniko" Area of Building Control and Check ("PEPD5"), 2 km through Suburbia Green Zone of Agios Nikolaos ("PEP4"), 5 km through "Velies", "Agios Dimitrios" Area of Building Control and Check ("PEPD3") of Monemvasia SXOOAP.
S5	No engagement (min distance over 20km)	Route length : 15.918km	No engagement (min distance over 20km)
S6	No engagement.	No engagement.	No engagement
S7	No significant population centres are identified in the study area. In general, the area is quite secluded.	No significant population centres are identified in the study area. In general, the area is quite secluded.	No significant population centres are identified in the study area. In general, the area is quite secluded.
S8	Total: 9 To the SW: Agios Fokas (300 m), Lira (300 m), Velies (750 m), Apidea (850 m), Gouves (1000 m). To the NE: Kastella (600 m), Ellinko (350 m), Agios Nikolas (470 m), Sykea (650 m), Metamorfosi (920 m)	Total: 4 To the SW: Vlisidia (900 m) To the NE: Ochtos (600 m), Peleta (880 m), Chouni (400 m),	Total: 8 To the SW: Kastella (300 m), Lira (300 m), Velies (750 m), Apidea (850 m), Gouves (1000 m). To the NE: Ellinko (350 m), Agios Nikolas (470 m), Sykea (650 m), Metamorfosi (920 m)
S9	0	0	1
S10	Low marine traffic density.	Low marine traffic density.	Low marine traffic density.

	OSS3 SE Peloponnese Landing		
S11	700 m from existing Agios Fokas fishing shelter.	No anchorage in the broader area	No anchorage in the broader area
S12	No engagement	No engagement	No engagement
S13	No engagement	No engagement	No engagement
S14	No engagement	No engagement	No engagement
CH			
CH1	88 within the study area. 7 within 200 m: To the NE: 1 at 130 m, 1 at 110 m, To the SW: 1 at 200 m, 1 at 30 m, 1 at 120 m, 1 at 50 m, 1 at 25 m.	1 within the study area. 1 at 325 m.	88 within the study area. 7 within 200 m: To the NE: 1 at 130 m, 1 at 110 m, To the SW: 1 at 200 m, 1 at 30 m, 1 at 120 m, 1 at 50 m, 1 at 25 m.
CH2	4. To the NE: 1 at 600 m To the SW: 1a at 220 m, 1 at 510 m, 1 at 125 m. "	2 within the study area. To the NE: 2 at 850 m distance.	4. To the NE: 1 at 600 m To the SW: 1a at 220 m, 1 at 510 m, 1 at 125 m. "
CH3	No relevant data identified.	No relevant data identified.	No relevant data identified.
CH4	Total: 4. Agios Andreas church (110 m), holy temple of the Transfiguration of the Saviour (480 m), church of Agios Dimitrios (600 m), Agios Fokas church (780 m)	Total: 3. Monastery of Dormition (650 m), a church (30 m), Holy Church of Annunciation (800 m)	Total 4. Agios Andreas church (110 m), holy temple of the Transfiguration of the Saviour (480 m), church of Agios Dimitrios (600 m), Kastella church (780 m)
CH5	No relevant data identified.	No relevant data identified.	No relevant data identified.
D			

	OSS3 SE Peloponnese Landing		
D1	Proximity to 4 RES projects; crossing of 1.	Proximity to 4 RES projects; crossing of 3.	Proximity to 4 RES projects; crossing of 1.
D1.1	Total: 1 to the SW: 450 m	no facilities (min distance over 1km)	no facilities (min distance over 1km)
D1.2	Total: 4 1 crossed for 6205 m. to the NE: 200 m, to the SW: 35 m, 940 m	Total: 7 3 crossed for 78 m and 2237 m and 632 m to the NE: 920 m, 340 m, 798 m, to the SW: 650 m,	Total: 4 1 crossed for 6205 m. to the NE: 200 m, to the SW: 35 m, 940 m
D1.3	no facilities (min distance over 1km)	no facilities (min distance over 1km)	no facilities (min distance over 1km)
D2	0.00 km	0.00 km	0.00 km
D3	Near villages have little touristic development. Proximity to Agios Fokas beach. No significant touristic development is identified in the area. 9400 m from Monemvasia Landscape of Outstanding Natural Beauty. Area is characterized as area of "Developing tourism with potential for development of alternative forms of tourism". A significant development (according to invalidated info it refers to a conference centre) is noted uphill Agios Fokas.	Touristic development at 4500 m from LF. No significant touristic development is identified in the area.	Near villages have little touristic development. Proximity to "Kastella" beach. No significant touristic development is identified in the area. 8000 m from Monemvasia Landscape of Outstanding Natural Beauty. Area is characterized as area of "Developing tourism with potential for development of alternative forms of tourism". Kastella settlement seems to be a summer houses complex.
D4	No relevant data identified.	No relevant data identified.	No relevant data identified.

	OSS3 SE Peloponnese Landing		
D5	Based on national spatial planning, the area is designated as Low Industrial Priority and as High Wind Power Potential. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism".	Based on national spatial planning, the area is designated as Low Industrial Priority and as High Wind Power Potential. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism".	Based on national spatial planning, the area is designated as Low Industrial Priority and as High Wind Power Potential. On the other hand, the area is also designated as an area of "Developing tourism with potential for development of alternative forms of tourism".
A			
A1	1 (R. of Peloponnese)	1 (R. of Peloponnese)	1 (R. of Peloponnese)
A2	1 (Laconia)	2 (Laconia & Arcadia)	1 (Laconia)
A3	2 (Monemvasia & Evrota)	3 (Monemvasia; Evrota; South Kinouria)	2 (Monemvasia & Evrota)

7 A.7.4. EVROTAS ALTERNATIVES ASSESSMENT MATRIX

	Evrotas Area	
Code	CCS1_Evrotas-BC	CCS1_Evrotas-Alt1
L1	3.59 km	6.91 km
L2	3.59 km	6.91 km
L3	n/a	n/a
ES		
ES1	0.000 (0.00%)	6.910 (3.63%)
ES2	0.000 (0.00%)	0.000 (0.00%)
ES3	0.000 (0.00%)	0.000 (0.00%)
ES4	0.000 (0.00%)	0.000 (0.00%)
ES5	2.270 (63.37%)	0.891 (12.89%)
ES6	0.000 (0.00%)	0.000 (0.00%)
ES7	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.000 (0.00%)
ES10	0.000 (0.00%)	0.000 (0.00%)
ES11	0.000 (0.00%)	0.000 (0.00%)
ES12	0.000 (0.00%)	0.000 (0.00%)

	Evrotas Area	
ES13	0.000 (0.00%)	0.000 (0.00%)
ES14	Fish (in Evrotas R.): 4 species | *Pelasgus laconicus (CR/CR); Valencia letourneuxi (CR/CR); Squalius keadicus (EN/EN); Tropidophoxinellus spartiaticus (VU/VU);* Avfiauna: 9 species | *Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Alectoris graeca (VU/LC); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Vanellus vanellus (VU/VU); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 1 species | *Canis aureus (EN/LC);*	Broad-leaved forest (Code CLC:311)
ES15	No relevant data identified.	No relevant data identified.
ES16	Almost half of the route passes through shrublands. Presence of A71 highway has increased human presence and nuisance. Most prominent features in the area are R. Evrotas and a mosaic of shrublands and tree-crops (olive groves). The general character of the area is natural (not pristine but, mainly unaffected). As such, the naturalness of area is moderate.	Most of the route passes through area dominated by tree crops (olive groves) with patches of natural areas (shrublands). Presence of A71 highway has increased human presence and nuisance. Although tree-crops are present, the general character of the area is natural (not pristine but, mainly unaffected). As such, the naturalness of area is moderate.
ES17	No relevant data identified.	No relevant data identified.
OC		
OC1	n/a	n/a
OC2	n/a	n/a
OC3	n/a	n/a

	Evrotas Area	
OC4	n/a	n/a
P		
P1	No intersection with Natura Areas	No intersection with Natura Areas
P2	None within the study area	None within the study area
P3	No intersection with Wild Life Refuge areas	No intersection with Wild Life Refuge areas
P4	None within the study area	None within the study area
P5	No intersection with National Parks	No intersection with National Parks
P6	None within the study area	None within the study area
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	None within the study area	None within the study area
P9	1 (Evrotas river)	1 (Evrotas river)
P10	n/a	n/a
P11	n/a	n/a
P12	n/a	n/a
P13	n/a	n/a
P14	n/a	n/a
P15	n/a	n/a
S		

	Evrotas Area	
S1	33% of the route crosses through agricultural areas whilst 64% from natural or semi-natural ones (3% from other types).	82% of the route crosses through agricultural areas whilst 17% from natural or semi-natural ones (1% from other types).
S1.1	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.131 km (3.65%)	0.093 km (1.35%)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	0.000 km (0.00%)	0.000 km (0.00%)
S1.6	0.000 km (0.00%)	0.000 km (0.00%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	1.154 km (16.68%)
S1.9	1.18 km (32.98%)	4.526 km (65.44%)
S1.10	0.000 km (0.00%)	0.000 km (0.00%)
S1.11	0.000 km (0.00%)	0.000 km (0.00%)
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are tree crops. Few small roads, mainly agricultural ones connecting fields, are crossed. Two major roads are crossed.	Alternative engages areas of limited economic development, restricted to agricultural activities - almost all of them are tree crops. Some small roads, mainly agricultural ones connecting fields, are crossed. Two major roads are crossed.
S3	n/a	n/a

	Evrotas Area	
S4	0.270 km passes through Evrota Protection Area ("PEP3") and 1.5 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of Mistra SXOOAP.	0.960 km passes through Evrota Protection Area ("PEP3") and 4.7 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of Mistra SXOOAP.
S5	No engagement	No engagement
S6	No engagement	No engagement
S7	n/a	n/a
S8	Total: 1 to the SW: Karavas Soustianon 220 m.	Total: 2 to the NE: Karavas Logastras 616 m, Karavas Soustianon 78 m.
S9	n/a	n/a
S10	n/a	n/a
S11	n/a	n/a
S12	n/a	n/a
S13	n/a	n/a
S14	n/a	n/a
CH		
CH1	No relevant data identified.	No relevant data identified.
CH2	No relevant data identified.	1. "Pita" site at indicative distance at 510 m to the south.
CH3	No relevant data identified.	No relevant data identified.
CH4	No relevant data identified.	No relevant data identified.
CH5	No relevant data identified.	No relevant data identified.

	Evrotas Area	
D		
D1	Overall, no engagement is identified.	Overall, no engagement is identified.
D1.1	no facilities (min distance over 1km)	no facilities (min distance over 1km)
D1.2	no facilities (min distance over 1km)	no facilities (min distance over 1km)
D1.3	no facilities (min distance over 1km)	no facilities (min distance over 1km)
D2	0.00 km	0.00 km
D3	No relevant data identified. Limited rafting activity may be engaged at R. Evrotas.	No relevant data identified. Limited rafting activity may be engaged at R. Evrotas.
D4	No relevant data identified.	No relevant data identified.
D5	0.270 km passes through Evrota Protection Area ("PEP3") and 1.5 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of Mistra SXOOAP.	0.960 km passes through Evrota Protection Area ("PEP3") and 4.7 km passes through Area of Agricultural Landscape and Activities Protection ("PEPD2") of Mistra SXOOAP.
A		
A1	1 (R. of Peloponnese)	1 (R. of Peloponnese)
A2	1 (Arcadia)	1 (Arcadia)
A3	1 (Sparti)	1 (Sparti)

7 A.7.5. MEGALOPOLI ALTERNATIVES ASSESSMENT MATRIX

	Megalopoli Branch	
Code	Megalopoli-BC	Megalopolis-Alt1
L1	9.89 km	9.7 km
L2	9.89 km	9.70 km
L3	n/a	n/a
ES		
ES1	2.672 (27%)	2.088 (21.53%)
ES2	0.000 (0.00%)	0.000 (0.00%)
ES3	0.000 (0.00%)	0.000 (0.00%)
ES4	0.000 (0.00%)	0.000 (0.00%)
ES5	0.000 (0.00%)	0.000 (0.00%)
ES6	3.018 (30.52%)	2.140 (22.06%)
ES7	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.000 (0.00%)
ES10	0.000 (0.00%)	0.000 (0.00%)
ES11	0.000 (0.00%)	0.000 (0.00%)
ES12	0.000 (0.00%)	0.000 (0.00%)

	Megalopoli Branch	
ES13	0.000 (0.00%)	0.000 (0.00%)
ES14	Avifauna: 8 species | *Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Alectoris graeca (VU/LC); Falco naumanni (VU/VU); Recurvirostra avosetta (VU/LC); Vanellus vanellus (VU/VU); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);*	Avifauna: 8 species | *Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Alectoris graeca (VU/LC); Falco naumanni(VU/VU); Recurvirostra avosetta (VU/LC); Vanellus vanellus (VU/VU); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);*
ES15	No relevant data identified.	No relevant data identified.
ES16	Almost half of the route passes through natural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area, north of R. Alfios; south the area is more natural. Most prominent features in the area are R. Alfios, PPC's facilities, and a mosaic of natural and agricultural areas. The general character of the area is that of degraded natural environment. As such, the naturalness of area is low.	Almost half of the route passes through natural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area, north of R. Alfios; south the area is more natural. Most prominent features in the area are R. Alfios, PPC's facilities, and a mosaic of natural and agricultural areas. The general character of the area is that of degraded natural environment. As such, the naturalness of area is low
ES17	No engagement assessed. Crossing with DESFA's pipeline. Megalopoli Power Plant is at 4.8 km to the W. 1.3 km from the limits of the Concession area managed by PPC (Lignite Centre of Megalopoli).	No engagement assessed. Crossing with DESFA's pipeline. Megalopoli Power Plant is at 4.7 km to the W. 0.3 km from the limits of the Concession area managed by PPC (Lignite Centre of Megalopoli).
OC		
OC1	n/a	n/a

	Megalopoli Branch	
OC2	n/a	n/a
OC3	n/a	n/a
OC4	n/a	n/a
P		
P1	No intersection with Natura Areas	No intersection with Natura Areas
P2	None within the study area	None within the study area
P3	No intersection with Wild Life Refuge areas	No intersection with Wild Life Refuge areas
P4	None within the study area	None within the study area
P5	No intersection with National Parks	No intersection with National Parks
P6	None within the study area	None within the study area
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	None within the study area	None within the study area
P9	2 (Kountinfarina river & Alfeios river)	2 (Kountinfarina river & Alfeios river)
P10	n/a	n/a
P11	n/a	n/a
P12	n/a	n/a
P13	n/a	n/a
P14	n/a	n/a
P15	n/a	n/a

	Megalopoli Branch	
S		
S1	45% of the route crosses through agricultural areas whilst 55% from natural or semi-natural ones.	56% of the route crosses through agricultural areas whilst 44% from natural or semi-natural ones.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.342 km (3.46%)	0.101 km (1.04%)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	0.000 km (0.00%)	0.000 km (0.00%)
S1.6	0.000 km (0.00%)	0.000 km (0.00%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)
S1.9	0.000 km (0.00%)	0.000 km (0.00%)
S1.10	1.607 km (16.25%)	2.003 km (20.65%)
S1.11	2.252 km (22.76%)	3.366 km (34.71%)
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - most of them are annual crops. Crossing of A7 and Sparti-Megalopoli regional road is noted. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area.	Alternative engages areas of limited economic development, restricted to agricultural activities - most of them are annual crops. Crossing of A7 and proximity to A71 highways is noted. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed. Proximity to Megalopoli Power Plant and more importantly lignite quarry fields is characterizing the broader area.

