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ENVIRONMENTAL IMPACT STUDY

Wind Power Plant "XEFOTO" with a capacity of 148.8MW at the locations "Xefoto, Samaranos, Iskima & Mesovouni" of the Municipality of Mykis of the Prefecture of Xanthi

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1 INTRODUCTION

1.1 Title

This Environmental Impact Assessment (EIA) concerns the project entitled:

"Wind Power Plant (WPP) "Xefoto" with a capacity of 148.8MW at the locations " Xefoto, Samarano, Iskima & Mesovouni " with its accompanying projects (33kV medium voltage external network for the electrical interconnection of the ASPEE with the network of ADMIE through the existing substation "Iasmos") in the Municipal Unit of Satra, Municipality of Mykis, Regional Unit of Xanthi , by the company named "ELPE Renewables S.A.". Part of the medium-voltage network runs within the boundaries of the Municipality of Iasmos of the Rhodope Region and along existing roads.

1.2 Type and size of the project

The purpose of the project is the production of electricity from Renewable Energy Sources (RES), in accordance with the provisions of Laws 3468/2006 and 3851/2010.The primary form of energy used in the project under study is wind energy. More specifically:

The wind farm "Xefoto" to be environmentally licensed consists of a total of twenty-four (24) Siemens Gamesa SG 6.2-170 type wind turbines with a nominal capacity of 6.2 MW, with a total installed capacity of 148.8 MW. The gensets of this type have a blade diameter of 170m and a tower height of 135m. The kinetic energy of the wind is converted, via the blades of each genset, into mechanical energy on the main low-speed shaft of the genset. Subsequently, the mechanical energy is converted into electrical energy via the electrical generator. Each genset will be connected to the Medium Voltage (MV) network of the ASPHE through a Transformer (CT). The interconnection of the ASPHE will be made through a 33kV underground MT line (external MT network), with a total length of 29.66km, up to the existing 20/150kV, 40/50 MVA "Iasmos" substation (substation).

1.3 Geographical location and administrative affiliation of the project

1.3.1 Location

The W/F "XEFOTO" is located in the homonymous location of the D.E. Satra, of the Municipality of Mykes, P.E. Xanthi. The site is located in the north-eastern part of the Regional Unit of Xanthi at the border with Bulgaria. Measured in a straight line, the project site is located approximately 26 km north-east of the city of Xanthi (1:50,000 scale GIS map of the Medoussa area). The nearest settlement from the nearest W/T to it is the settlement of Kalotycho located at a distance of 632m from W/T 23, while the next nearest is the settlement of Gidotopos located at a distance of 799m. On the other hand, Echinos is located to the east of W/T1 at a distance of 13.5km (further details are provided in subsection 5.1.1 of this document).

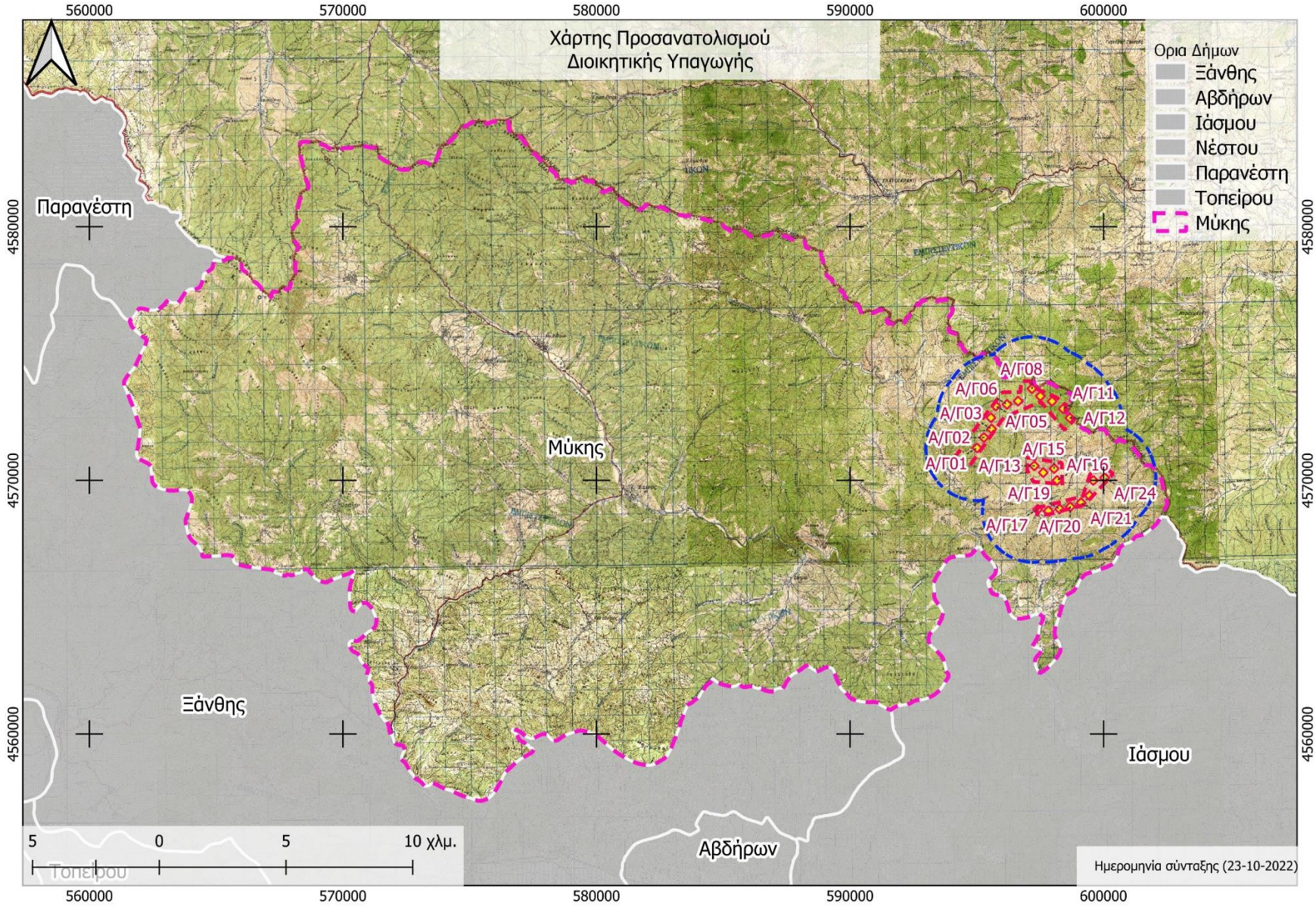
With regard to Bulgaria, the nearest settlement is that of Kusla, 780 km north of W/T 8.

It should be noted that in the Municipal Unit of Satra there are no defined settlement boundaries. For the purposes of the study, the settlements were delimited with a wide zone around the perimeter of the dwellings.

1.3.2 Administrative affiliation of a project

The ASPIE is administratively under the Region of Eastern Macedonia - Thrace, in the Regional Unit of Xanthi, in the Municipality of Myki and specifically the ASPIE is located within the boundaries of the Municipal Unit (D.E.) Satra while the medium voltage line passes through the D.E. Iasmos and Sostou of the Municipality of Iasmos of the P.E. Rodopi.
Below is a map of the orientation - administrative affiliation.

Map 1: Orientation - Administrative affiliation.



1.3.3 Geographical coordinates of the project

First of all, it should be noted that the location of the project with the corresponding coordinates is shown in detail on the attached Topographical Plan (see Annex I).

In the following subsections the coordinates are presented in order:

a) the polygons for the location of the W/T and the locations of the W/T (1.3.3.1.),

(b) the installation areas of the W/T (1.3.3.2),

(c) control centres (1.3.3.3.3),

(d) road works (1.3.3.4); and

(e) engineering works (1.3.3.5).

1.3.3.1 Zoning polygons and Wind Turbines (W/T)

The proposed W/F consists of twenty-four (24) total Gensets, located in areas defined on the accompanying Topographical Plan by three (3) polygons. Twelve gensets will be installed in the northern polygon, four gensets in the central polygon and eight gensets in the southern polygon.

Relevant coordinate tables follow:

Table 1: Coordinates of the northern polygon

Polygon vertices RAE 1	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	598482	4572732	41°18'9.34 "E	25°10'41.35 "N
2	598839,9	4572383	41°17'57.85 "E	25°10'56.53 "N
3	598456	4571990	41°17'45.26 "E	25°10'39.80 "N
4	597520	4573097	41°18'21.58 "E	25°10'0.20 "N
5	596062,9	4572483	41°18'2.30 "E	25°8'57.20 "N
6	594899	4570849	41°17'9.82 "E	25°8'6.25 "N
7	594475,9	4571307	41°17'24.86 "E	25°7'48.31 "N
8	595314,6	4572557	41°18'5.01 "E	25°8'25.07 "N
9	596023,3	4573479	41°18'34.59 "E	25°8'56.07 "N
10	596705,3	4573478	41°18'34.29 "E	25°9'25.39 "N
11	596764,8	4573912	41°18'48.32 "E	25°9'28.20 "N
12	597087	4573916	41°18'48.32 "E	25°9'42.06 "N
13	597216	4573673	41°18'40.37 "E	25°9'47.46 "N
14	598164,5	4573255	41°18'26.40 "E	25°10'28.00 "N
15	598498,7	4572980	41°18'17.36 "E	25°10'42.21 "N

Table 2: Coordinates of the central polygon

Polygon vertices RAE 2	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	598352,4	4570684	41°17'2.99 "E	25°10'34.58 "N
2	598370,5	4569856	41°16'36.13 "E	25°10'34.88 "N
3	597227	4569944	41°16'39.50 "E	25°9'45.79 "N
4	596976,5	4570407	41°16'54.58 "E	25°9'35.29 "N
5	597011,6	4570892	41°17'10.31 "E	25°9'37.07 "N

Table 3: Coordinates of the southern polygon

Polygon vertices RAE 3	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	599176,6	4569378	41°16'20.26 "E	25°11'9.24 "N
2	599463,3	4570238	41°16'48.02 "E	25°11'22.07 "N
3	599929,8	4570628	41°17'0.45 "E	25°11'42.35 "N
4	600373,2	4570254	41°16'48.13 "E	25°12'1.19 "N
5	599251,4	4569042	41°16'9.35 "E	25°11'12.26 "N
6	597862,5	4568666	41°15'57.78 "E	25°10'12.36 "N
7	597377,1	4568652	41°15'57.52 "E	25°9'51.49 "N
8	597360,8	4568909	41°16'5.87 "E	25°9'50.94 "N

Table 4: Coordinates of W/T

Serial number W/T	Geographical Coordinates				
	(ΕΓΣΑ87)		(WGS 84)		Altitude
	X	Y	λ	φ	
W/T01	595007	4571276	41°17'23.62 "E	25°8'11.13 "N	554,00
W/T02	595276	4571689	41°17'36.89 "E	25°8'22.92 "N	576,00
W/T03	595579	4572026	41°17'47.69 "E	25°8'36.14 "N	462,00
W/T04	595552	4572470	41°18'2.10 "E	25°8'35.23 "N	475,00
W/T05	595744	4572931	41°18'16.96 "E	25°8'43.75 "N	512,00
W/T06	596186	4572995	41°18'18.85 "E	25°9'2.79 "N	550,00
W/T07	596625	4573125	41°18'22.87 "E	25°9'21.74 "N	520,50
W/T08	597173	4573612	41°18'38.43 "E	25°9'45.58 "N	669,00
W/T09	597501	4573319	41°18'28.78 "E	25°9'59.51 "N	614,80
W/T10	597965	4573115	41°18'21.97 "E	25°10'19.34 "N	674,50
W/T11	598404	4572821	41°18'12.24 "E	25°10'38.05 "N	765,00
W/T12	598670	4572458	41°18'0.36 "E	25°10'49.27 "N	760,00
W/T 13	597264	4570573	41°16'59.86 "E	25°9'47.74 "N	541,00
W/T 14	597617	4570304	41°16'50.98 "E	25°10'2.76 "N	541,00
W/T 15	598046	4570464	41°16'55.98 "E	25°10'21.29 "N	537,00
W/T16	598162	4569998	41°16'40.82 "E	25°10'26.00 "N	504,00
W/T17	597391	4568849	41°16'3.91 "E	25°9'52.20 "N	447,00

Serial number W/T	Geographical Coordinates				
	(ΕΓΣΑ87)		(WGS 84)		Altitude
	X	Y	λ	φ	
W/T18	597820	4568798	41°16'2.07 "E	25°10'10.61 "N	501,00
W/T19	598259	4568871	41°16'4.24 "E	25°10'29.52 "N	587,00
W/T20	598680	4568956	41°16'6.81 "E	25°10'47.66 "N	581,00
W/T21	599107	4569115	41°16'11.78 "E	25°11'6.10 "N	628,50
W/T22	599441	4569397	41°16'20.77 "E	25°11'20.62 "N	587,50
W/T23	599592	4569996	41°16'40.13 "E	25°11'27.46 "N	610,00
W/T24	600038	4570096	41°16'43.17 "E	25°11'46.68 "N	656,50

1.3.3.2 Installation Platforms of W/T

For the installation of the W/Ts, 24 platforms will be formed with the following coordinates.

Table 5: Coordinates of the deck tops of the installation Platforms of the W/T installation.