	Megalopoli Branch	
S3	n/a	n/a
S4	No relevant data identified.	No relevant data identified.
S5	No engagement	No engagement
S6	No engagement	No engagement
S7	n/a	n/a
S8	Total: 3 to the W: Perivolia 225 m, to the NW: Megalopoli 710 m to the N: Kato Makrisi 530 m	Total: 4 to the N: Megalopoli 445 m to the E: Perivolia 300 m to the W: Vrisoules 445 m, Kamaritsa 300 m.
S9	n/a	n/a
S10	n/a	n/a
S11	n/a	n/a
S12	n/a	n/a
S13	n/a	n/a
S14	n/a	n/a
CH		
CH1	No relevant data identified.	No relevant data identified.
CH2	2 (345 m to the S; 150 to the W)	3 (345 m to the S; 350 to the W; 920 to the E)
CH3	No relevant data identified.	No relevant data identified.
CH4	No relevant data identified.	No relevant data identified.

	Megalopoli Branch	
CH5	No relevant data identified.	No relevant data identified.
D		
D1	Proximity to 1 RES project; Megalopoli Power Plant and Lignite Centre of PPC in the broader area. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.	Engagement with 1 and proximity to 2 RES projects; Megalopoli Power Plant and Lignite Centre of PPC in the broader area. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.
D1.1	Total: 1 to the W: 350 m	Total: 3 1 crossed for 60 m to the W: 2 at 280 m
D1.2	No relevant data identified.	No relevant data identified.
D1.3	No relevant data identified.	No relevant data identified.
D2	0.00 km	0.00 km
D3	No relevant data identified.	No relevant data identified.
D4	No engagement. However, the broader area is widely known for the Megalopoli Power Plant of PPC and Megalopoli Lignite Centre. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.	No engagement. However, the broader area is widely known for the Megalopoli Power Plant of PPC and Megalopoli Lignite Centre. Recent developments include break of lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.
D5	Transition of Megalopoli Lignite Centre (Mine and Power Plant) to less polluting activities is under discussion with natural gas having a key role.	Transition of Megalopoli Lignite Centre (Mine and Power Plant) to less polluting activities is under discussion with natural gas having a key role.

	Megalopoli Branch	
A		
A1	1 (R. of Peloponnese)	1 (R. of Peloponnese)
A2	1 (Arcadia)	1 (Arcadia)
A3	1 (Megalopoli)	1 (Megalopoli)

7 A.7.6. FOLOI PLATEAU ALTERNATIVES ASSESSMENT MATRIX

	Foloi Plateau	
Code	CCS1_Foloi-BC	CCS1_Foloi-Alt2
L1	32.66 km	34.74 km
L2	32.66 km	34.74 km
L3	n/a	n/a
ES		
ES1	0.359 (1.11%)	0.000 (0.00%)
ES2	0.000 (0.00%)	0.000 (0.00%)
ES3	1.114 (3.41%)	2.626 (7.56%)
ES4	0.000 (0.00%)	0.000 (0.00%)
ES5	0.592 (1.81%)	2.273 (6.54%)

	Foloi Plateau	
ES6	3.586 (10.98%)	3.561 (10.25%)
ES7	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.000 (0.00%)
ES10	0.000 (0.00%)	0.000 (0.00%)
ES11	0.000 (0.00%)	0.000 (0.00%)
ES12	0.000 (0.00%)	0.000 (0.00%)
ES13	0.000 (0.00%)	0.000 (0.00%)
ES14	Avifauna: 9 species | *Circus pygargus (CR/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Alectoris graeca (VU/LC); Recurvirostra avosetta (VU/LC); Vanellus vanellus (VU/VU); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);*	Avifauna: 13 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Alectoris graeca (VU/LC); Ardea alba (VU/LC); Recurvirostra avosetta (VU/LC); Vanellus vanellus (VU/VU); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);*

	Foloi Plateau	
ES15	Route crosses Mt Foloi IBA for approx. 12 km. Mt Foloi hosts the oak forest of Foloi (protected area). It is the only native broad-leaved oak forest in the Balkans, with old clusters of oaks. In general, environmental areas of interest lie only within the Natura 2000 site.	Route crosses R. Lestenitsas and the area of Goumero Gorge (characterized as monument of natural beauty by Ministry of Culture). The gorge's path includes the cave of Askiti, in which the ancient oracle of the athletes was once officiating, while later the Holy Monastery of Askiti was built there, which is characterized as an important monument of the Byzantine period, the ancient cobblestone path Byzantine church of 1200 AD and ends in the village of Goumero. On the path you will find the oldest olive trees in Greece, with branches from which they crowned the Olympians. The gorge surrounded by lush vegetation and springs with cool water.
ES16	Most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Crossing of Foloi Plateau and corresponding protected area. Intense morphology of rippled cultivated areas. Most prominent features in the area is Foloi Plateau; the oak forest of Foloi is the only native broad-leaved oak forest in the Balkans, with old clusters of oaks. The general character of the area is that of natural environment with significant agricultural activity. As such, the naturalness of area is moderate.	Most of the route passes through agricultural areas, whilst the rest mainly through land principally occupied by agriculture, with significant areas of natural vegetation. Proximity to Ancient Olympia UNESCO site. Intense morphology of rippled cultivated areas. Most prominent features in the area is R. Lestenitsas and Goumero Gorge. Goumero Gorge is a monument of natural beauty (Ministry of Culture) where one can find the oldest olive trees in Greece, with branches from which they crowned the Olympians. The gorge surrounded by lush vegetation and springs with cool water. The general character of the area is that of natural environment with significant agricultural activity. As such, the naturalness of area is high.
ES17	No relevant data identified.	No relevant data identified.

	Foloi Plateau	
OC		
OC1	n/a	n/a
OC2	n/a	n/a
OC3	n/a	n/a
OC4	n/a	n/a
P		
P1	Total Number: 1 10.190 km (GR2330002 SPA & SAC)	No intersection with Natura Areas
P2	No additional area	Total number: 1 min distance : 0,730 km (GR2330002 SPA & SAC)
P3	No intersection with Wild Life Refuge areas	No intersection with Wild Life Refuge areas
P4	None within the study area	None within the study area
P5	No intersection with National Parks	No intersection with National Parks
P6	None within the study area	None within the study area
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	None within the study area	None within the study area
P9	0	1 (Lestenitsas river)
P10	n/a	n/a
P11	n/a	n/a

	Foloi Plateau	
P12	n/a	n/a
P13	n/a	n/a
P14	n/a	n/a
P15	n/a	n/a
S		
S1	70% of the route crosses through agricultural areas whilst 18% from natural or semi-natural ones (12% from other types).	76% of the route crosses through agricultural areas whilst 24% from natural or semi-natural ones.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.000 km (0.00%)	0.000 km (0.00%)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	9.223 km (28.24%)	2.091 km (6.02%)
S1.6	0.000 km (0.00%)	0.000 km (0.00%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)
S1.9	2.866 km (8.77%)	4.620 km (13.30%)
S1.10	5.992 km (18.35%)	5.463 km (15.73%)
S1.11	8.922 km (27.32%)	14.100 km (40.59%)

	Foloi Plateau	
S2	Basecase engages areas of limited economic development, restricted to agricultural activities - few of them are tree crops. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed.	Alternative engages areas of limited economic development, restricted to agricultural activities - quite a few of them are tree crops. Numerous small roads, mainly agricultural ones connecting small rural settlements or simply fields, are crossed.
S3	n/a	n/a
S4	No relevant data identified.	No relevant data identified.
S5	No engagement	No engagement
S6	No engagement	No engagement
S7	n/a	n/a
S8	Total: 6 to the SW: Ampari 360 m, Nea Persena 750 m, Goumero 550 m to the NE: Xirokampos 520, Pefki 840 m, Agia Anna 890 m,	Total: 3 to the SW: Pefkes 320 m, Kladeos 510 m, Chelidon 700 m
S9	n/a	n/a
S10	n/a	n/a
S11	n/a	n/a
S12	n/a	n/a
S13	n/a	n/a
S14	n/a	n/a
CH		
CH1	0	0

	Foloi Plateau	
CH2	1 Cave	Engagement with Goumero Gorge. Goumero Gorge is characterized as monument of natural beauty by Ministry of Culture. The gorge's path includes the cave of Askiti, in which the ancient oracle of the athletes once was officiating, while later the Holy Monastery of Askiti was built there, which is characterized as an important monument of the Byzantine period, the ancient cobblestone path Byzantine church of 1200 AD and ends in the village of Goumero. On the path you will find the oldest olive trees in Greece, with branches from which they crowned the Olympians.
CH3	1. The entire Foloi Plateau area is an Area of High Archaeological Potential. Foloi forest is also known as the Forest of Centaurs, a forest full of myths and traditions, in which had the kingdom of Centaur Folos (son of Silinos and the nymph Melia), the good Centaur who hosted the mythical hero Hercules when he chased the Erymanthios boar.	Engagement with Goumero Gorge. Goumero Gorge is characterized as monument of natural beauty by Ministry of Culture. The gorge's path includes the cave of Askiti, in which the ancient oracle of the athletes was once officiating, while later the Holy Monastery of Askiti was built there, which is characterized as an important monument of the Byzantine period, the ancient cobblestone path Byzantine church of 1200 AD and ends in the village of Goumero. On the path you will find the oldest olive trees in Greece, with branches from which they crowned the Olympians.
CH4	3 (Cave of Panayia Spiliotisa; Agios Georgios Church; Profitis Ilias Church)	1 (Monastery of Nikava)

	Foloi Plateau	
CH5	No relevant data identified. No relevant data identified. Foloi forest is known as the Forest of Centaurs, a forest full of myths and traditions, in which had the kingdom of Centaur Folos.	No relevant data identified. No relevant data identified. Foloi forest is known as the Forest of Centaurs, a forest full of myths and traditions, in which had the kingdom of Centaur Folos.
D		
D1	Overall, no engagement is identified.	0
D1.1	2	0
D1.2	0	0
D1.3	0	0
D2	32.66 km	32.66 km
D3	The broader area is considered significant alternative (mainly eco) tourism venue. Numerous paths and areas of natural beauty are located and in the broader area. Some such areas are crossed by the alternative, whilst paths may also be crossed. No significant tourism establishments are identified.	The broader area is considered significant tourism venue due to proximity to Ancient Olympia; alternative tourism is also very important in the area. Numerous paths and areas of natural beauty are located and in the broader area. Some such paths and areas are crossed by the alternative. No significant tourism establishments are identified; monasteries (visited for religious tourism) are noted (in the broader area).
D4	No relevant data identified.	No relevant data identified.
D5	No significant economic activities have been identified.	No significant economic activities have been identified.
A		
A1	1 (R. of W. Greece)	1 (R. of W. Greece)
A2	1 (Ilia)	1 (Ilia)

	Foloi Plateau	
A3	2 (Ancient Olympia; Pyrgos)	2 (Ancient Olympia; Pyrgos)

7 A.7.7. PATRAIKOS CROSSING ALTERNATIVES ASSESSMENT MATRIX

	Patraikos Crossing			
Code	OSS4-BC	OSS4-Alt3 (Scoping)	OSS4-Alt1	OSS4-Alt2
L1	59.68 km	65.77 km	66.36 km	74.66 km
L2	42.45 km	48.54 km	43.11 km	53.09 km
L3	17.23 km	17.23 km	23.25 km	21.57 km
ES				
ES1	10.167 (23.98% of onshore length/17.04% of total length)	9462.82 (19.49% of onshore length/14.41% of total length)	4.509 (10.41% of onshore length/6.79% of total length)	4.509 (8.48% of onshore length/6.04% of total length
ES2	0.000 (0.00%)	0.000 (0.00%)	0.751 (1.73% of onshore length/1.13% of total length)	0.752 (1.45% of onshore length/1.00% of total length)
ES3	3.102 (7.39% of onshore length/5.20% of total length)	3841.02 (7.91% of onshore length/5.85% of total length)	2.747 (0.63% of onshore length/0.41% of total length)	2.747 (5.16% of onshore length/3.68% of total length)
ES4	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES5	3.445 (8.12% of onshore length/5.77% of total length)	3294.48(6.79% of onshore length/5.02% of total length)	0.828 (1.91% of onshore length/1.24% of total length)	0.828 (1.55% of onshore length/1.11% of total length)

	Patraikos Crossing			
ES6	0.454 (1.07% of onshore length/0.7% of total length)	0.000 (0.00%)	0.000 (0.00%)	1.812 (3.41% of onshore length/2.42% of total length)
ES7	0.426 (1.00% of onshore length/0.71% of total length)	0.263(0.81% of onshore length/0.6% of total length)	0.216 (0.50% of onshore length/0.33% of total length)	0.216 (0.40% of onshore length/0.29% of total length)
ES8	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.395 (0.81% of onshore length/0.6% of total length)	0.000 (0.00%)	0.000 (0.00%)
ES10	0.286 (0.67% of onshore length/0.48% of total length)	0.301 (0.62% of onshore length/0.46% of total length)	0.000 (0.00%)	0.000 (0.00%)

	Patraikos Crossing			
ES11	LF4 Total number 3: 1.11 km Infralittoral fine mud (A5.34 - Eunis code) 1.20 km *Posidonia Oceanica* beds (1120 Annex I code) 1.11 km Probability of existence of coralligenous outcrops* >50% (MEDISEH) LF5 Total number 3: 2.13 km Infralittoral fine sand (A5.23 - Eunis code) 1.79 km *Posidonia Oceanica* beds (1120 Annex I code) 2.15 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	LF4 Total number 3: 1.11 km Infralittoral fine mud (A5.34 - Eunis code) 1.20 km *Posidonia Oceanica* beds (1120 Annex I code) 1.11 km Probability of existence of coralligenous outcrops* >50% (MEDISEH) LF5 Total number 3: 2.13 km Infralittoral fine sand (A5.23 - Eunis code) 1.79 km *Posidonia Oceanica* beds (1120 Annex I code) 2.15 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	LF4 Total number 3: 1.11 km Infralittoral fine mud (A5.34 - Eunis code) 1.20 km *Posidonia Oceanica* beds (1120 Annex I code) 1.11 km Probability of existence of coralligenous outcrops* >50% (MEDISEH) LF5a Total number 3: 1.91 Infralittoral fine sand(A5.23 - Eunis code) 0.17 km *Posidonia Oceanica* beds (1120 Annex I code) 0.87 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	LF4a Total number 5: 2.11 km Infralittoral sandy mud (A5.33 - Eunis code) ; 0.41 km Mediterranean biocoenosis of coastal terrigenous muds (habitat A5.39 - Eunis code) (NT - Near Threatened); 0.04 km Infralittoral fine mud (A5:34 - Eunis code) 0.49 km *Posidonia Oceanica* beds (1120) 1.90 km Probability of existence of coralligenous outcrops* >50% (MEDISEH) LF5a Total number 3: 1.04 km Infralittoral fine sand(A5.23 - Eunis code) 0.17 km *Posidonia Oceanica* beds (1120 Annex I code) 0.87 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)