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T01	1	595011,85	4571208,85	41°17'21.44 "E	25°8'11.30 "N
Platform W/T01	2	594995,1	4571216,18	41°17'21.68 "E	25°8'10.58 "N
Platform W/T01	3	594989,2	4571269,76	41°17'23.42 "E	25°8'10.36 "N
Platform W/T01	4	594993,18	4571285,28	41°17'23.93 "E	25°8'10.54 "N
Platform W/T01	5	595003,27	4571308,1	41°17'24.66 "E	25°8'10.98 "N
Platform W/T01	6	595032,1	4571361,73	41°17'26.39 "E	25°8'12.25 "N
Platform W/T01	7	595040,4	4571364,19	41°17'26.46 "E	25°8'12.61 "N
Platform W/T01	8	595048,13	4571362,24	41°17'26.40 "E	25°8'12.94 "N
Platform W/T01	9	595051,79	4571361,31	41°17'26.37 "E	25°8'13.10 "N
Platform W/T01	10	595050,02	4571353,86	41°17'26.13 "E	25°8'13.02 "N
Platform W/T01	11	595041,77	4571319,01	41°17'25.00 "E	25°8'12.65 "N
Platform W/T01	12	595027,02	4571234,77	41°17'22.27 "E	25°8'11.96 "N
Platform W/T02	1	595259,11	4571635,27	41°17'35.16 "E	25°8'22.17 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T02	2	595250,95	4571638,49	41°17'35.27 "E	25°8'21.82 "N
Platform W/T02	3	595247,36	4571639,91	41°17'35.32 "E	25°8'21.66 "N
Platform W/T02	4	595247,18	4571643,21	41°17'35.42 "E	25°8'21.66 "N
Platform W/T02	5	595245,95	4571666,75	41°17'36.19 "E	25°8'21.62 "N
Platform W/T02	6	595260,93	4571768,65	41°17'39.48 "E	25°8'22.32 "N
Platform W/T02	7	595284,53	4571805,62	41°17'40.67 "E	25°8'23.35 "N
Platform W/T02	8	595300,2	4571799,17	41°17'40.46 "E	25°8'24.03 "N
Platform W/T02	9	595288,13	4571753,34	41°17'38.98 "E	25°8'23.48 "N
Platform W/T02	10	595281,8	4571730,17	41°17'38.23 "E	25°8'23.19 "N
Platform W/T02	11	595281,23	4571722,44	41°17'37.98 "E	25°8'23.17 "N
Platform W/T02	12	595282,28	4571711,59	41°17'37.62 "E	25°8'23.21 "N
Platform W/T02	13	595297,59	4571670,45	41°17'36.28 "E	25°8'23.84 "N
Platform W/T02	14	595295,85	4571657,37	41°17'35.86 "E	25°8'23.76 "N
Platform W/T03	1	595570,5	4572009,94	41°17'47.17 "E	25°8'35.76 "N
Platform W/T03	2	595555,29	4572044,28	41°17'48.29 "E	25°8'35.13 "N
Platform W/T03	3	595552,83	4572079,3	41°17'49.43 "E	25°8'35.04 "N
Platform W/T03	4	595555,76	4572100,1	41°17'50.10 "E	25°8'35.18 "N
Platform W/T03	5	595576,27	4572149,25	41°17'51.69 "E	25°8'36.09 "N
Platform W/T03	6	595584,5	4572197,76	41°17'53.26 "E	25°8'36.47 "N
Platform W/T03	7	595591,46	4572196,62	41°17'53.22 "E	25°8'36.77 "N
Platform W/T03	8	595598,09	4572195,53	41°17'53.18 "E	25°8'37.06 "N
Platform W/T03	9	595599,05	4572195,37	41°17'53.17 "E	25°8'37.10 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T03	10	595598,43	4572191,21	41°17'53.04 "E	25°8'37.07 "N
Platform W/T03	11	595598,57	4572189,26	41°17'52.98 "E	25°8'37.07 "N
Platform W/T03	12	595598,12	4572189,23	41°17'52.98 "E	25°8'37.05 "N
Platform W/T03	13	595591,84	4572147,72	41°17'51.63 "E	25°8'36.76 "N
Platform W/T03	14	595586,73	4572112,31	41°17'50.49 "E	25°8'36.52 "N
Platform W/T03	15	595580,77	4572083,52	41°17'49.56 "E	25°8'36.25 "N
Platform W/T03	16	595585,12	4572063,95	41°17'48.92 "E	25°8'36.42 "N
Platform W/T03	17	595608,29	4572035,51	41°17'47.99 "E	25°8'37.40 "N
Platform W/T03	18	595605,55	4572032,67	41°17'47.90 "E	25°8'37.28 "N
Platform W/T03	19	595600,59	4572027,55	41°17'47.73 "E	25°8'37.07 "N
Platform W/T03	20	595586,13	4572012,58	41°17'47.25 "E	25°8'36.44 "N
Platform W/T04	1	595566,83	4572440,23	41°18'1.13 "E	25°8'35.85 "N
Platform W/T04	2	595564,07	4572442,19	41°18'1.19 "E	25°8'35.73 "N
Platform W/T04	3	595559,98	4572445,07	41°18'1.29 "E	25°8'35.56 "N
Platform W/T04	4	595540,3	4572458,99	41°18'1.75 "E	25°8'34.72 "N
Platform W/T04	5	595499,43	4572496,91	41°18'2.99 "E	25°8'32.98 "N
Platform W/T04	6	595463,8	4572532,61	41°18'4.17 "E	25°8'31.47 "N
Platform W/T04	7	595454,13	4572559,17	41°18'5.03 "E	25°8'31.07 "N
Platform W/T04	8	595454,69	4572560,04	41°18'5.06 "E	25°8'31.10 "N
Platform W/T04	9	595548,37	4572503,95	41°18'3.20 "E	25°8'35.09 "N
Platform W/T04	10	595595,3	4572491,22	41°18'2.77 "E	25°8'37.10 "N
Platform W/T04	11	595596,25	4572483,91	41°18'2.53 "E	25°8'37.14 "N
Platform W/T04	12	595597,2	4572476,59	41°18'2.29 "E	25°8'37.18 "N
Platform W/T04	13	595597,27	4572476,07	41°18'2.28 "E	25°8'37.18 "N
Platform W/T05	1	595888,43	4572837,58	41°18'13.87 "E	25°8'49.90 "N
Platform W/T05	2	595862,09	4572847,6	41°18'14.21 "E	25°8'48.78 "N
Platform W/T05	3	595852,27	4572851,33	41°18'14.33 "E	25°8'48.36 "N
Platform W/T05	4	595803,55	4572869,84	41°18'14.95 "E	25°8'46.27 "N
Platform W/T05	5	595786,14	4572875,87	41°18'15.16 "E	25°8'45.53 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T05	6	595772,56	4572884,08	41°18'15.43 "E	25°8'44.95 "N
Platform W/T05	7	595728,35	4572926,34	41°18'16.82 "E	25°8'43.07 "N
Platform W/T05	8	595726,72	4572937,93	41°18'17.19 "E	25°8'43.01 "N
Platform W/T05	9	595743,78	4572950,97	41°18'17.61 "E	25°8'43.75 "N
Platform W/T05	10	595770,24	4572939,01	41°18'17.21 "E	25°8'44.88 "N
Platform W/T05	11	595796,68	4572927,42	41°18'16.82 "E	25°8'46.01 "N
Platform W/T05	12	595835,98	4572917,63	41°18'16.49 "E	25°8'47.69 "N
Platform W/T05	13	595885,69	4572887,42	41°18'15.49 "E	25°8'49.81 "N
Platform W/T05	14	595897,04	4572852,6	41°18'14.35 "E	25°8'50.28 "N
Platform W/T06	1	596210,08	4572956,04	41°18'17.57 "E	25°9'3.80 "N
Platform W/T06	2	596172,77	4572938,26	41°18'17.01 "E	25°9'2.18 "N
Platform W/T06	3	596128,03	4572902,7	41°18'15.88 "E	25°9'0.24 "N
Platform W/T06	4	596126,88	4572904,24	41°18'15.93 "E	25°9'0.19 "N
Platform W/T06	5	596123,9	4572908,26	41°18'16.06 "E	25°9'0.07 "N
Platform W/T06	6	596122,3	4572910,41	41°18'16.13 "E	25°9'0.00 "N
Platform W/T06	7	596166,01	4572947,72	41°18'17.32 "E	25°9'1.90 "N
Platform W/T06	8	596168,85	4572980,27	41°18'18.38 "E	25°9'2.04 "N
Platform W/T06	9	596174,45	4573005,17	41°18'19.18 "E	25°9'2.29 "N
Platform W/T06	10	596189,16	4573010,99	41°18'19.36 "E	25°9'2.93 "N
Platform W/T06	11	596202,46	4572999,05	41°18'18.97 "E	25°9'3.50 "N
Platform W/T06	12	596212,65	4572999,17	41°18'18.97 "E	25°9'3.93 "N
Platform W/T06	13	596226,26	4573004,76	41°18'19.15 "E	25°9'4.52 "N
Platform W/T06	14	596245,24	4573021,88	41°18'19.69 "E	25°9'5.35 "N
Platform W/T06	15	596250,88	4573016,73	41°18'19.52 "E	25°9'5.59 "N
Platform W/T06	16	596255,46	4573012,55	41°18'19.39 "E	25°9'5.78 "N
Platform W/T06	17	596262,63	4573006,01	41°18'19.17 "E	25°9'6.09 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T07	1	596578,99	4573056,03	41°18'20.66 "E	25°9'19.72 "N
Platform W/T07	2	596576,81	4573067,88	41°18'21.04 "E	25°9'19.63 "N
Platform W/T07	3	596575,8	4573073,39	41°18'21.22 "E	25°9'19.59 "N
Platform W/T07	4	596568,59	4573112,58	41°18'22.49 "E	25°9'19.30 "N
Platform W/T07	5	596586,18	4573118,85	41°18'22.69 "E	25°9'20.06 "N
Platform W/T07	6	596605,22	4573137,88	41°18'23.30 "E	25°9'20.89 "N
Platform W/T07	7	596629,17	4573143,78	41°18'23.48 "E	25°9'21.93 "N
Platform W/T07	8	596661,28	4573145,34	41°18'23.52 "E	25°9'23.31 "N
Platform W/T07	9	596734,01	4573144,58	41°18'23.46 "E	25°9'26.43 "N
Platform W/T07	10	596741,42	4573120,62	41°18'22.68 "E	25°9'26.74 "N
Platform W/T07	11	596742,94	4573115,69	41°18'22.52 "E	25°9'26.80 "N
Platform W/T07	12	596748,87	4573096,55	41°18'21.90 "E	25°9'27.04 "N
Platform W/T08	1	597112,67	4573510,71	41°18'35.17 "E	25°9'42.92 "N
Platform W/T08	2	597102,77	4573523,69	41°18'35.59 "E	25°9'42.51 "N
Platform W/T08	3	597154,41	4573571,34	41°18'37.11 "E	25°9'44.75 "N
Platform W/T08	4	597159,88	4573621,87	41°18'38.75 "E	25°9'45.02 "N
Platform W/T08	5	597164,31	4573634,22	41°18'39.15 "E	25°9'45.22 "N
Platform W/T08	6	597179,58	4573641,06	41°18'39.36 "E	25°9'45.88 "N
Platform W/T08	7	597194,19	4573640,68	41°18'39.35 "E	25°9'46.51 "N
Platform W/T08	8	597208,02	4573635,15	41°18'39.16 "E	25°9'47.10 "N
Platform W/T08	9	597217,28	4573627,68	41°18'38.91 "E	25°9'47.49 "N
Platform W/T08	10	597235,62	4573608,21	41°18'38.27 "E	25°9'48.27 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T08	11	597247,52	4573589,43	41°18'37.66 "E	25°9'48.77 "N
Platform W/T08	12	597237,65	4573585,29	41°18'37.53 "E	25°9'48.34 "N
Platform W/T08	13	597231,57	4573582,74	41°18'37.45 "E	25°9'48.08 "N
Platform W/T08	14	597164,7	4573554,7	41°18'36.57 "E	25°9'45.19 "N
Platform W/T08	15	597129,82	4573524,66	41°18'35.61 "E	25°9'43.67 "N
Platform W/T09	1	597346,2	4573230,63	41°18'25.99 "E	25°9'52.80 "N
Platform W/T09	2	597345,57	4573232,35	41°18'26.04 "E	25°9'52.78 "N
Platform W/T09	3	597343,64	4573237,63	41°18'26.21 "E	25°9'52.70 "N
Platform W/T09	4	597341,31	4573244,02	41°18'26.42 "E	25°9'52.60 "N
Platform W/T09	5	597338,69	4573251,17	41°18'26.65 "E	25°9'52.49 "N
Platform W/T09	6	597338,31	4573252,23	41°18'26.69 "E	25°9'52.48 "N
Platform W/T09	7	597350,43	4573256,92	41°18'26.84 "E	25°9'53.00 "N
Platform W/T09	8	597368,25	4573262,43	41°18'27.01 "E	25°9'53.77 "N
Platform W/T09	9	597412,16	4573281,8	41°18'27.62 "E	25°9'55.67 "N
Platform W/T09	10	597446,7	4573308,14	41°18'28.45 "E	25°9'57.17 "N
Platform W/T09	11	597500,31	4573334,74	41°18'29.29 "E	25°9'59.49 "N
Platform W/T09	12	597522,45	4573323,91	41°18'28.93 "E	25°10'0.44 "N
Platform W/T09	13	597520,99	4573311,7	41°18'28.54 "E	25°10'0.37 "N
Platform W/T09	14	597510,73	4573297,13	41°18'28.07 "E	25°9'59.92 "N
Platform W/T09	15	597498,44	4573287,68	41°18'27.77 "E	25°9'59.38 "N
Platform W/T09	16	597480,86	4573276,9	41°18'27.43 "E	25°9'58.62 "N