	Patraikos Crossing			
ES12	Total number 5: 1.60 km Mediterranean biocoenosis of coastal detritic bottoms (A5.46 - Eunis 2012 code) (DD - Data Deficient) 10.87 km Mediterranean biocoenosis of coastal terrigenous muds (A5.39 Eunis 2012 code) (NT - Near Threatened) 0.82 km Infralittoral fine mud (A5.34 - Eunis 2012 code) 0.99 km Infralittoral fine sands (A5.23 - Eunis 2012 code) (DD - Data Deficient) 4.19 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	Total number 5: 1.60 km Mediterranean biocoenosis of coastal detritic bottoms (A5.46 - Eunis 2012 code) (DD - Data Deficient) 10.87 km Mediterranean biocoenosis of coastal terrigenous muds (A5.39 Eunis 2012 code) (NT - Near Threatened) 0.82 km Infralittoral fine mud (A5.34 - Eunis 2012 code) 0.99 km Infralittoral fine sands (A5.23 - Eunis 2012 code) (DD - Data Deficient) 4.19 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	Total number 5: 15.06 km Mediterranean biocoenosis of coastal terrigenous muds (A5.39 Eunis 2012 code) (NT - Near Threatened) 0.91 km Mediterranean biocoenosis of coastal detritic bottoms (A5.46 - Eunis 2012 code) (DD - Data Deficient) 0.82 km Infralittoral fine mud (A5.34 - Eunis 2012 code) 3.81 km Infralittoral fine sands (A5.23 - Eunis 2012 code) (DD - Data Deficient) 5.85 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)	Total number 5: 14.60 km Mediterranean biocoenosis of coastal terrigenous muds (A5.39 Eunis 2012 code) (NT - Near Threatened) 3.05 km Mediterranean biocoenosis of coastal detritic bottoms (A5.46 - Eunis 2012 code) (DD - Data Deficient) 0.63 km Infralittoral fine sands (A5.23 - Eunis 2012 code) (DD - Data Deficient) 4.19 km Probability of existence of coralligenous outcrops* >50% (MEDISEH)

	Patraikos Crossing			
ES13	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). In addition, according the EUROSION Project i) The coast on LF4 characterized by a soft strand (less than 100 m) in front of a rocky coast. ii) The coast on LF5 characterized by extensive beaches	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). In addition, according the EUROSION Project i) The coast on LF4 characterized by a soft strand (less than 100 m) in front of a rocky coast. ii) The coast on LF5 characterized by extensive beaches	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). In addition, according the EUROSION Project i) The coast on LF4 characterized by a soft strand (less than 100 m) in front of a rocky coast. ii) The coast on LF5a characterized by extensive beaches	According to the 3rd national report on the implementation of the Habitats Directive (Directive 92/43/EEC) in Greece, the area is not located in the distribution of the Habitat 8330 (Annex I of Directive 92/43/EEC). In addition, according the EUROSION Project i) The coast on LF4a characterized by extensive beaches. ii) The coast on LF5a characterized by extensive beaches
ES14	Avifauna: 30 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna*	Avifauna: 30 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna*	Avifauna: 30 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida*	Avifauna: 30 species | *Plegadis falcinellus (CR/LC); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila chrysaetos (EN/LC); Larus melanocephalus (EN/LC); Chlidonias hybrida*

	tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC); Mammals: 5 species | *Lutra lutra (EN/NT); Canis lupus (VU/LC); Canis aureus (EN/LC); Delphinus delphis (EN/LC); Tursiops truncatus (VU/ LC)*	*tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU);Acrocephalus melanopogon (VU/LC);* Mammals: 5 species | *Lutra lutra (EN/NT); Canis lupus (VU/LC); Canis aureus (EN/LC); Delphinus delphis (EN/LC); Tursiops truncatus (VU/ LC)*	*(EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 4 species | *Lutra lutra (EN/NT); Canis aureus (EN/LC); Delphinus delphis*	*(EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU);Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon* (VU/LC); Mammals: 4 species | *Lutra lutra (EN/NT); Canis aureus (EN/LC); Delphinus delphis*

	Patraikos Crossing			
			(EN/LC); Tursiops truncatus (VU/ LC)	*(EN/LC); Tursiops truncatus (VU/ LC)*
ES15	In Western Continental Greece, route crosses an unfragmented forested area in the broader area of Mt Arakynthos, for approx. 10 km (KP 15- KP 25); wolf's presence has been verified as well as suitable home sites.	In Western Continental Greece, route crosses an unfragmented forested area in the broader area of Mt Arakynthos, for approx. 10 km (KP 15- KP 25); wolf's presence has been verified as well as suitable home sites.	In Western Continental Greece, route crosses an unfragmented forested area in the broader area of Mt Arakynthos, for approx. 4 km.	In Western Continental Greece, route crosses an unfragmented forested area in the broader area of Mt Arakynthos, for approx. 4 km.
ES16	CCS1 section passes through the plain of Achaia (intense agricultural activity). LF4 is located within protected areas/ habitats. Patraikos Gulf is a very sensitive area for marine biodiversity; Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). LF5 is located within protected areas/ habitats. Almost half of the CCS2 section passes through plain of Evinochori, in the estuary of R. Evinos; the rest of the CCS2 section passes through completely unfragmented forested areas of Mt	CCS1 section passes through the plain of Achaia (intense agricultural activity). LF4 is located within protected areas/ habitats. Patraikos Gulf is a very sensitive area for marine biodiversity; Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). LF5 is located within protected areas/ habitats. Almost half of the CCS2 section passes through plain of Evinochori, in the estuary of R. Evinos; the rest of the CCS2 section passes through completely unfragmented forested areas of Mt	CCS1 section passes through the plain of Achaia (intense agricultural activity). LF4 is located within protected areas/ habitats. Patraikos Gulf is a very sensitive area for marine biodiversity; Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). LF5a is located within protected areas/ habitats. Most of the CCS2 section passes through agricultural lands; the rest of the CCS2 section passes	CCS1 section passes through the plain of Achaia (intense agricultural activity). LF4a is located within natural areas with scattered houses (mostly summer houses). Patraikos Gulf is a very sensitive area for marine biodiversity; Patraikos Gulf hosts significant anthropogenic pressures (mainly due to maritime traffic and aquaculture activities). LF5a is located within protected areas/ habitats. Most of the CCS2 section passes through agricultural lands; the

	Patraikos Crossing			
	Arakynthos. Most prominent features include the plains of Achaia (intensively cultivated) and Evinochori (traditional cultivated), Patraikos Gulf, R. Evinos and its estuary, Mt Varasova and Mt. Arakynthos. As such, the naturalness of the CCS1 section is very low, of OSS4 is moderate and of CCS2 section is high.	Arakynthos and south limits of Lake Trichonida. Most prominent features include the plains of Achaia (intensively cultivated) and Evinochori (traditional cultivated), Patraikos Gulf, R. Evinos and its estuary, Mt Varasova and Mt. Arakynthos, and L. Trichonida. As such, the naturalness of the CCS1 section is very low, of OSS4 is moderate and of CCS2 section is high.	through the eastern foothills of Mt Arakynthos, a mixed of natural and agricultural areas, S of Trichonida Lake. Most prominent features include the plain of Achaia (intensively cultivated), Patraikos Gulf, R. Evinos, Mt. Varasova and Mt. Arakynthos, and L. Trichonida. As such, the naturalness of the CCS1 section is very low, of OSS4 is moderate and of CCS2 section is moderate.	rest of the CCS2 section passes through the eastern foothills of Mt Arakynthos, a mixed of natural and agricultural areas, S of Trichonida Lake. Most prominent features include the plain of Achaia (intensively cultivated), Patraikos Gulf, R. Evinos, Mt. Varasova, Mt. Arakynthos, and L. Trichonida. As such, the naturalness of the CCS1 section is very low, of OSS4 is moderate and of CCS2 section is moderate.
ES17	Patraikos gulf hosts indications for gas pockets.	Patraikos gulf hosts indications for gas pockets.	Patraikos gulf hosts indications for gas pockets.	Patraikos gulf hosts indications for gas pockets.
OC				
OC1	4.08	4.08	3.48	4.13
OC2	13.21	13.21	19.79	17.46
OC3	0	0	0	0
OC4	0	0	0	0
P				

	Patraikos Crossing			
P1	No intersection with Natura Areas	422,86 (GR2310001 and GR2310015, overlapping)	No intersection with Natura Areas	No intersection with Natura Areas
P2	Total number : 3 Min distance : 0.070 km (GR2310001 - SAC & GR2310015 - SPA. overlapping); 0.702 km (GR2310005 -SAC); 0.009 km (GR2310010 - SPA)	Total number: 2 Min distance: 0.009 km (GR2310010 - SPA). 0.010 km (GR2310009 -SPA)	Total number: 2 Min distance : 0.101 km (GR2310009 - SAC); 0.370 km (GR2310005 -SAC)	Total number: 2 Min distance : 0.101 km (GR2310009 - SAC); 1.006 km (GR2310005 -SAC)
P3	Total number : 1 5.622 km Arakynthos-Mataraga-Gavalou mountain	Total number : 1 4274.32 m Arakynthos-Mataraga-Gavalou mountain	No intersection with Wild Life Refuge areas	No intersection with Wild Life Refuge areas
P4	No additional area	No additional area	Total number: 1 min distance: 0.090 km (Trikorfo-Kalavrouza-Makineia-Vlaxomandra areas)	Total number: 1 min distance: 0.090 km (Trikorfo-Kalavrouza-Makineia-Vlaxomandra areas)
P5	Total number : 1 0.616 km (Lagoon of Messologi-Aitoliko (Zone ΠΠ1))	Total number : 1 5.2 km (Lagoon of Messologi-Aitoliko (Zone ΠΠ1))	Total number : 1 0.247 km (Lagoon of Messologi-Aitoliko (Zone ΠΠ1))	Total number : 1 0.247 km (Lagoon of Messologi-Aitoliko (Zone ΠΠ1))
P6	Total number : 1 Min. Distance : 0.121 km (Lagoon of Messolonghi/Aetoliko-exterior boundaries)	Total number : 1 Min. Distance : 0.121 km (Lagoon of Messolonghi/Aetoliko-exterior boundaries)	Total number : 1 Min. Distance from offshore part: 0.576 km (Lagoon of Messologi-Aitoliko(exterior boundaries) | from onshore part > 1 km	No additional area

	Patraikos Crossing			
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	Total number : 1 Min. Distance : 0.410 km (Varasova mountain)	Total number : 1 Min. Distance : 2.89 km (Klisova lagoon)	Total number : 1 Min. Distance : 0.356 km (Varasova mountain)	Total number : 1 Min. Distance : 0.356 km (Varasova mountain)
P9	1 (Evinos river)	1 (Evinos river)	2 (Kato Vasiliki river; Evinos river)	5 (Serdini river; Parapeiros river; Peiros river; Kato Vasiliki river; Evinos river)
P10	total length: 2,720 km (1023 m at LF4 and 1697 m at LF5)	total length: 2.720 km (1023 m at LF4 and 1697 m at LF5)	total length: 1.274 km (1023 m at LF4 and 251 m at LF5)	total length: 0.672 km (421 m at LF4 and 251 m at LF5)
P11	No additional area	No additional area	No additional area	No additional area
P12	17.23 (entire offshore route)	17.23 (entire offshore route)	23.25 (entire offshore route)	21.57 (entire offshore route)
P13	No additional area	No additional area	No additional area	No additional area
P14	Patraikos Gulf is a candidate IMMA. Engagement with Wolf habitats (1800 m through confirmed wolf presence, 3425 m through Suitable home site)	Patraikos Gulf is a candidate IMMA. Engagement with Wolf habitats (1800 m through confirmed wolf presence, 960 m through Suitable home site)	Patraikos Gulf is a candidate IMMA.	Patraikos Gulf is a candidate IMMA.
P15	No additional area	No additional area	No additional area	No additional area
S				

	Patraikos Crossing			
S1	58% of the onshore route crosses through agricultural areas whilst 42% from natural or semi-natural ones.	65% of the onshore route crosses through agricultural areas whilst 35% from natural or semi-natural ones.	78% of the onshore route crosses through agricultural areas whilst 21% from natural or semi-natural ones and 1% from discontinuous urban fabric.	79% of the onshore route crosses through agricultural areas whilst 20% from natural or semi-natural ones and 1% from discontinuous urban fabric.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)	0.332 km (0.77% of onshore length/0.50% of total length)	0.332 km (0.62% of onshore length/0.45% of total length)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.170 km (0.40% of onshore length/0.28% of total length)	0.150 km (0.22% of onshore length/0.16% of total length)	0.098 km (0.23% of onshore length/0.14% of total length	0.098 km (0.18% onshore length/0.13% of total length)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	0.000 km (0.00%)	0.841 km (1.73% of onshore length/1.28% of total length	3.686 km (8.51% of onshore length/5.55% of total length	3.554 km (6.69% of onshore length/4.76% of total length
S1.6	17.695 km (41.74% of onshore length/29.65% of total length	17.021 km (35% of onshore length/26% of total length	11.465 km (26.48% of onshore length/17.27% of total length)	1.870 km (3.52% of onshore length/2.50% of total length)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)	2.311 km (4.35% of onshore length/3.09% of total length)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)	0.000 km (0.00%)	0.283 km (0.53% of onshore length/0.37% of total length)
S1.9	1.378 km (3.25% of onshore length/2.30% of total length)	4.726 km (9.74% of onshore length/7.20% of total length)	5.258 km (12.14% of onshore length/7.92% of total length)	11.721 km (22.06% of onshore route/15.70% of total route)

	Patraikos Crossing			
S1.10	4.895 km (11.55% of onshore length/8.20% of total length)	6.861 km (14.14% of onshore length/10.45% of total length)	9.998 km (23.09% of onshore length/15.07% of total length)	14.788 km (27.83% of onshore length/19.80% of total length)
S1.11	0.367 km (0.87% of onshore length/0.62% of total length)	1.380 km (2.81% of onshore length/2.10% of total length)	3.396 km (7.84% of onshore length/5.11% of total length)	7.315 km (13.76% of onshore route/9.79% of total length)
S2	CCS1 area passes through intensively cultivated fields of Achaia Plain. LF4 hosts significant touristic facilities in the surrounding area. LF5 and CCS2 are also characterized by intensively cultivated fields of Evinochori Plain. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section.	CCS1 area passes through intensively cultivated fields of Achaia Plain. LF4 hosts significant touristic facilities in the surrounding area. LF5 and CCS2 are also characterized by intensively cultivated fields of Evinochori Plain. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section.	CCS1 area passes through intensively cultivated fields of Achaia Plain. LF4 hosts significant touristic facilities in the surrounding area. LF5a and CCS2 are characterized by cultivated fields E of Mt Varasova. Numerous small, rural settlements hosting small touristic facilities are located, especially along CCS1 section and at the end of CCS2 section.	CCS1 area passes through intensively cultivated fields of Achaia Plain; it also passes very close to the Patra Industrial Area. LF4a is located within an area of numerous summer houses and significant touristic facilities. LF5a and CCS2 are characterized by cultivated fields E of Mt Varasova. Characteristic discontinuous urban fabric, of scattered rural settlements, summer houses and touristic facilities, especially along CCS1 section. Small, rural settlements at the end of CCS2 section.

	Patraikos Crossing			
S3	LF4 hosts significant touristic facilities in the surrounding area. LF5 is also characterized by intensively cultivated fields of Evinochori Plain.	LF4 hosts significant touristic facilities in the surrounding area. LF5 is also characterized by intensively cultivated fields of Evinochori Plain.	LF4 hosts significant touristic facilities in the surrounding area. LF5a and CCS2 are characterized by cultivated fields E of Mt Varasova, next to Kato Vasiliki settlement.	LF4a is located within an area of numerous summer houses and significant touristic facilities. LF5a and CCS2 are characterized by cultivated fields E of Mt Varasova, next to Kato Vasiliki settlement.
S4	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5 is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5 is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5a is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4a area hosts numerous significant tourism facilities whilst numerous smaller ones are expected. LF5a is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.
S5	Route length : 6644.409km	Route length : 6644.409km	Route length : 3399.583km	Route length : 6.672 km
S6	No relevant data identified.	No relevant data identified.	No relevant data identified.	No relevant data identified.
S7	The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at	The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are clearly agricultural; however, close to the landfall at	The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are	The entire project footprint located on Peloponnese, is engaged with a mosaic of agricultural and rural settlements. Along the mainland, the settlements are

	Patraikos Crossing			
	Lakopetra, significant touristic development is identified.	Lakopetra, significant touristic development is identified.	clearly agricultural; however, close to the landfall at Lakopetra, significant touristic development is identified.	clearly agricultural; however, close to the landfall at Tsoukaleika, significant touristic development is identified.
S8	Total: 11 settlements **CCS1 (Total**: 6 settlements) To the E: Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m; To the W: Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m; **CCS2 (**Total: 5 settlements) To the E: Paliostani 250 m, Perithorio 430 m, To the W: Evinochori 1000 m, Kokori 1000 m, Grammatiko 420 m	Total: 15 settlements **CCS1** (Total: 6 settlements) To the E: Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m; To the W: Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m; **CCS2 (T**otal: 9 settlements) To the E: Nea Kalidona 300 m, Evinochori 1000 m, Kokori 1000 m, Agios Andreas 670 m, To the W: Agios Georgios 350 m, Koutsocheri 500 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m	Total: 16 settlements **CCS1 (**Total: 6 settlements) To the E: Lampreika 650 m, Niforeika 1000 m, Limnohori 550 m; To the W: Karamesineika 700 m, Gomosto 1000 m, Kalamaki 500 m; **CCS2 (**Total: 10 settlements) To the E: Trikorfo 930 m, Agios Andreas 670 m, To the W: Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m	Total: 20 settlements **CCS1 (**Total: 10 settlements) To the E: Petrochori 260 m, Fostaina 550 m, Vrachneika 750 m To the W: Zambeteika 550 m, Logothetis 400 m, Ano Achaia 270 m, Spaliareika 730 m, Avgereika 550 m, Chaikali 280 m, Tsoukaleika 450 m, **CCS2 (**Total: 10 settlements) To the E: Trikorfo 930 m, Agios Andreas 670 m, To the W: Kato Vasiliki 550 m, Gavrolimni 250 m, Markinou 330 m, Mesarista 50 m, Ano Metapa 50 m, Gavalou 780 m, Trichoni 300 m, Gramatiko 540 m
S9	0	0	0	0

	Patraikos Crossing			
S10	Very high marine traffic density.	Very high marine traffic density.	Very high marine traffic density.	Very high marine traffic density.
S11	22 km from Patra port.	22 km from Patra port.	22 km from Patra port.	10 km from Patra port.
S12	The entire offshore route passes through fishing grounds, given that Patraikos Gulf sea is an area of high fishing effort.	The entire offshore route passes through fishing grounds, given that Patraikos Gulf sea is an area of high fishing effort.	The entire offshore route passes through fishing grounds, given that Patraikos Gulf sea is an area of high fishing effort.	The entire offshore route passes through fishing grounds, given that Patraikos Gulf sea is an area of high fishing effort.
S13	No engagement	No engagement	No engagement	No engagement
S14	No engagement	No engagement	No engagement	No engagement
CH				
CH1	Total crossed: 0 Total in study area: 2 (at distance of 600 m, 330 m)	Total crossed: 0 Total in study area: 2 (at distance of 100 m and 315 m)	Total crossed: 0 Total in study area: 1 (at distance of 400 m)	Total crossed: 2. ("Skagia", "Achlada"& "Galaria" Declared AS (HGG 796/B/30-8-1996): crossed for 323,27 m | "Kalamaki" Declared AS (HGG 793/B/14-9-1995): crossed for 613,26 m). Total in study area: 2 (at distance of 150 m and 400 m)
CH2	Total crossed: 0 Total in study area: 2 (at distance of 380 m, 300 m)	Total crossed: 0 Total in study area: 4 (at distance of 240 m, 700 m, 650 m, 20 m)	No relevant data identified.	No relevant data identified.
CH3	No relevant data identified.	No relevant data identified.	No relevant data identified.	No relevant data identified.

	Patraikos Crossing			
CH4	Numerous small churches in proximity, especially close to populated areas.	Numerous small churches in proximity, especially close to populated areas.	Numerous small churches in proximity, especially close to populated areas.	Numerous small churches in proximity, especially close to populated areas.
CH5	No relevant data identified.	No relevant data identified.	No relevant data identified.	No relevant data identified.
D				
D1	Proximity to 2 RES projects. None is crossed.	Proximity to 3 RES projects. None is crossed.	Proximity to 1 RES project. None is crossed.	Proximity to 3 RES projects. None is crossed.
D1.1	Total: 2 CCS1 (Total: 2) to the E: 200 m, 400 m, to the W: 0 CCS2 (Total: 0)	Total: 2 CCS1 (Total: 2) to the E: 200 m, 400 m, to the W: 0 CCS2 (Total: 0)	No relevant data identified.	No relevant data identified.
D1.2	No relevant data identified.	Total: 1 CCS1 (Total: 0) CCS2 (Total: 1) to the E: 0 to the W: 260 m	Total: 1 CCS1 (Total: 0) CCS2 (Total: 1) to the E: 0 to the W: 260 m	Total: 2 CCS1 (Total: 0) CCS2 (Total: 2) to the E: 0 to the W: 260 m, 440 m
D1.3	No relevant data identified.	No relevant data identified.	No relevant data identified.	Total: 1 CCS1 (Total: 1) to the E: 0 to the W: 750m CCS2 (Total: 0)
D2	42,45	48,54	43,11	53,09

	Patraikos Crossing			
D3	The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4 is located in the area of Kalamaki beach where scattered residents are evident. The most prominent development is the Lakopetra Grecotel establishment at a distance of ~250 m (Casa Marron). LF5 is not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism.	The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4 is located in the area of Kalamaki beach where scattered residents are evident. The most prominent development is the Lakopetra Grecotel establishment at a distance of ~250 m (Casa Marron). LF5 is not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism.	The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4 is located in the area of Kalamaki beach where scattered residents are evident. The most prominent development is the Lakopetra Grecotel establishment at a distance of ~250 m (Casa Marron). LF5a is not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism.	The entire north coastline of Peloponnese is hosting a lot of touristic developments and summer houses. LF4a is located within natural areas with scattered houses (numerous summer houses) and significant touristic facilities between Tsoukaleika and Vrachneika settlements. LF5a is not engaged with any touristic or otherwise evident development; even though it is designated as area of potential for development of alternative forms of tourism.
D4	No relevant data identified.	No relevant data identified.	No relevant data identified.	Industrial area of Patra lies at approx. 900 m NW of the alternative's segment located in Peloponnese.

	Patraikos Crossing			
D5	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5 is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5 is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4 area hosts some significant tourism facilities whilst numerous smaller ones are expected. LF5a is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.	LF4a area hosts numerous significant tourism facilities whilst numerous smaller ones are expected. LF5a is designated for "Potential for alternative tourism"; however, the broader area is not presenting any relevant facilities.
A				
A1	1 (R. of W. Greece)	1 (R. of W. Greece)	1 (R. of W. Greece)	1 (R. of W. Greece)
A2	2 (Achaia & Etoloakarnania)	2 (Achaia & Etoloakarnania)	2 (Achaia & Etoloakarnania)	2 (Achaia & Etoloakarnania)
A3	4 (W. Achaia; Nafpaktia, I.P. of Messolonghi; Agrinio)	4 (W. Achaia; Nafpaktia, I.P. of Messolonghi; Agrinio)	3 (W. Achaia; Nafpaktia; Agrinio)	4 (W. Achaia; Patra, Nafpaktia, Agrinio)

7 A.7.8. MENIDI ALTERNATIVES ASSESSMENT MATRIX

	Menidi Area	
Code	CCS2_Menidi-BC	CCS2_Menidi-Alt1
L1	14.05 km	20.28 km
L2	14.05 km	20.28 km
L3	n/a	n/a
ES		
ES1	0.982 (6.98%)	6.664 (32.86%)
ES2	0.000 (0.00%)	0.000 (0.00%)
ES3	4.451 (31.67%)	3.183 (15.70%)
ES4	0.000 (0.00%)	0.000 (0.00%)
ES5	3.306 (23.52%)	3.156 (15.57%)
ES6	0.000 (0.00%)	0.000 (0.00%)
ES7	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.000 (0.00%)
ES10	0.000 (0.00%)	0.000 (0.00%)
ES11	0.000 (0.00%)	0.000 (0.00%)
ES12	0.000 (0.00%)	0.000 (0.00%)

	Menidi Area	
ES13	0.000 (0.00%)	0.000 (0.00%)
ES14	Avifauna: 28 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU) Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 1 species | *Lutra lutra (EN/NT)*	Avifauna: 28 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Circus pygargus (CR/LC); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardeola ralloides (VU/LC); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 1 species | *Lutra lutra (EN/NT);*
ES15	No relevant data identified.	No relevant data identified.

	Menidi Area	
ES16	Most of the route passes through lowland natural forest areas at the western foothills of Mt Makrinoros, whilst the rest through agricultural fields. Proximity to Amvrakikos Gulf and corresponding protected areas; route parallel to westernmost limit of Wildlife Refuge. Ionia Odos highway is also almost parallel to the alternative. Most prominent features in the area is Amvrakikos Gulf, Ionia Odos, WR of Retha and Loggos Monasteries, and Mt Makrinoros. The general character of the area is that of natural environment with limited, traditional agricultural activity. As such, the naturalness of area is high.	Almost the entire route passes through the central forested ridges of Mt Makrinoros, through the Wildlife Refuge of Retha and Loggos Monasteries, whilst only a small part through agricultural fields. Most prominent features in the area is R. Mantani and Mt Makrinoros which host the WR. The general character of the area is that of natural environment with very limited, traditional agricultural activity. As such, the naturalness of area is very high.
ES17	No relevant data identified.	No relevant data identified.
OC		
OC1	0	0
OC2	0	0
OC3	0	0
OC4	0	0
P		
P1	No intersection with Natura Areas	No intersection with Natura Areas
P2	None within the study area	None within the study area
P3	Total number : 1 3.275 km (Retha & Logos area)	Total number : 1 9.972 km (Retha & Logos area)

	Menidi Area	
P4	No additional area	No additional area
P5	Total number : 1 13.413 km (National Park of Amvrakikos - Zone C)	Total number : 1 16.497 km (National Park of Amvrakikos - Zone C)
P6	No additional area	No additional area
P7	No intersection with Landscape of Outstanding Natural Areas	No intersection with Landscape of Outstanding Natural Areas
P8	None within the study area	None within the study area
P9	1 (Mantani river)	1 (Mantani river)
P10	n/a	n/a
P11	n/a	n/a
P12	n/a	n/a
P13	n/a	n/a
P14	n/a	n/a
P15	n/a	n/a
S		
S1	38% of the route crosses through agricultural areas whilst 62% from natural or semi-natural ones.	36% of the route crosses through agricultural areas whilst 64% from natural or semi-natural ones.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)
S1.3	0.000 km (0.00%)	0.000 km (0.00%)

	Menidi Area	
S1.4	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	0.000 km (0.00%)	0.000 km (0.00%)
S1.6	0.000 km (0.00%)	0.000 km (0.00%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)
S1.9	1.932 km (13.75%)	4.165 km (20.54%)
S1.10	0.785 km (5.59%)	0.000 km (0.00%)
S1.11	2.596 km (18.47%)	3.108 km (15.37%)
S2	Basecase engages areas of limited economic development, close to road networks and few settlements.	Alternative engages remote areas, of no economic development; almost no proximity to road network; limited proximity to only one settlement.
S3	No engagement	No engagement
S4	According to national plan for tourism, the area is engaged with an area designated for Developing tourism with potential for development of alternative forms of tourism (B2)	According to national plan for tourism, the area is engaged with an area designated for Developing tourism with potential for development of alternative forms of tourism (B2)
S5	No engagement	No engagement
S6	No engagement	No engagement
S7	n/a	n/a

	Menidi Area	
S8	Total: 4 to the SW: Agia Triada 450 m, Eleochori 650 m; to the NE: Lagada 220 m, Kastriotisa 550 m	Total: 4 to the SW: Kastriotisa 750 m to the NE: Valmada 350 m, Eleofito 1000 m, Katharovouni 720 m,
S9	n/a	n/a
S10	n/a	n/a
S11	n/a	n/a
S12	n/a	n/a
S13	n/a	n/a
S14	n/a	n/a
CH		
CH1	No relevant data identified.	No relevant data identified.
CH2	No relevant data identified.	No relevant data identified.
CH3	No relevant data identified.	No relevant data identified.
CH4	No relevant data identified.	No relevant data identified.
CH5	No relevant data identified.	No relevant data identified.
D		
D1	No relevant data identified.	No relevant data identified.
D1.1	No relevant data identified.	No relevant data identified.
D1.2	No relevant data identified.	No relevant data identified.

	Menidi Area	
D1.3	No relevant data identified.	No relevant data identified.
D2	14.05 km	20.28 km
D3	No relevant data identified.	No relevant data identified.
D4	No relevant data identified.	No relevant data identified.
D5	According to national plan for tourism, the area is engaged with an area designated for Developing tourism with potential for development of alternative forms of tourism (B2)	According to national plan for tourism, the area is engaged with an area designated for Developing tourism with potential for development of alternative forms of tourism (B2)
A		
A1	1 (R. of W. Greece)	1 (R. of W. Greece)
A2	1 (Etoloakarnania)	1 (Etoloakarnania)
A3	1 (Amfilochia)	1 (Amfilochia)

7 A.7.9. MARGARITI ALTERNATIVES ASSESSMENT MATRIX

	Margariti Area	
Code	CCS2_Margariti-BC	CCS2_Margariti-Alt1
L1	28.69 km	26.86 km
L2	28.69 km	26.86 km
L3	n/a	n/a

	Margariti Area	
ES		
ES1	0.000 (0.00%)	0.000 (0.00%)
ES2	0.000 (0.00%)	0.000 (0.00%)
ES3	0.000 (0.00%)	0.000 (0.00%)
ES4	2.248 (8.36%)	1.66 km (6.16%)
ES5	4.234 (15.74%)	13.31 (49.54%)
ES6	0.000 (0.00%)	0.000 (0.00%)
ES7	0.000 (0.00%)	0.000 (0.00%)
ES8	0.000 (0.00%)	0.000 (0.00%)
ES9	0.000 (0.00%)	0.000 (0.00%)
ES10	0.748 (2.78%)	0.75 km (2.78%)
ES11	0.000 (0.00%)	0.000 (0.00%)
ES12	0.000 (0.00%)	0.000 (0.00%)
ES13	0.000 (0.00%)	0.000 (0.00%)

	Margariti Area	
ES14	Fishes: 1 species | *Salmo farioides (VU/DD)* Avifauna: 36 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Circus pygargus (CR/LC); Aquila heliaca (CR/VU); Falco cherrug (CR/EN); Numenius tenuirostris (CR/CR); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila pomarina (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Ardeola ralloides (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 2 species | *Lutra lutra (EN/NT); Canis lupus (VU/LC);*	Fishes: 1 species | *Salmo farioides (VU/DD)* Avifauna: 36 species | *Plegadis falcinellus (CR/LC); Milvus migrans (CR/VU); Circus pygargus (CR/LC); Aquila heliaca (CR/VU); Falco cherrug (CR/EN); Numenius tenuirostris (CR/CR); Botaurus stellaris (EN/LC); Ardea purpurea (EN/LC); Ciconia nigra (EN/LC); Aquila pomarina (EN/LC); Falco biarmicus (EN/VU); Larus melanocephalus (EN/LC); Chlidonias hybrida (EN/LC); Chlidonias niger (EN/LC); Tadorna tadorna (VU/LC); Ardeola ralloides (VU/LC); Anas strepera (VU/LC); Anas querquedula (VU/LC); Aythya nyroca (VU/NT); Pelecanus onocrotalus (VU/LC); Pelecanus crispus (VU/VU); Ardea alba (VU/LC); Ciconia ciconia (VU/LC); Platalea leucorodia (VU/LC); Gyps fulvus (CR/LC); Circus aeruginosus (VU/LC); Buteo rufinus (VU/VU); Hieraaetus fasciatus (VU/EN); Recurvirostra avosetta (VU/LC); Glareola pratincola (VU/LC); Vanellus vanellus (VU/VU); Chroicocephalus genei (VU/LC); Gelochelidon nilotica (VU/VU); Sterna sandvicensis (VU/LC); Coracias garrulus (VU/VU); Acrocephalus melanopogon (VU/LC);* Mammals: 2 species | *Lutra lutra (EN/NT); Canis lupus (VU/LC);*
ES15	Almost half of the route lies on the western avifauna migration corridor. Route crosses IBA "Lake of Kalodiki, Marshes of Margariti and Karteri" for 3,2 km.	Almost half of the route lies on the western avifauna migration corridor. Route crosses IBA "R. Acherontas Straights and Estuary" for 0,5 km.