Platform W/T09	17	597455,88	4573267,18	41°18'27.12 "E	25°9'57.54 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T09	18	597417,87	4573257,89	41°18'26.84 "E	25°9'55.90 "N
Platform W/T10	1	598019,73	4573019,58	41°18'18.85 "E	25°10'21.64 "N
Platform W/T10	2	598016,16	4573019,83	41°18'18.86 "E	25°10'21.49 "N
Platform W/T10	3	598010,08	4573020,24	41°18'18.87 "E	25°10'21.23 "N
Platform W/T10	4	597981,04	4573022,23	41°18'18.95 "E	25°10'19.98 "N
Platform W/T10	5	597930,47	4573111,18	41°18'21.86 "E	25°10'17.86 "N
Platform W/T10	6	597966,43	4573135,79	41°18'22.64 "E	25°10'19.42 "N
Platform W/T10	7	597942,86	4573171,55	41°18'23.81 "E	25°10'18.42 "N
Platform W/T10	8	597952,96	4573178,69	41°18'24.04 "E	25°10'18.86 "N
Platform W/T10	9	598028,91	4573077,07	41°18'20.71 "E	25°10'22.07 "N
Platform W/T10	10	598031,91	4573073,05	41°18'20.58 "E	25°10'22.20 "N
Platform W/T10	11	598047,95	4573051,58	41°18'19.87 "E	25°10'22.87 "N
Platform W/T10	12	598042,4	4573033,68	41°18'19.30 "E	25°10'22.62 "N
Platform W/T11	1	598444,13	4572643,71	41°18'6.48 "E	25°10'39.67 "N
Platform W/T11	2	598439,96	4572649,76	41°18'6.67 "E	25°10'39.49 "N
Platform W/T11	3	598408,75	4572695,13	41°18'8.16 "E	25°10'38.18 "N
Platform W/T11	4	598390,02	4572739,8	41°18'9.62 "E	25°10'37.40 "N
Platform W/T11	5	598383,65	4572775,11	41°18'10.76 "E	25°10'37.15 "N
Platform W/T11	6	598387,03	4572809,54	41°18'11.88 "E	25°10'37.31 "N
Platform W/T11	7	598391,58	4572837,54	41°18'12.78 "E	25°10'37.52 "N
Platform W/T11	8	598414,7	4572833,42	41°18'12.64 "E	25°10'38.51 "N
Platform W/T11	9	598424,84	4572808,82	41°18'11.84 "E	25°10'38.94 "N
Platform W/T11	10	598427,87	4572747,99	41°18'9.86 "E	25°10'39.03 "N
Platform W/T11	11	598453,68	4572648,58	41°18'6.63 "E	25°10'40.08 "N
Platform W/T11	12	598448,07	4572645,72	41°18'6.54 "E	25°10'39.84 "N
Platform W/T12	1	598729,27	4572292,97	41°17'54.98 "E	25°10'51.72 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T12	2	598662,53	4572401,91	41°17'58.54 "E	25°10'48.92 "N
Platform W/T12	3	598651,91	4572419,25	41°17'59.11 "E	25°10'48.47 "N
Platform W/T12	4	598650,52	4572423,73	41°17'59.25 "E	25°10'48.41 "N
Platform W/T12	5	598644,48	4572443,16	41°17'59.89 "E	25°10'48.17 "N
Platform W/T12	6	598648,21	4572466,25	41°18'0.63 "E	25°10'48.34 "N
Platform W/T12	7	598673,72	4572476,52	41°18'0.95 "E	25°10'49.44 "N
Platform W/T12	8	598691,41	4572459,72	41°18'0.40 "E	25°10'50.19 "N
Platform W/T12	9	598728,19	4572347,28	41°17'56.74 "E	25°10'51.71 "N
Platform W/T12	10	598741,84	4572296,27	41°17'55.08 "E	25°10'52.27 "N
Platform W/T13	1	597350,01	4570551,91	41°16'59.14 "E	25°9'51.42 "N
Platform W/T13	2	597361,98	4570543	41°16'58.84 "E	25°9'51.93 "N
Platform W/T13	3	597378,97	4570532,14	41°16'58.48 "E	25°9'52.66 "N
Platform W/T13	4	597384,69	4570529,16	41°16'58.38 "E	25°9'52.90 "N
Platform W/T13	5	597398,88	4570521,98	41°16'58.15 "E	25°9'53.51 "N
Platform W/T13	6	597407,49	4570516,35	41°16'57.96 "E	25°9'53.87 "N
Platform W/T13	7	597407,61	4570516,46	41°16'57.96 "E	25°9'53.88 "N
Platform W/T13	8	597407,91	4570516,14	41°16'57.95 "E	25°9'53.89 "N
Platform W/T13	9	597408,04	4570516	41°16'57.95 "E	25°9'53.90 "N
Platform W/T13	10	597411,32	4570513,86	41°16'57.88 "E	25°9'54.04 "N
Platform W/T13	11	597411,34	4570512,39	41°16'57.83 "E	25°9'54.04 "N
Platform W/T13	12	597411,37	4570509,99	41°16'57.75 "E	25°9'54.04 "N
Platform W/T13	13	597409,07	4570507,45	41°16'57.67 "E	25°9'53.94 "N
Platform W/T13	14	597405,97	4570504,03	41°16'57.56 "E	25°9'53.80 "N
Platform W/T13	15	597317,48	4570551,97	41°16'59.15 "E	25°9'50.03 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T13	16	597297,71	4570556,3	41°16'59.30 "E	25°9'49.18 "N
Platform W/T13	17	597273,5	4570557,1	41°16'59.34 "E	25°9'48.14 "N
Platform W/T13	18	597257,85	4570555,13	41°16'59.28 "E	25°9'47.46 "N
Platform W/T13	19	597252,44	4570559,69	41°16'59.43 "E	25°9'47.23 "N
Platform W/T13	20	597245,82	4570572,53	41°16'59.85 "E	25°9'46.96 "N
Platform W/T13	21	597242,08	4570581,62	41°17'0.15 "E	25°9'46.80 "N
Platform W/T13	22	597261,49	4570590,86	41°17'0.44 "E	25°9'47.64 "N
Platform W/T13	23	597276,57	4570597,56	41°17'0.65 "E	25°9'48.29 "N
Platform W/T13	24	597288,75	4570601,33	41°17'0.77 "E	25°9'48.82 "N
Platform W/T13	25	597302,12	4570592,81	41°17'0.48 "E	25°9'49.39 "N
Platform W/T13	26	597317,51	4570585,35	41°17'0.24 "E	25°9'50.05 "N
Platform W/T14	1	597616,34	4570285,46	41°16'50.38 "E	25°10'2.72 "N
Platform W/T14	2	597601,83	4570295,46	41°16'50.71 "E	25°10'2.10 "N
Platform W/T14	3	597601,63	4570310,15	41°16'51.19 "E	25°10'2.10 "N
Platform W/T14	4	597589,2	4570336,97	41°16'52.06 "E	25°10'1.58 "N
Platform W/T14	5	597567,19	4570371,11	41°16'53.18 "E	25°10'0.65 "N
Platform W/T14	6	597498,97	4570430,89	41°16'55.15 "E	25°9'57.76 "N
Platform W/T14	7	597499,67	4570431,74	41°16'55.18 "E	25°9'57.79 "N
Platform W/T14	8	597502,84	4570435,62	41°16'55.30 "E	25°9'57.93 "N
Platform W/T14	9	597503,13	4570435,97	41°16'55.31 "E	25°9'57.94 "N
Platform W/T14	10	597513,29	4570433,8	41°16'55.24 "E	25°9'58.37 "N
Platform W/T14	11	597550,75	4570413,3	41°16'54.56 "E	25°9'59.97 "N
Platform W/T14	12	597569,71	4570403,64	41°16'54.23 "E	25°10'0.78 "N
Platform W/T14	13	597584,19	4570397,27	41°16'54.02 "E	25°10'1.40 "N
Platform W/T14	14	597595,23	4570392,4	41°16'53.86 "E	25°10'1.87 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T14	15	597596,24	4570390,15	41°16'53.79 "E	25°10'1.91 "N
Platform W/T14	16	597629,35	4570316,16	41°16'51.37 "E	25°10'3.29 "N
Platform W/T14	17	597632,32	4570301,55	41°16'50.90 "E	25°10'3.41 "N
Platform W/T14	18	597628,47	4570292,33	41°16'50.60 "E	25°10'3.24 "N
Platform W/T15	1	598031,68	4570472,19	41°16'56.25 "E	25°10'20.68 "N
Platform W/T15	2	598044,4	4570475,72	41°16'56.36 "E	25°10'21.23 "N
Platform W/T15	3	598059,88	4570476,94	41°16'56.40 "E	25°10'21.89 "N
Platform W/T15	4	598064,02	4570457,9	41°16'55.78 "E	25°10'22.06 "N
Platform W/T15	5	598040,31	4570447,19	41°16'55.44 "E	25°10'21.03 "N
Platform W/T15	6	598023,23	4570444,2	41°16'55.35 "E	25°10'20.30 "N
Platform W/T15	7	598009,9	4570444,39	41°16'55.36 "E	25°10'19.72 "N
Platform W/T15	8	597998,59	4570444,55	41°16'55.37 "E	25°10'19.24 "N
Platform W/T15	9	597933,19	4570445,47	41°16'55.43 "E	25°10'16.43 "N
Platform W/T15	10	597888,28	4570435,09	41°16'55.11 "E	25°10'14.49 "N
Platform W/T15	11	597887,36	4570440,17	41°16'55.28 "E	25°10'14.45 "N
Platform W/T15	12	597886,05	4570447,37	41°16'55.51 "E	25°10'14.40 "N
Platform W/T15	13	597886,02	4570447,54	41°16'55.52 "E	25°10'14.40 "N
Platform W/T15	14	597887,17	4570447,84	41°16'55.53 "E	25°10'14.45 "N
Platform W/T15	15	597887,58	4570448,01	41°16'55.53 "E	25°10'14.47 "N
Platform W/T15	16	597888,73	4570448,49	41°16'55.55 "E	25°10'14.52 "N
Platform W/T15	17	597888,94	4570448,58	41°16'55.55 "E	25°10'14.53 "N
Platform W/T15	18	597889,19	4570448,69	41°16'55.56 "E	25°10'14.54 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T15	19	597889,43	4570448,82	41°16'55.56 "E	25°10'14.55 "N
Platform W/T15	20	597889,44	4570448,82	41°16'55.56 "E	25°10'14.55 "N
Platform W/T15	21	597891,27	4570449,77	41°16'55.59 "E	25°10'14.63 "N
Platform W/T15	22	597893,11	4570450,68	41°16'55.62 "E	25°10'14.71 "N
Platform W/T15	23	597894,98	4570451,55	41°16'55.65 "E	25°10'14.79 "N
Platform W/T15	24	597896,67	4570452,29	41°16'55.67 "E	25°10'14.86 "N
Platform W/T15	25	597896,86	4570452,37	41°16'55.67 "E	25°10'14.87 "N
Platform W/T15	26	597898,76	4570453,15	41°16'55.70 "E	25°10'14.95 "N
Platform W/T15	27	597900,68	4570453,89	41°16'55.72 "E	25°10'15.04 "N
Platform W/T15	28	597902,26	4570454,46	41°16'55.74 "E	25°10'15.10 "N
Platform W/T15	29	597902,62	4570454,59	41°16'55.74 "E	25°10'15.12 "N
Platform W/T15	30	597904,57	4570455,24	41°16'55.76 "E	25°10'15.20 "N
Platform W/T15	31	597904,91	4570455,35	41°16'55.76 "E	25°10'15.22 "N
Platform W/T15	32	597904,98	4570455,37	41°16'55.76 "E	25°10'15.22 "N
Platform W/T15	33	597905,04	4570455,39	41°16'55.77 "E	25°10'15.22 "N
Platform W/T15	34	597906,53	4570455,84	41°16'55.78 "E	25°10'15.29 "N
Platform W/T15	35	597908,51	4570456,41	41°16'55.80 "E	25°10'15.37 "N
Platform W/T15	36	597910,5	4570456,93	41°16'55.81 "E	25°10'15.46 "N
Platform W/T15	37	597912,5	4570457,4	41°16'55.83 "E	25°10'15.55 "N
Platform W/T15	38	597914,51	4570457,83	41°16'55.84 "E	25°10'15.63 "N
Platform W/T15	39	597916,53	4570458,21	41°16'55.85 "E	25°10'15.72 "N
Platform W/T15	40	597916,55	4570458,22	41°16'55.85 "E	25°10'15.72 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T15	41	597918,5	4570458,57	41°16'55.86 "E	25°10'15.80 "N
Platform W/T15	42	597918,59	4570458,58	41°16'55.86 "E	25°10'15.81 "N
Platform W/T15	43	597918,81	4570458,62	41°16'55.86 "E	25°10'15.82 "N
Platform W/T15	44	597919,03	4570458,66	41°16'55.87 "E	25°10'15.83 "N
Platform W/T15	45	597920,47	4570458,92	41°16'55.87 "E	25°10'15.89 "N
Platform W/T15	46	597922,44	4570459,27	41°16'55.88 "E	25°10'15.97 "N
Platform W/T15	47	597922,81	4570457,19	41°16'55.82 "E	25°10'15.99 "N
Platform W/T15	48	597938,73	4570461,36	41°16'55.94 "E	25°10'16.67 "N
Platform W/T15	49	597950,66	4570483,14	41°16'56.65 "E	25°10'17.20 "N
Platform W/T15	50	597956,39	4570489,79	41°16'56.86 "E	25°10'17.45 "N
Platform W/T15	51	597963,38	4570491,13	41°16'56.90 "E	25°10'17.75 "N
Platform W/T15	52	597982,8	4570478,68	41°16'56.49 "E	25°10'18.58 "N
Platform W/T16	1	598203,7	4569964,81	41°16'39.73 "E	25°10'27.77 "N