	Margariti Area	
ES16	Most of the route passes through wet meadows in the broader area of Margariti marshlands, whilst the rest through forest areas. Proximity to 3 marshlands and the corresponding protected area; route parallel to some extent to Provincial Road (Preveza-Igoumenitsa). Most prominent features in the area is the Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. As such, the naturalness of area is high.	Almost half of the route passes through agricultural areas in the broader area of Mt Paramythia, whilst the rest through forest areas. Most prominent features in the area is Mt Paramythia and downhill of the route, the plain of Marshlands of Margariti, Karteri and Kalodiki. The general character of the area is that of traditional agricultural activity with significant presence of purely natural locations. As such, the naturalness of area is high.
ES17	No relevant data identified.	No relevant data identified.
OC		
OC1	0	0
OC2	0	0
OC3	0	0
OC4	0	0
P		
P1	Total number: 1 0.138 km (overlapping GR2120002 - SAC & GR2120006 - SPA)	No intersection with Natura Areas
P2	Total number: 1 min distance : 0.044 km (GR2120006 - SPA)	Total number: 1 min distance : 0.660 km (GR2120006 - SPA)
P3	No intersection with Wild Life Refuge area	No intersection with Wild Life Refuge area

	Margariti Area	
P4	Total number: 1 min distance: 0.507 km (Kalodiki marsh)	None within the study area
P5	No intersection with National Parks	No intersection with National Parks
P6	None within the study area	None within the study area
P7	Total number : 1 1.141 km (Acherontas & Nekromanteio)	Total number : 1 1.141 km (Acherontas & Nekromanteio)
P8	Total number : 1 Min. Distance : 0.530 km (Kalodiki marsh)	No additional area
P9	1 (Vouvos river)	1 (Vouvos river)
P10	n/a	n/a
P11	n/a	n/a
P12	n/a	n/a
P13	n/a	n/a
P14	n/a	n/a
P15	n/a	n/a
S		
S1	64% of the route crosses through agricultural areas whilst 27% from natural or semi-natural ones (9% through other land uses).	41.5% of the route crosses through agricultural areas whilst 58.5% from natural or semi-natural ones.
S1.1	0.000 km (0.00%)	0.000 km (0.00%)
S1.2	0.000 km (0.00%)	0.000 km (0.00%)

	Margariti Area	
S1.3	0.000 km (0.00%)	0.000 km (0.00%)
S1.4	0.000 km (0.00%)	0.000 km (0.00%)
S1.5	4.864 km (18.08%)	3.01 km (11.19%)
S1.6	6.819 km (2535%)	4.29 km (15.96%)
S1.7	0.000 km (0.00%)	0.000 km (0.00%)
S1.8	0.000 km (0.00%)	0.000 km (0.00%)
S1.9	0.978 km (3.63%)	0.5 km (1.86%)
S1.10	1.688 km (6.27%)	0.61 km (2.27%)
S1.11	2.902 km (10.79%)	1.66 km (6.16%)
S2	Basecase engages areas of limited economic development, close to road networks and few settlements. Mostly annual crops are cultivated; very limited quarry activity.	Alternative engages areas of limited economic development, close to road networks and few settlements. Mostly annual crops are cultivated; very limited quarry activity.
S3	No engagement	No engagement
S4	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 7.77 km (25.49%), through Areas of Special Uses for 0.39 km (1,27%) and for 22.32 km (73.24%) through Areas of Building Control - Check ("PEPD"), in total. 0.985 km through areas designated as of "Developed Tourism" according to national plan for tourism.	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 3.77 km (16.64%) and for 18.88 km (83.36%) through Areas of Building Control - Check ("PEPD"), in total.
S5	No engagement	No engagement

	Margariti Area	
S6	No engagement	No engagement
S7	n/a	n/a
S8	Total: 10 to the S-W: Themelo 1000 m, Tzara 150 m, Spatharei 66 m, Morfi 780 m, Kalodiki 480m, Katavothra 650 m, Milokokkia 911 m to the N-E: Koroni 590 m, Margariti 570 m, Palaiokastro 325 m.	Total: 5 to the S-W: Themelo 1000 m, Tzara 150 m, Spatharei 530 m. to the N-E: Koroni 590 m, Karvounari 580 m.
S9	n/a	n/a
S10	n/a	n/a
S11	n/a	n/a
S12	n/a	n/a
S13	n/a	n/a
S14	n/a	n/a
CH		
CH1	Total: 11 (660 m, 406 m, 205 m, 240 m, 764 m, 850 m, 960 m, 345 m, 430 m, 781 m - R. Acheron is crossed (declared as A.S.))	Total: 3 (1000 m, 660 m, R. Acheron is crossed (declared as A.S.))
CH2	Total: 5 (178 m, 938 m, 682 m, 919 m, 870 m)	Total: 2 (312 m, 145 m)
CH3	No relevant data identified.	No relevant data identified.
CH4	Total: 3 (457 m, 239 m, 313 m, 725 m, 345 m)	Total: 1 (340 m)
CH5	No relevant data identified.	No relevant data identified.
D		

	Margariti Area	
D1	Proximity to 10 RES project; Poseidon Pipeline Project is also noted in the broader area.	Engagement with 1 and proximity to 9 RES projects; Poseidon Pipeline Project is also noted in the broader area.
D1.1	Total: 10 to the E: 1 at 280 m, 3 at 320 m, 1 at 210 m, 2 at 600 m to the W: 1 at 30 m, 2 at 290 m	Total: 10 1 crossed for 793 m to the W: 1 at 851 m, 1 at 40 m, 2 at 370 m, to the E: 2 at 820 m, 2 at 440 m, 1 at 30 m, 1 at 290 m
D1.2	No relevant data identified.	No relevant data identified.
D1.3	No relevant data identified.	No relevant data identified.
D2	28.69 km	26.86 km
D3	No relevant data identified.	No relevant data identified.
D4	No relevant data identified.	No relevant data identified.
D5	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 7,77 km (25,49%), through Areas of Special Uses for 0,39 km (1,27%) and for 22,32 km (73,24%) through Areas of Building Control - Check ("PEPD"), in total. 0,985 km through areas designated as of "Developed Tourism" according to national plan for tourism.	Route passes through the following designated land uses of all engaged Municipalities: Area of Special Protection ("PEP") for 3,77 km (16,64%) and for 18,88 km (83,36%) through Areas of Building Control - Check ("PEPD"), in total.
A		
A1	1 (R. of Epirus)	1 (R. of Epirus)
A2	2 (Thesprotia & Preveza)	2 (Thesprotia & Preveza)

	Margariti Area	
A3	2 (Parga; Igoumenitsa)	3 (Souli; Igoumenitsa; Parga)

7 A.7.10. CS2/MS2-CS2/MS2N ALTERNATIVES ASSESSMENT MATRIX

	CS2/MS2-CS2/MS2 N (Crete Facilities)		
Code	**Base Case**	**Alternative 1**	**Alternative 2**
A1	168904 m²	214548 m²	244728 m²
P			
P1	4.6 km from GR4320008 (SAC) & GR4320017 (SPA)	4 km from GR4320016 (SPA)	0.075 km from GR4320006 (SAC)
P2	-	-	Within the Sitia Natural Geological Park, which is a world-class park and is under UNESCO protection.
P3	~6200 m from K579	~6300 m from K579	~3600 m from K762
P4	~4900 m from AT6011013	~6800 m from AT6011013	~1200 m from AT6011002
P5	> 20 km from any receptor	> 20 km from any receptor	~8000 m from Vai Forest
P6	0	"Kato Steno" stream delta is engaged	0
P7	From CLC: 7159.03, 6.97%	From CLC: 0, 0%	From CLC: 41787.44, 17.07%

	CS2/MS2-CS2/MS2 N (Crete Facilities)		
ES			
ES1	CLC code: 223 - 161745.17, 95.76% 323 - 7159.03, 4,23%	CLC code: 243 - 45542.53, 21.23% 333 - 169005.29, 78,77%	CLC code: 223 - 200008.38, 81.72% 243 - 2931.81, 1.20% 323 - 41787.44, 17,07%
ES2	Atherinolakkos Power Plant is located ~550 m to the E.	Atherinolakkos Power Plant is located ~1300 m to the W.	No pressures.
ES3	Atherinolakkos Power Plant is located ~550 m to the E, but the background noise is very low.	Atherinolakkos Power Plant is located ~1300 m to the W, but the background noise is very low.	No noise sources identified.
ES4	A flat area of Olive groves between hilly ranges to the NW and SE Cretan Sea. Surrounding natural areas are covered by phryganic vegetation. Despite the nearby presence of Atherinolakkos Power Plant, the aesthetic value of the landscape is not decreased. Moderate absorption capacity.	Phrygana vegetation with few Olive groves in the entrance of a gorge. The area is secluded by Atherinolakkos Power Plant and Fishing shelter, by the surrounding hills. High aesthetic value but not visible by any sensitive receptor. Moderate absorption capacity.	Area located in a hilly mosaic of maquis vegetation and olive groves. Vantage view of the seascape to the E. Low absorption capacity.
ES5	Area located on a gentle slope plateau of olive groves. Small to moderate earthworks for levelling.	Area located on slopes of the "Kato Steno" stream delta. Moderate to high earthworks for levelling.	Area located on a gentle slope plateau of olive groves. Small to moderate earthworks for levelling.
ES6	No engagement.	No engagement.	No engagement.
ES7	Plot is located in an area next to Atherinolakkos Power Plant; along with the	Plot is located in a pristine area. W of the study area Atherinolakkos Power Plant and	No anthropogenic pressures identified in the area.

	CS2/MS2-CS2/MS2 N (Crete Facilities)		
	small fishing shelter, they pose the only anthropogenic presence in the area, with limited negative impact on the natural environment.	the small fishing shelter, are the only anthropogenic presence in the area, with limited negative impact on the natural environment.	
S			
S1	95% on agricultural area (Olive groves) and 5% on natural-semi natural areas (phrygana vegetation)	20% on agricultural area (Olive groves) and 80% on natural-semi natural areas (phrygana vegetation)	83% on agricultural area (mainly Olive groves) and 17% on natural-semi natural areas (sclerophyllous vegetation)
S2	According to Lefki SXOOAP, the facility is located on Zone of Agricultural Land. Atherinolakkos Power Plant is designated as Heavy Industry Zone.	According to Lefki SXOOAP, the facility is located on Grassing lands and few small sections on Zone of Agricultural Land.	According to Itanos SXOOAP, the facility is located on area Outside Spatial Planning, where no heavy industry is allowed.
S3	~1900 m from Goudouras (W)	~2900 m from Agia Triada (N)	~1500 m from Agkathia (NE) ~1400 m from Palaiokastro (N)
S4	550 m W Atherinolakkos Power Plant	1300 m from Atherinolakkos Power Plant	No engagement.
S5	No engagement.	No engagement.	No engagement.
S6	No engagement.	No engagement.	No engagement.
S7	Adjacent to paved dirt road network. Close proximity to national road network.	Adjacent to paved dirt road network. Close proximity to national road network.	Adjacent to paved dirt road network. Close proximity to national road network.
S8	3 RES Projects are developed: 1 wind farm 380 to the W (Production Permit); 1 wind farm 570 m to the E (Under Evaluation); 1	3 RES Projects are developed: 1 wind farm 340 m to the W (Under Evaluation); 1 solar thermal 570 to the NW (Installation Permit);	2 RES Projects are developed: 1 wind farm 1400 m to the W; 1 solar thermal 160 to the SW (both with Production Permit).

	CS2/MS2-CS2/MS2 N (Crete Facilities)		
	solar thermal 200 to the NE (Installation Permit).	1 wind farm 1000 m to the E (Production Permit).	
S18	0	0	0
S19	0	0	0
S20	No population centres in the broader area.	No population centres in the broader area.	No population centres in the broader area.
S21	1	1	2
S9	Moderate. Area close to settlement, but also in proximity to nearby Power Plant.	Moderate. Area close to settlement, but also in proximity to nearby Power Plant.	Low. Area known for its ecotourism development.
CH			
CH1	3 sites: Kastri of Goudoura at 690 m and Dasonari of Lefki at 590 m, to the North; "Favolies and Livari of Agia Triada" at 1900 m to the Southeast.	Facility located within "Favolies and Livari of Agia Triada"	No data available.
CH2	None identified.	None identified.	None identified.
CH3	No engagement.	No engagement.	No engagement.
CH4	No engagement.	No engagement.	No engagement.

7 A.7.11. CS3 ALTERNATIVES ASSESSMENT MATRIX

	CS3 (Achaia Facilities)		
Code	**Base Case**	**Alternative 1**	**Alternative 2**
A1	110365 m²	79387 m²	102573 m²
P			
P1	11850 m from GR2330002 (SAC&SPA)	10900 m from GR2320011 (SPA)	13000 m from GR2320011
P2	>40 km	>20 km	>25 km
P3	16800 m from K877	11670 m from K767	12300 from K414
P4	>20 km	>20 km	>25 km
P5	>40 km	>30 km	>30 km
P6	0 (0). Proximity to Artificial Lake of R. Pinios	0 (0). Proximity to remotely identified water course.	0 (0)
P7	From Official Forest Maps: 53373 m² (48%) Based on satellite images: 0%	From Official Forest Maps: 60177, 75.5% Based on satellite images: 7%	From Official Forest Maps: 26879.45, 26.21% Based on satellite images: 20%
ES			
ES1	CLC code: 211 - 97162.74, 88.03% 242 - 13201.86, 11.96%	CLC code: 223 - 141.64, 0.17% 242 - 73623.98, 92.74% 323 - 15989.44, 7.08%	CLC code: 243 - 82963.11, 80.88% 311 - 4180.67, 4.08% 323 - 10367.69, 10.11% 324 - 5061.25, 4.93%

	CS3 (Achaia Facilities)		
ES2	No pressures. Based on 2020 study of MEE on exceeding of Limit Values (or target values), limited exceedance has been recorded for O3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.	No pressures. Based on 2020 study of MEE on exceeding of Limit Values (or target values), limited exceedance has been recorded for O3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.	No pressures. Based on 2020 study of MEE on exceeding of Limit Values (or target values), limited exceedance has been recorded for O3 (daily 8hour), PM10 (daily and average) and PM2.5 (average), BaP (average), in the broader area.
ES3	No noise sources identified.	No significant noise sources identified. Nevertheless, site is located in a more anthropogenic environment than any other option.	No noise sources identified.
ES4	Area located on agricultural area surrounded by a mosaic of agricultural and natural areas. Most cultivations are tree-crops giving out a sense of semi-natural area. Moderate absorption capacity, in comparison to other options.	Area located on the foot of a mountainous forest. The remaining area is completely covered by agricultural crops and settlements. Many cultivations are tree-crops. High absorption capacity, in comparison to other options.	Area located on a plateau at 550 m altitude, surrounded by mountainous forest. Minimum absorption capacity, in comparison to other options.
ES5	Area located on a plane surface of agricultural land use. Small earthworks for levelling.	Area located on a plane surface of agricultural land use. Small earthworks for levelling.	Area located on a plane surface of agricultural land use and/ or grasslands. Small to moderate earthworks for levelling.
ES6	No flood risk identified.	~50% is located within EL02RAK0008 flooding area	No flood risk identified.

	CS3 (Achaia Facilities)		
ES7	Plot is located in an area surrounded by a mosaic of agricultural and semi-natural (and natural) areas; close to the artificial lake of Pinios, in an otherwise seemingly completely undisturbed environment.	Plot is located in an area surrounded by agricultural activity, close to population centres.	Plot is located in an area surrounded by natural vegetation, mainly forests and forested areas (bushlands), in a seemingly completely undisturbed environment.
S			
S1	100% on agricultural area.	93% on agricultural area and 7% on natural-semi natural areas (sclerophyllous vegetation)	81% on agricultural areas and 19% on natural-semi natural areas (4% on forests)
S2	No spatial provision	Area included in "Indicative broader zone of high priority agricultural land".	No spatial provision
S3	~1600 m from Kato Velitses (N) ~2000 m from Kalivakia (S) ~2600 m from Portes (NE)	~550 m from Lampreika (N) ~650 m from Petrochori (E) ~1200 m from Pournari (S) ~1200 m from Mirto (SW)	~2800 m from Pournari (N) ~3200 m from Krinos (NW) ~4000 m from Petas (W) ~2600 m from Vithoulkas (NE)
S4	>2 km	>2 km	>2 km
S5	Area: - included in H/C block "NW Peloponnese" -3500 m from quarry	Area: - included in H/C block "NW Peloponnese"	Area: - included in H/C block "NW Peloponnese"
S6	No engagement. Proximity to artificial lake of Pinios.	No engagement.	No engagement.
S7	Adjacent to paved (asphalt) road network.	Adjacent to paved (dirt) road network.	Adjacent to paved (dirt) road network.

	CS3 (Achaia Facilities)		
S8	Area is: - Adjacent to 5MW P/V site (Production Permit)	No engagement.	No engagement.
S18	>19 km	> 8 km	>14 km
S19	0	0	0
S20	No population centres in the broader area.	Plot is located in an area surrounded by agricultural activity, close to population centres.	No population centres in the broader area.
S21	3	4	0
S9	Site located in mountainous/ hilly areas. Some human activity, including few live stocking shanties, industrial and RES developments. Close proximity to Artificial lake of Pinios. As such, **moderate** social acceptance is assessed.	Area located in agricultural plane, in close proximity to numerous small agricultural settlements. As such, **small** social acceptance is assessed.	Site located in remote mountainous/ hilly areas. No human activity, but few live stocking shanties. As such, **high** social acceptance is assessed.
CH			
CH1	~1500 m from Declared A.S.	~1100 m from Declared A.S.	No engagement.
CH2	Proximity to declared A.S. "Santameri - Mount Skolis" gives ground to increased chance finding of cultural heritage resource.	None identified.	None identified.
CH3	N/A	N/A	N/A
CH4	~1000 m from Agios Georgios Church.	Surrounded by numerous settlements with churches and cemeteries.	~1500 m from Agios Dimitrios "Mpada" church

7 A.7.12. MS4/PRS4 AND HEATING STATION ALTERNATIVES ASSESSMENT MATRIX

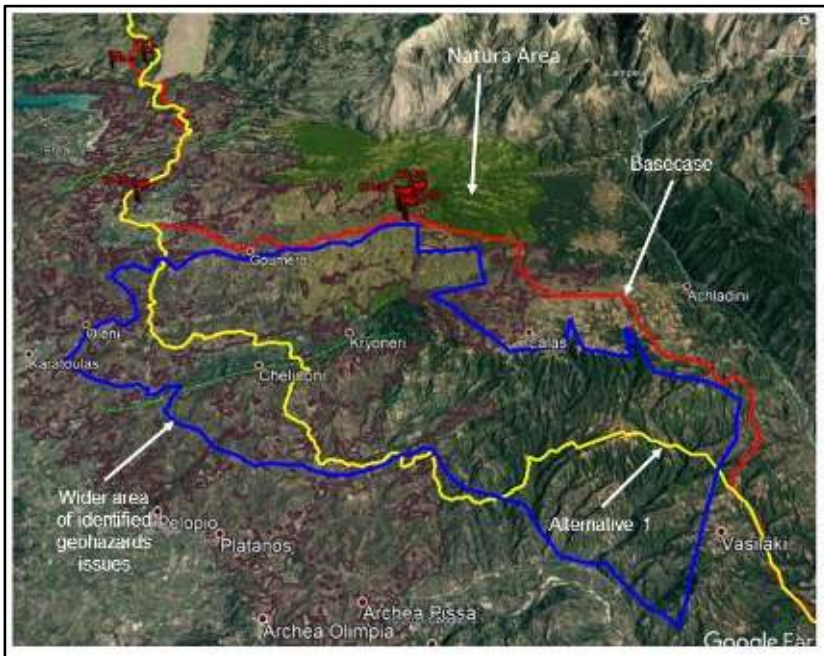
	MR4/PRS4 & Heating Station (Megalopoli Facilities)		
Code	**Base Case**	**Alternative 1**	**Alternative 2**
A1	52761 m²	39941 m²	41789 m²
P			
P1	20 km from GR2520002 (SAC)	20 km from GR2520002 (SAC)	20 km from GR2520002 (SAC)
P2	> 20 km from any receptor	> 20 km from any receptor	> 20 km from any receptor
P3	~4500 m from K468	~4600 m from K468	~4500 m from K468
P4	~18 km from AT1080115	~17 km from AT1080115	~18 km from AT1080115
P5	> 20 km from any receptor	> 20 km from any receptor	> 20 km from any receptor
P6	0	0. Indication of riverine within the area, at SE corner.	0
P7	From Official Forest Maps: 2730 m² (5%) Based on satellite images: 25%	From Official Forest Maps: 1493 m² (4%) Based on satellite images: 25%	From Official Forest Maps: 1883 m² (4,5%) Based on satellite images: 60%
ES			
ES1	CLC code: 243 - 52760.98, 100%	CLC code: 242 - 39940.79, 100%	CLC code: 243 - 41789.30, 100%

	MR4/PRS4 & Heating Station (Megalopoli Facilities)		
ES2	Megalopoli Power Plant and Coal Mines should be noted (distance ~5.3 km). However, no other pressures are evident. Based on 2020 study of MEE no exceedance of any Limit Values has been recorded, in the broader area.	Megalopoli Power Plant and Coal Mines should be noted (distance ~6.3 km). However, no other pressures are evident. Based on 2020 study of MEE no exceedance of any Limit Values has been recorded, in the broader area.	Megalopoli Power Plant and Coal Mines should be noted (distance ~5 km). However, no other pressures are evident. Based on 2020 study of MEE no exceedance of any Limit Values has been recorded, in the broader area.
ES3	60 m from Highway Tripoli-Sparti. Some, limited noise should be expected. Due to the discontinuous noise source of the highway, no significant cumulative noise impact.	No noise sources identified.	200 m from Highway Tripoli-Sparti. Some, limited noise should be expected. Due to the discontinuous noise source of the highway, no significant cumulative noise impact.
ES4	A plateau (of agricultural pattern with no structures) in front of a hilly range near the newly built highway with a background of natural sclerophyllous vegetation. A landscape with natural elements but also clear agricultural character, characterized also by the highway (viewers/users). Increased absorption capacity.	Area located on a plain surrounded by a hilly range mainly occupied by agricultural use; limited livestock shanties. Interaction with the Highway of Tripoli-Sparti (~1000 m to the south) is interrupted by the agricultural settlements of Soulari. Decreased absorption capacity.	A plateau (of agricultural pattern with no structures) in front of a hilly range near the newly built highway with a background of natural sclerophyllous vegetation. A landscape with natural elements but also clear agricultural character, characterized also by the highway (viewers/users). Increased absorption capacity.
ES5	Area located on a plain surface of agricultural land use. Small earthworks for levelling.	Area located on a plain surface of agricultural land use. Small earthworks for levelling.	Area located on a plain surface of agricultural land use. Small earthworks for levelling.
ES6	No engagement.	No engagement.	No engagement.

	MR4/PRS4 & Heating Station (Megalopoli Facilities)		
ES7	Plot is located in an area surrounded by a mosaic of agricultural and natural areas; close to the new highway of Tripoli-Sparti. Highway's presence fragments an otherwise typical and excellent mosaic of agricultural and natural areas.	Plot is located in an area surrounded by a mosaic of agricultural and semi-natural and natural areas. No significant structures exist in the area.	Plot is located in an area surrounded by a mosaic of agricultural and natural areas; close to the new highway of Tripoli-Sparti. Highway's presence fragments and otherwise typical and excellent mosaic of agricultural and natural areas.
S			
S1	100% on agricultural area.	100% on agricultural area.	100% on agricultural area.
S2	No spatial provision. Recent developments include break of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.	No spatial provision. Recent developments include break of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.	No spatial provision. Recent developments include break of Megalopoli lignite production activities and replacement of lignite by natural gas as fuel for the Power Plant.
S3	~900 m from Soulari (NE) ~1650 m from Leontari (W) ~2700 m from Voutsaras (E)	~300 m from Soulari (S) ~1900 m from Voutsaras €	~1100 m from Soulari (NE) ~1450 m from Leontari (W) ~2900 m from Voutsaras (E)
S4	No engagement.	No engagement.	No engagement.
S5	Outside H/C Blocks. Within concession area of PPC (?). ~5.5 km from existing coal mining area of PPC.	Outside H/C Blocks. Within concession area of PPC (?). ~6 km from existing coal mining area of PPC.	Outside H/C Blocks. Within concession area of PPC (?). ~5 km from existing coal mining area of PPC.
S6	No engagement.	No engagement.	No engagement.
S7	Adjacent to paved dirt road network. Close proximity to national highway.	Adjacent to paved dirt road network. Proximity to national highway.	Adjacent to paved dirt road network. Close proximity to national highway.

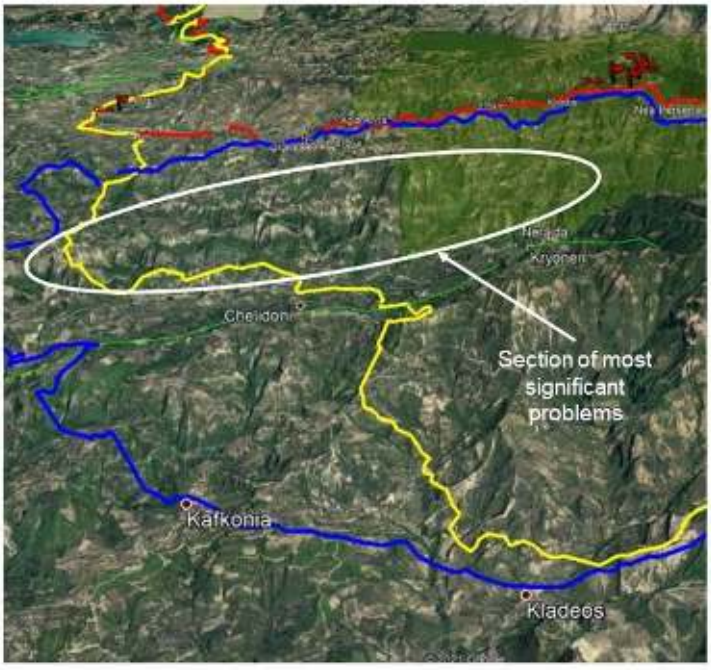
	MR4/PRS4 & Heating Station (Megalopoli Facilities)		
S8	No engagement.	No engagement.	No engagement.
S18	N/A	N/A	N/A
S19	N/A	N/A	N/A
S20	Megalopoli is a significant population centre of the broader area.	Megalopoli is a significant population centre of the broader area.	Megalopoli is a significant population centre of the broader area.
S21	3	2	3
S9	High. Area adjacent to highway, in close proximity to PPC coal mine.	Moderate. Area close to settlement, but also in proximity to nearby highway and PPC coal mine.	High. Area adjacent to highway, in close proximity to PPC coal mine.
CH			
CH1	No engagement.	No engagement.	No engagement.
CH2	None identified.	None identified.	None identified.
CH3	No engagement.	No engagement.	No engagement.
CH4	550 m from Agios Konstantinos Church. 1200 m from Profitis Ilias Church.	700 m from Agios Konstantinos Church. 370 m from Profitis Ilias Church.	550 m from Agios Konstantinos Church. 1350 m from Profitis Ilias Church.

Appendix 1 - FEED GEOTECHNICAL ASSESSMENT FOR FOLOI AREA



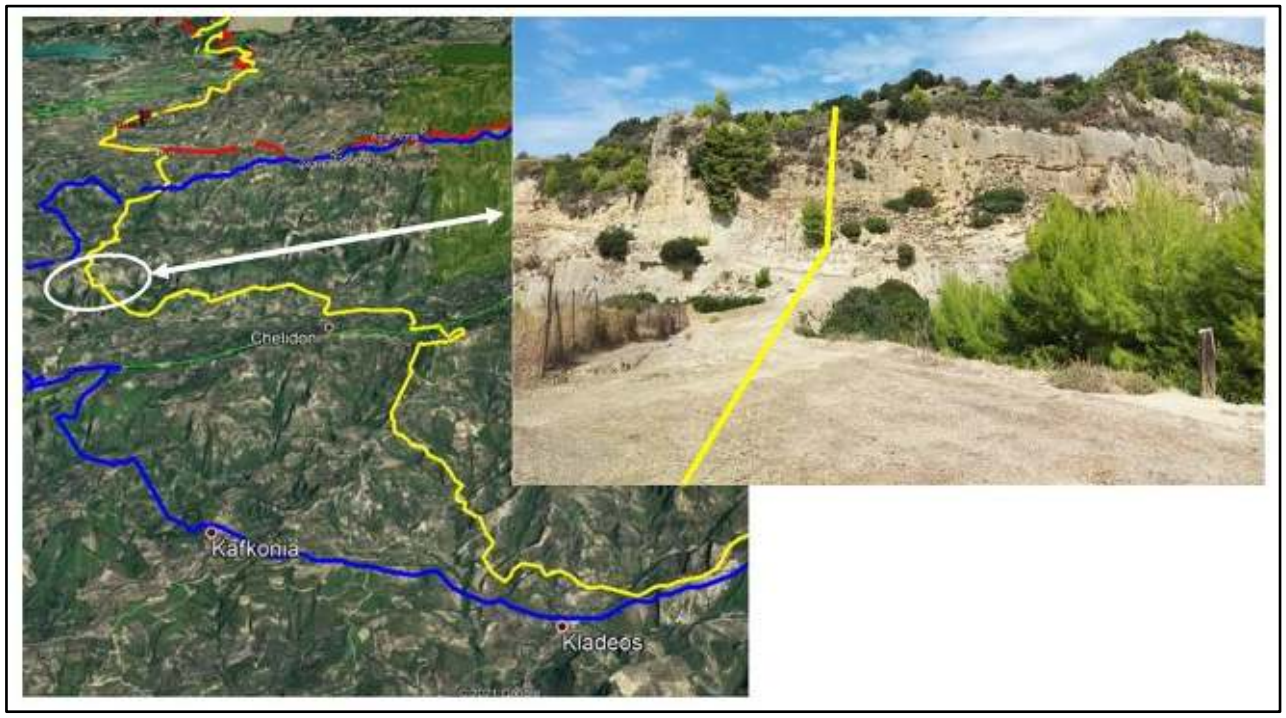
Basecase (red line) passes approx. for 10 km through Natura Area GR2330002, where the Forest of Foloi is included. Alternative routing (yellow line) avoids the Natura Area. Selection of Basecase over Alternative 1 was decided after the site visit conducted on September 2020 because of significant geomorphological issues that have been observed in the area.