Platform W/T16	2	598192,32	4569924,07	41°16'38.41 "E	25°10'27.26 "N
Platform W/T16	3	598189,36	4569924,57	41°16'38.43 "E	25°10'27.13 "N
Platform W/T16	4	598180,87	4569926	41°16'38.48 "E	25°10'26.77 "N
Platform W/T16	5	598152,67	4569930,77	41°16'38.65 "E	25°10'25.56 "N
Platform W/T16	6	598149,38	4569936,47	41°16'38.83 "E	25°10'25.42 "N
Platform W/T16	7	598149,82	4569980,71	41°16'40.27 "E	25°10'25.47 "N
Platform W/T16	8	598148,66	4570005	41°16'41.06 "E	25°10'25.43 "N
Platform W/T16	9	598161,6	4570013,39	41°16'41.32 "E	25°10'25.99 "N
Platform W/T16	10	598177,9	4570008,37	41°16'41.15 "E	25°10'26.69 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T16	11	598198,68	4570090,48	41°16'43.81 "E	25°10'27.63 "N
Platform W/T16	12	598205,32	4570088,23	41°16'43.73 "E	25°10'27.92 "N
Platform W/T16	13	598219,51	4570019,51	41°16'41.50 "E	25°10'28.49 "N
Platform W/T17	1	597389,37	4568818,89	41°16'2.93 "E	25°9'52.12 "N
Platform W/T17	2	597305,99	4568802,09	41°16'2.42 "E	25°9'48.52 "N
Platform W/T17	3	597225,81	4568770,21	41°16'1.43 "E	25°9'45.06 "N
Platform W/T17	4	597220,68	4568784,07	41°16'1.88 "E	25°9'44.85 "N
Platform W/T17	5	597220,29	4568784,48	41°16'1.89 "E	25°9'44.83 "N
Platform W/T17	6	597315,52	4568847,2	41°16'3.88 "E	25°9'48.96 "N
Platform W/T17	7	597351,04	4568844,99	41°16'3.80 "E	25°9'50.48 "N
Platform W/T17	8	597378,07	4568858,6	41°16'4.23 "E	25°9'51.65 "N
Platform W/T17	9	597394,52	4568869,95	41°16'4.59 "E	25°9'52.37 "N
Platform W/T17	10	597419,01	4568839,17	41°16'3.58 "E	25°9'53.40 "N
Platform W/T18	1	597834,73	4568788,7	41°16'1.76 "E	25°10'11.24 "N
Platform W/T18	2	597816,16	4568782,07	41°16'1.55 "E	25°10'10.43 "N
Platform W/T18	3	597792,24	4568789,03	41°16'1.79 "E	25°10'9.41 "N
Platform W/T18	4	597791,63	4568788,66	41°16'1.78 "E	25°10'9.38 "N
Platform W/T18	5	597786,21	4568785,33	41°16'1.67 "E	25°10'9.15 "N
Platform W/T18	6	597776,91	4568779,63	41°16'1.49 "E	25°10'8.75 "N
Platform W/T18	7	597697,4	4568819,39	41°16'2.82 "E	25°10'5.35 "N
Platform W/T18	8	597701,34	4568828,66	41°16'3.11 "E	25°10'5.53 "N
Platform W/T18	9	597710,11	4568849,59	41°16'3.79 "E	25°10'5.92 "N
Platform W/T18	10	597698,88	4568856,12	41°16'4.01 "E	25°10'5.44 "N
Platform W/T18	11	597661,19	4568874,97	41°16'4.63 "E	25°10'3.83 "N
Platform W/T18	12	597668,54	4568886,21	41°16'4.99 "E	25°10'4.15 "N
Platform W/T18	13	597833,08	4568807,79	41°16'2.38 "E	25°10'11.18 "N
Platform W/T19	1	598307,26	4568895,76	41°16'5.02 "E	25°10'31.60 "N
Platform W/T19	2	598333,12	4568896,46	41°16'5.04 "E	25°10'32.72 "N
Platform W/T19	3	598365,26	4568888,4	41°16'4.76 "E	25°10'34.09 "N
Platform W/T19	4	598423,74	4568896,06	41°16'4.98 "E	25°10'36.61 "N
Platform W/T19	5	598428,78	4568896,72	41°16'5.00 "E	25°10'36.83 "N
Platform W/T19	6	598429,5	4568891,53	41°16'4.83 "E	25°10'36.85 "N
Platform W/T19	7	598430,32	4568885,62	41°16'4.64 "E	25°10'36.89 "N
Platform W/T19	8	598366,07	4568875,27	41°16'4.33 "E	25°10'34.12 "N
Platform W/T19	9	598319,55	4568867,67	41°16'4.11 "E	25°10'32.12 "N
Platform W/T19	10	598310,92	4568856,47	41°16'3.75 "E	25°10'31.74 "N
Platform W/T19	11	598288,44	4568852,27	41°16'3.62 "E	25°10'30.77 "N
Platform W/T19	12	598270,29	4568850,66	41°16'3.58 "E	25°10'29.99 "N
Platform W/T19	13	598256,68	4568853,65	41°16'3.68 "E	25°10'29.41 "N
Platform W/T19	14	598245,46	4568859,54	41°16'3.88 "E	25°10'28.93 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T19	15	598238,65	4568867,09	41°16'4.13 "E	25°10'28.64 "N
Platform W/T19	16	598234,18	4568872,05	41°16'4.29 "E	25°10'28.45 "N
Platform W/T19	17	598233,85	4568872,41	41°16'4.30 "E	25°10'28.44 "N
Platform W/T19	18	598236,85	4568885,25	41°16'4.71 "E	25°10'28.57 "N
Platform W/T19	19	598244,85	4568891,47	41°16'4.91 "E	25°10'28.92 "N
Platform W/T19	20	598260,23	4568895,68	41°16'5.04 "E	25°10'29.58 "N
Platform W/T19	21	598279,1	4568897,52	41°16'5.09 "E	25°10'30.39 "N
Platform W/T20	1	598735,75	4568949,22	41°16'6.57 "E	25°10'50.05 "N
Platform W/T20	2	598761,83	4568951,02	41°16'6.62 "E	25°10'51.17 "N
Platform W/T20	3	598851,04	4568952,79	41°16'6.63 "E	25°10'55.00 "N
Platform W/T20	4	598851,11	4568950,28	41°16'6.55 "E	25°10'55.00 "N
Platform W/T20	5	598851,23	4568945,28	41°16'6.39 "E	25°10'55.01 "N
Platform W/T20	6	598851,42	4568937,75	41°16'6.15 "E	25°10'55.01 "N
Platform W/T20	7	598763,74	4568931,15	41°16'5.97 "E	25°10'51.24 "N
Platform W/T20	8	598722,01	4568919,56	41°16'5.61 "E	25°10'49.44 "N
Platform W/T20	9	598686,07	4568915,74	41°16'5.51 "E	25°10'47.89 "N
Platform W/T20	10	598663,34	4568951,76	41°16'6.68 "E	25°10'46.94 "N
Platform W/T20	11	598663,61	4568960,25	41°16'6.96 "E	25°10'46.95 "N
Platform W/T20	12	598677,06	4568972,93	41°16'7.36 "E	25°10'47.54 "N