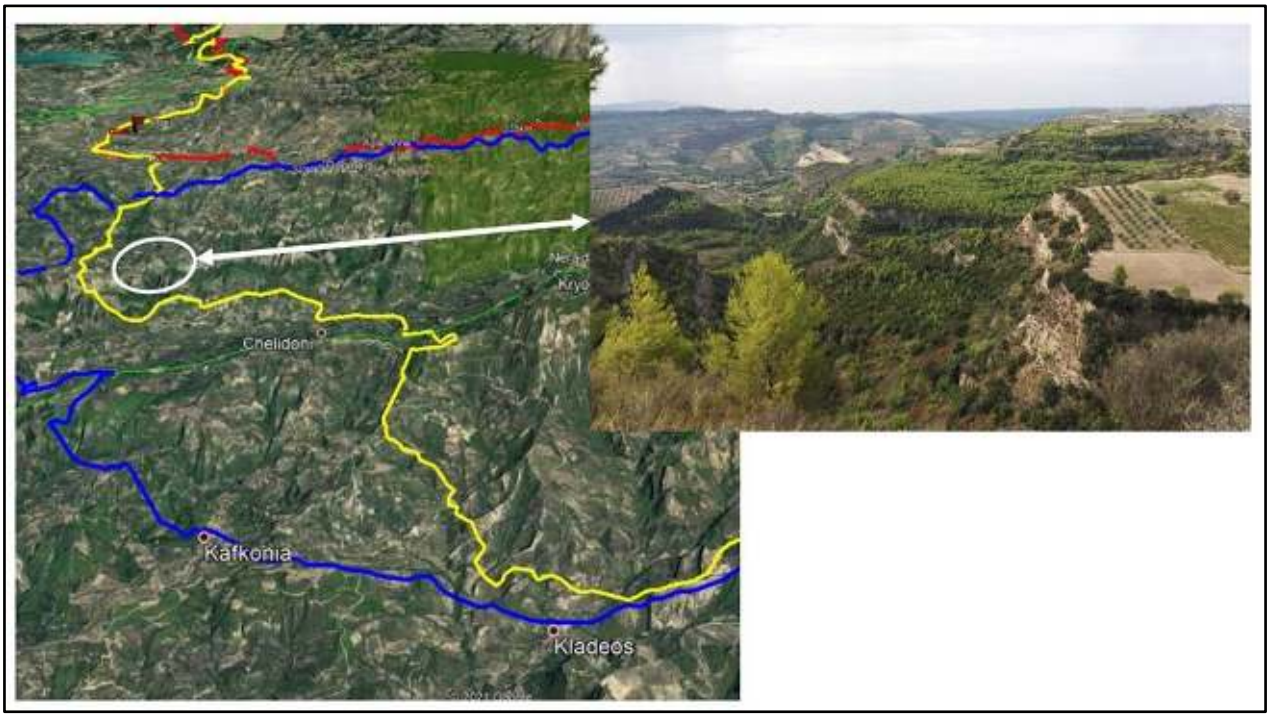
In more details, at the wider area (blue polygon) are observed very steep slopes and erosion phenomena, as well as very narrow passages. Moreover there are a lot of steep ravines presenting erosion phenomena.
In order the pipeline to be installed in this area, special construction technics should be applied (e.g. Microtunneling, Rise borings, etc.) and this will have significant cost and time impacts to the project. More importantly, these technics could require substantial supporting works (e.g. retaining walls, access roads) that could induce significant ESIA related impacts.

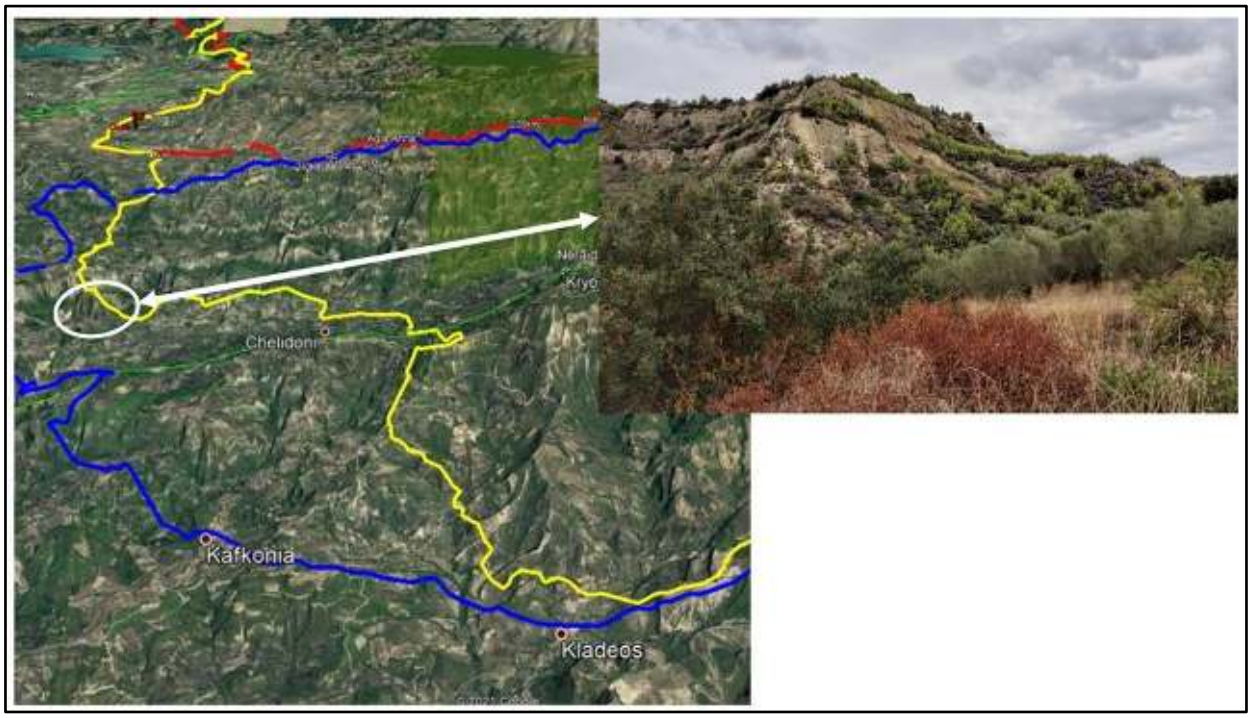


The most significant problems are observed at the pipeline section which is located north from the Kladas settlement.

Especially the geological formation that extends from west to east (marked white in the GE abstract) presents very steep slopes, limited space for the pipeline installation and significant geohazards.
The geological formations comprise alternations of marls, conglomerates and sandstones. Their thickness is a few meters and their dip is very low. Different weathering and erosion degree caused by rockmass heterogeneity (lithology and mechanical properties) can trigger rock falls.


Chelidoni
Kafkonia
Kladeos


Chelidoni
Kafkonia
Kladeos


Chelidoni
Kafkonia
Kladeos


Chelidoni
Kafkonia
Kladeos

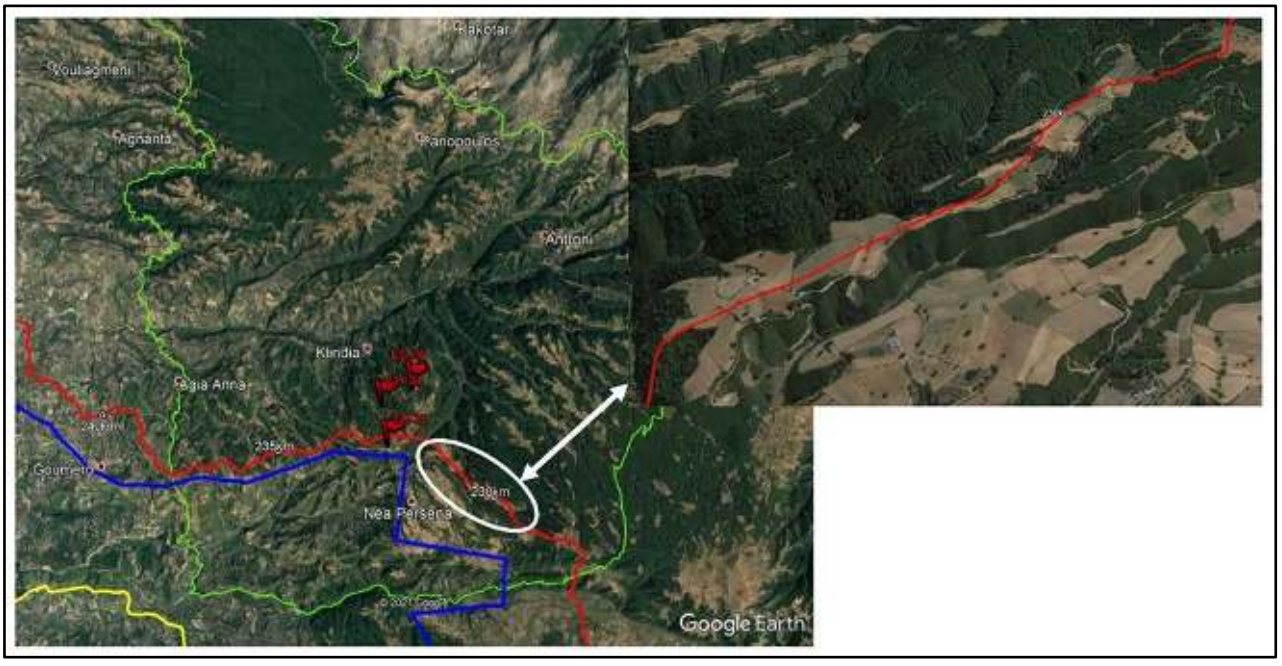
On the other hand, the currently selected routing avoids the majority of the problematic areas.

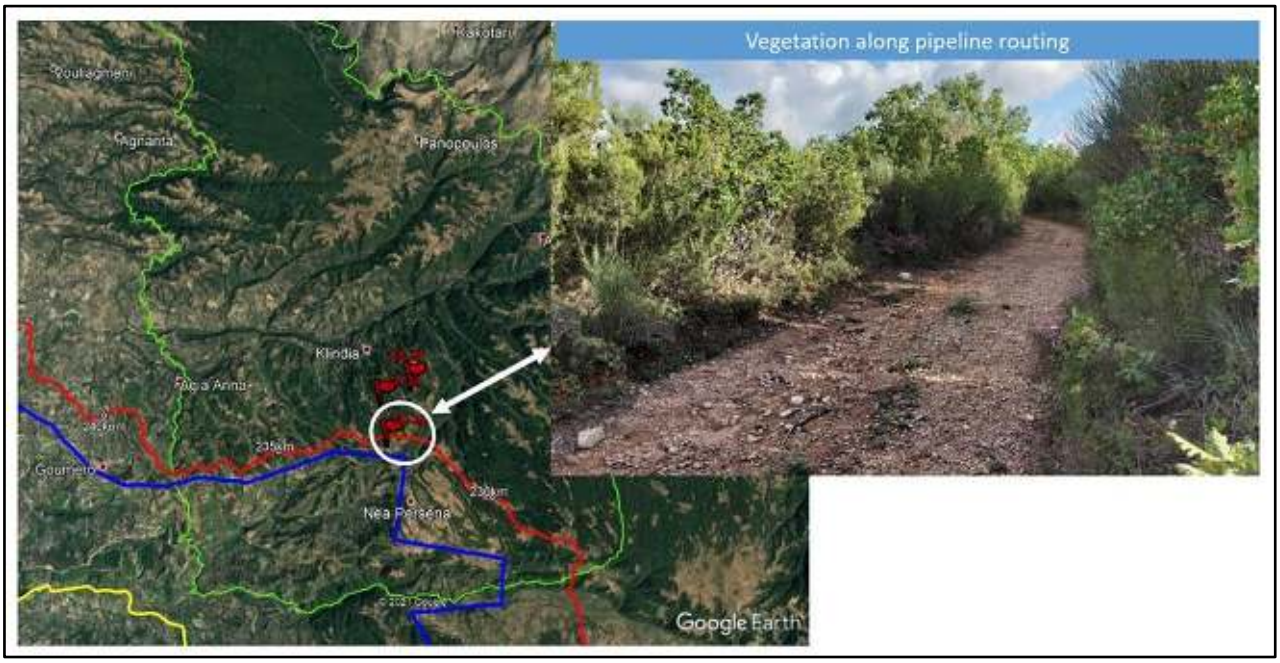
- pass along areas presenting gentle to moderate slopes
- the crossing with steep ravines has been significant reduced
- it is 3.5 km shorter

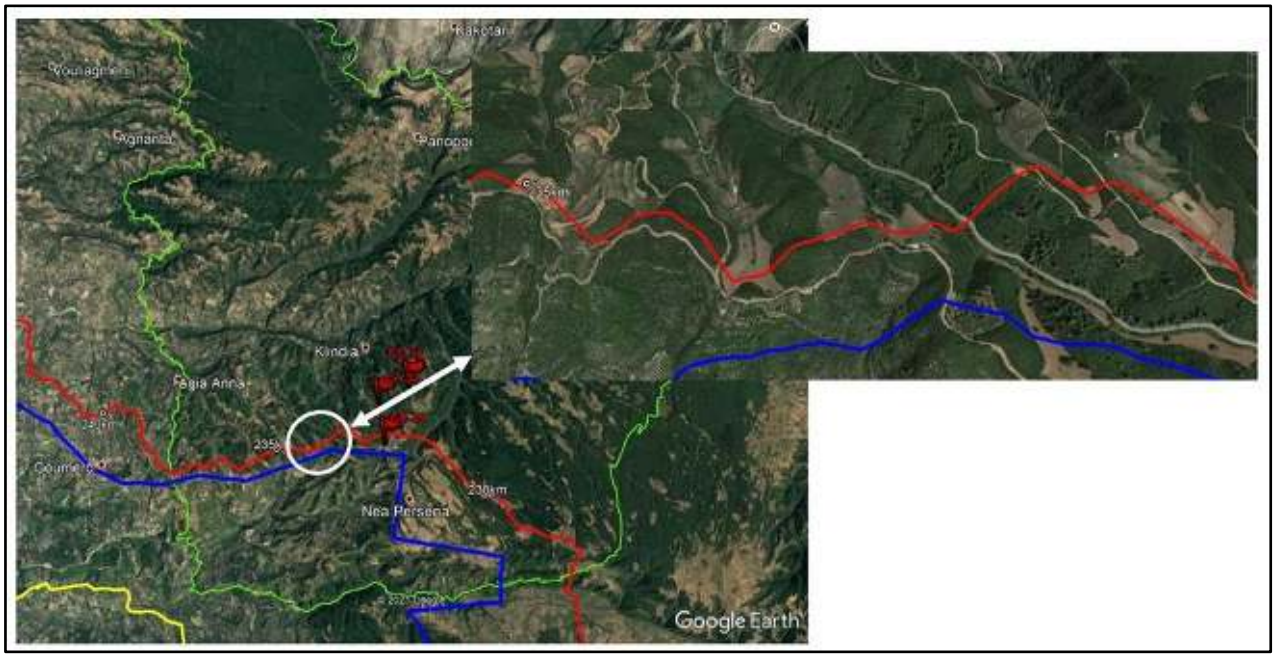
Regarding the Forest of Foloi:

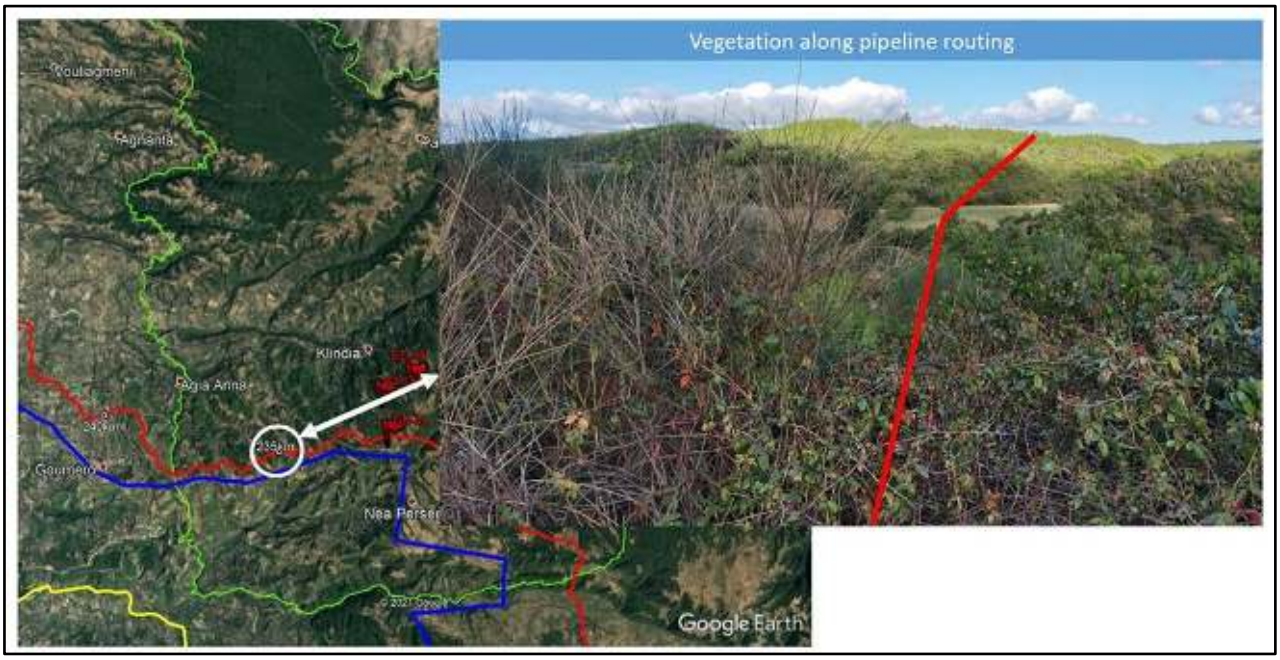
- In order to reduced the impacts to the Foloi's forest the minimum working strip width has been considered
- An effort has been made in order the routing to avoid as much as possible the Oak trees plantations, staying in the southern side of the forest avoiding to pass through its main core.
- When possible, the routing is passing through areas cultivated with annual crops.
- According to EU Directives and applicable legislation, Natura sites are not restricted areas and new projects are not excluded. New projects must be designed and implemented in such a way as to ensure the protection of these areas.
- According to articles 45, 46, 48, 53, 54, 55, 57 of Law 998/79, the construction of natural gas transmission pipelines, falls within the permissible interventions within forests, and reforested areas


Voulagmeni
Agnanta
Panopoulos
Antoni
Klindia
Agia Anna
Goumero
Nea Persena
235km
230km
Google Earth


Voulagmeni
Agnanta
Panopoulos
Antoni
Klindia
Agia Anna
Goumero
Nea Persena
235km
230km
Google Earth

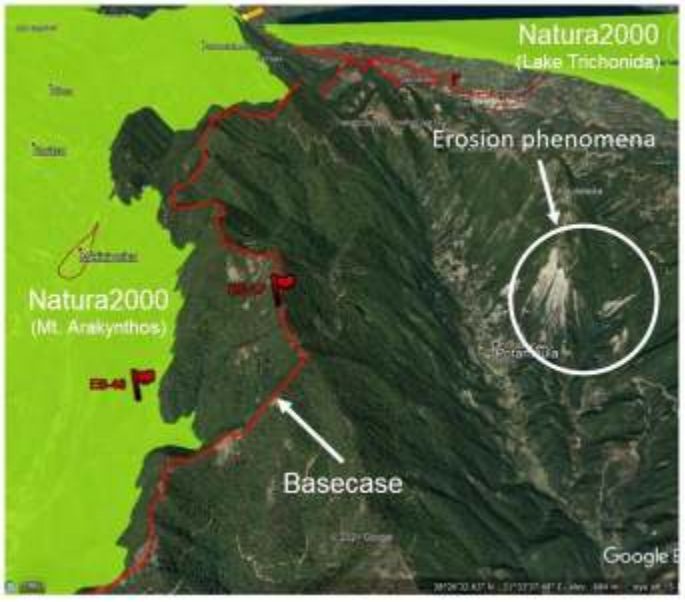

Vegetation along pipeline routing
Kranionas
Panopoulas
Klindia
Agia Anna
Nea Peramos
Google Earth


Klindia
Agia Anna
Nea Peramos
Google Earth

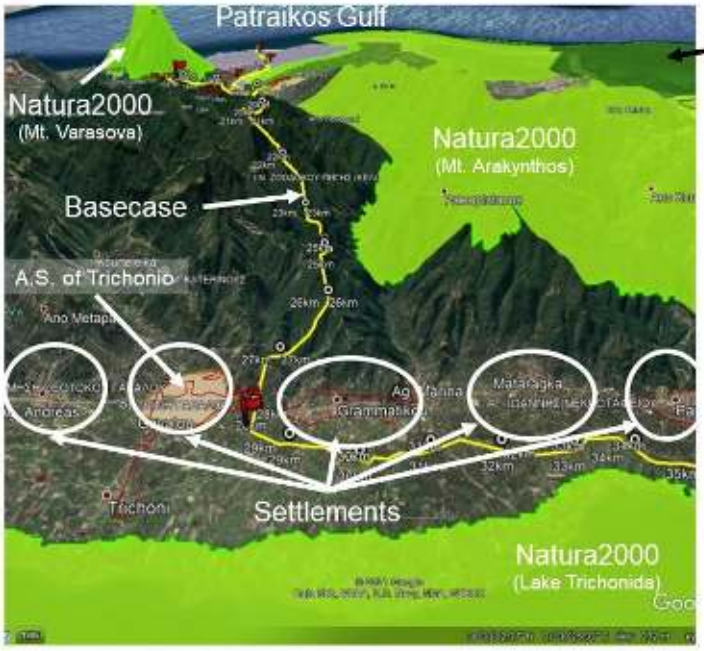

Vegetation along pipeline routing
Agrianta
Klindia
Agia Anna
Nea Peramos
Google Earth

Appendix 2 - FEED GEOTECHNICAL ASSESSMENT FOR MT ARAKYNTHOS AREA

1. The pipeline axis as well as the working strip are outside the limits of Natura area.
2. According to EU Directives and applicable legislation, Natura sites are not restricted areas and new projects are not excluded. New projects must be designed and implemented in such a way as to ensure the protection of these areas.
3. There is no possibility for further routing optimization due to the morphology of the wider area and the erosions phenomena that are observed eastward.

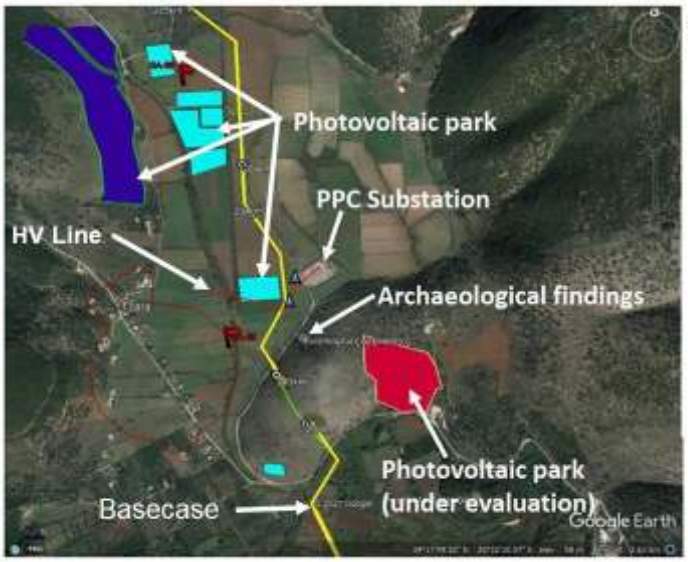


1. The minimum working strip have been considered in order to mitigated as possible the impacts along the forest.
2. According to articles 45, 46, 48, 53, 54, 55, 57 of Law 998/79, the construction of natural gas transmission pipelines, falls within the permissible interventions within forests, and reforested areas
3. Further routing optimization is not possible since eastward located the Natura area and the National park of Mesologgi Lagoon and on the other hand the mountainous area westward presents significant erosion phenomena.

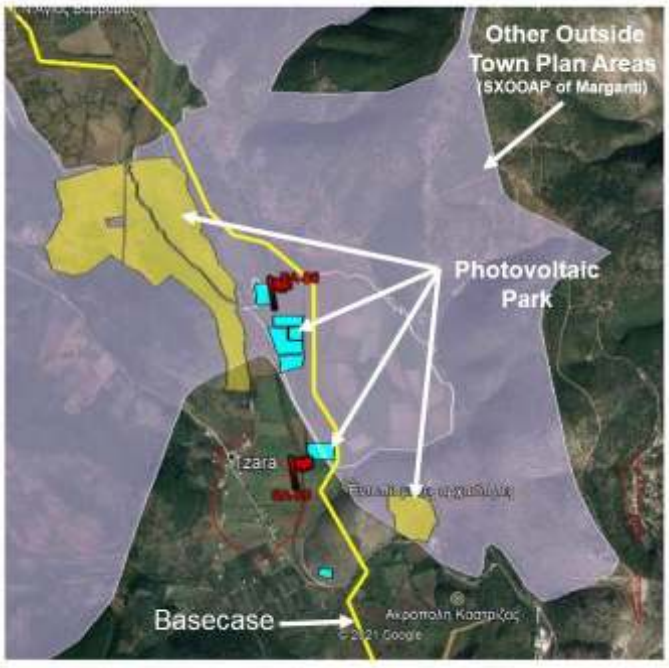


1. A safety distance 200 m has to be considered from the limits of both settlements (i.e. Gavalos & Grammatiko)
2. Class location 3 has been considered due to the numerous scattered farmhouses at the wider area
3. The routing is located ~350 m from the outer limits of the archaeological area (Ancient City of Trichonio, at Gavalos Settlement). No proximity issues are mentioned in the Archaeological Authority's letter
4. There is no possibility for further routing optimization due to the numerous settlements which are located along the provincial road.

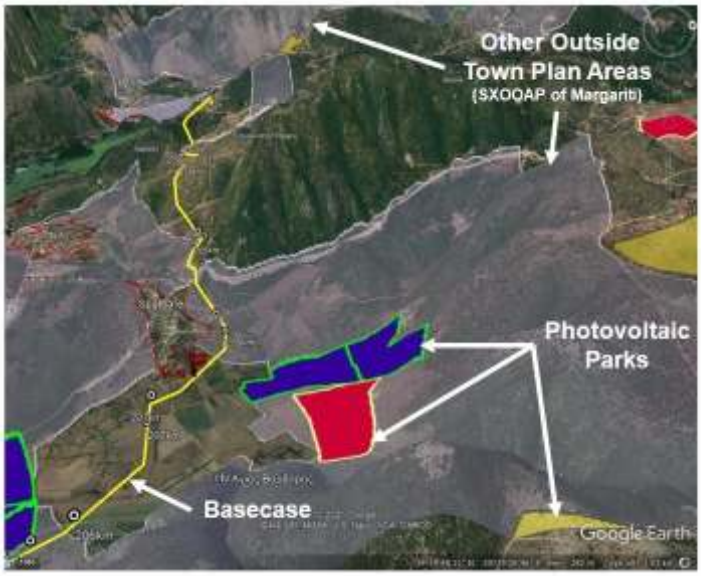
Appendix 3 - FEED GEOTECHNICAL ASSESSMENT FOR MARGARITI AREA



1. Tzara settlement is small but not abandoned. Mainly extended along the provincial road Morfi-Kanali. A pipeline section (280 m) is located within the 200 m buffer zone of the settlement (~ 130 m eastward). The space for possible modifications is limited due to the archaeological findings. Moreover numerous photovoltaic parks have been already constructed in the area, there are HV tension lines and pylons, and a PPC substation which is located eastward from the pipeline routing. Class location 2 has been foreseen to be applied at this pipeline section.

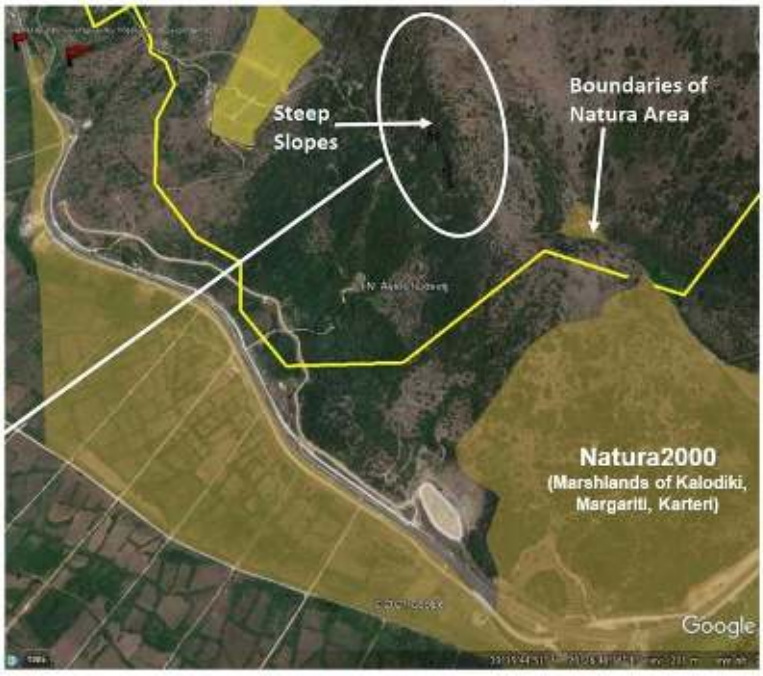


1. There is no possibility for routing modification since the specific area is quite big. Eastward the ground morphology presents steep slopes and westward there is an area where a photovoltaic park will be constructed (currently permitted)
2. The execution of large development projects, or Strategic Investments is not prohibited in land characterized as agricultural land of high productivity.



1. There is no possibility for route modification since the specific area is quite big. An effort has been made in order the route to avoid the steep mountainous area located northward. Class location 3 has been considered.
2. The study of the Open City Spatial and Housing Organization Plan (SXOOAP) of Margariti is in phase B2 (not yet approved). Nevertheless, according to the said SXOOAP, the route does not cross any tourism development zone in the area of Spatharei.

1. The route is designed so as to avoid the "Area Designated for Potential Housing Development", as much as possible. A class location 3 has been considered
2. The study of the Open City Spatial and Housing Organization Plan (SXOOAP) of Margariti is in phase B2 (not yet approved).
3. Nevertheless, projects of National Importance are exempted from the prohibitions of the provisions of SXOOAPs.



1. The area is quite big in order to be avoided. The pipeline will be installed between the Natura area and Margariti settlement (~ 500m westward). Many photovoltaic parks are already constructed in the wider area and some other are under evaluation. There is no possibility for further optimization of the routing.
2. The execution of large development projects, or Strategic Investments is not prohibited in land characterized as agricultural land of high productivity.