Platform W/T20	13	598682,34	4568977,92	41°16'7.52 "E	25°10'47.77 "N
Platform W/T20	14	598685,25	4568980,66	41°16'7.61 "E	25°10'47.90 "N
Platform W/T20	15	598708,23	4568957,83	41°16'6.86 "E	25°10'48.87 "N
Platform W/T20	16	598720,11	4568949,99	41°16'6.60 "E	25°10'49.38 "N
Platform W/T21	1	599100,72	4569101,15	41°16'11.33 "E	25°11'5.82 "N
Platform W/T21	2	599087,74	4569110,97	41°16'11.66 "E	25°11'5.27 "N
Platform W/T21	3	599052,33	4569147,81	41°16'12.87 "E	25°11'3.77 "N
Platform W/T21	4	599037,84	4569160,52	41°16'13.29 "E	25°11'3.15 "N
Platform W/T21	5	599035,71	4569170,07	41°16'13.60 "E	25°11'3.07 "N
Platform W/T21	6	599038,2	4569176,11	41°16'13.79 "E	25°11'3.18 "N
Platform W/T21	7	599043,55	4569180,3	41°16'13.93 "E	25°11'3.41 "N
Platform W/T21	8	599055,94	4569179,26	41°16'13.89 "E	25°11'3.94 "N
Platform W/T21	9	599111,69	4569151,66	41°16'12.97 "E	25°11'6.32 "N
Platform W/T21	10	599139,71	4569145,81	41°16'12.76 "E	25°11'7.52 "N
Platform W/T21	11	599183,46	4569142,19	41°16'12.63 "E	25°11'9.40 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T21	12	599193,54	4569141,36	41°16'12.60 "E	25°11'9.83 "N
Platform W/T21	13	599193,85	4569137,65	41°16'12.48 "E	25°11'9.84 "N
Platform W/T21	14	599194,47	4569130,42	41°16'12.24 "E	25°11'9.87 "N
Platform W/T21	15	599128,31	4569125,8	41°16'12.12 "E	25°11'7.02 "N
Platform W/T21	16	599115,36	4569102,23	41°16'11.36 "E	25°11'6.45 "N
Platform W/T22	1	599536,12	4569386,07	41°16'20.38 "E	25°11'24.70 "N
Platform W/T22	2	599530,24	4569374,26	41°16'20.00 "E	25°11'24.44 "N
Platform W/T22	3	599464,47	4569392,3	41°16'20.61 "E	25°11'21.62 "N
Platform W/T22	4	599443,76	4569381,46	41°16'20.27 "E	25°11'20.72 "N
Platform W/T22	5	599428,63	4569387,82	41°16'20.48 "E	25°11'20.08 "N
Platform W/T22	6	599419,52	4569407,1	41°16'21.11 "E	25°11'19.70 "N
Platform W/T22	7	599406,46	4569413,35	41°16'21.32 "E	25°11'19.14 "N
Platform W/T22	8	599397,68	4569417,55	41°16'21.46 "E	25°11'18.77 "N
Platform W/T22	9	599385,01	4569423,61	41°16'21.66 "E	25°11'18.23 "N
Platform W/T22	10	599390,97	4569440,45	41°16'22.21 "E	25°11'18.49 "N
Platform W/T22	11	599405,06	4569442,39	41°16'22.26 "E	25°11'19.10 "N
Platform W/T22	12	599468,76	4569419,18	41°16'21.48 "E	25°11'21.82 "N
Platform W/T22	13	599470,56	4569418,29	41°16'21.45 "E	25°11'21.90 "N
Platform W/T22	14	599478,74	4569414,27	41°16'21.32 "E	25°11'22.25 "N
Platform W/T23	1	599695,26	4569944	41°16'38.40 "E	25°11'31.86 "N
Platform W/T23	2	599675,82	4569945,11	41°16'38.44 "E	25°11'31.03 "N
Platform W/T23	3	599644,22	4569952,62	41°16'38.70 "E	25°11'29.68 "N
Platform W/T23	4	599617,93	4569958,36	41°16'38.90 "E	25°11'28.55 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T23	5	599595,61	4569964,1	41°16'39.09 "E	25°11'27.59 "N
Platform W/T23	6	599559,41	4569966,99	41°16'39.20 "E	25°11'26.04 "N
Platform W/T23	7	599556,83	4569978,33	41°16'39.57 "E	25°11'25.94 "N
Platform W/T23	8	599564,28	4569987,74	41°16'39.87 "E	25°11'26.26 "N
Platform W/T23	9	599567,17	4569991,68	41°16'40.00 "E	25°11'26.39 "N
Platform W/T23	10	599573,39	4570001,08	41°16'40.30 "E	25°11'26.66 "N
Platform W/T23	11	599579,61	4570009,48	41°16'40.57 "E	25°11'26.93 "N
Platform W/T23	12	599587,21	4570011,41	41°16'40.63 "E	25°11'27.26 "N
Platform W/T23	13	599594,4	4570011,14	41°16'40.62 "E	25°11'27.57 "N
Platform W/T23	14	599599,65	4570008,79	41°16'40.54 "E	25°11'27.79 "N
Platform W/T23	15	599609,47	4569996,08	41°16'40.12 "E	25°11'28.21 "N
Platform W/T23	16	599612,81	4569983,93	41°16'39.73 "E	25°11'28.34 "N
Platform W/T23	17	599640,22	4569975,91	41°16'39.46 "E	25°11'29.52 "N
Platform W/T23	18	599696,57	4569959,06	41°16'38.88 "E	25°11'31.93 "N
Platform W/T23	19	599697,49	4569958,79	41°16'38.87 "E	25°11'31.97 "N
Platform W/T23	20	599696,45	4569951,86	41°16'38.65 "E	25°11'31.92 "N
Platform W/T24	1	600041,1	4570048,98	41°16'41.65 "E	25°11'46.79 "N
Platform W/T24	2	600039,34	4570049,59	41°16'41.67 "E	25°11'46.71 "N
Platform W/T24	3	600030,16	4570052,76	41°16'41.77 "E	25°11'46.32 "N
Platform W/T24	4	600017,8	4570057,02	41°16'41.92 "E	25°11'45.79 "N
Platform W/T24	5	600007	4570068,74	41°16'42.30 "E	25°11'45.34 "N
Platform W/T24	6	600003,95	4570086,66	41°16'42.88 "E	25°11'45.22 "N

Platforms	a/a	(ΕΓΣΑ87)		(WGS84)	
		X	Y	λ	φ
Platform W/T24	7	600006,55	4570108,29	41°16'43.58 "E	25°11'45.34 "N
Platform W/T24	8	600007,35	4570140,81	41°16'44.64 "E	25°11'45.39 "N
Platform W/T24	9	600014,11	4570156,82	41°16'45.15 "E	25°11'45.69 "N
Platform W/T24	10	600010,59	4570205,59	41°16'46.74 "E	25°11'45.57 "N
Platform W/T24	11	600010,7	4570206,63	41°16'46.77 "E	25°11'45.58 "N
Platform W/T24	12	600018,72	4570207,62	41°16'46.80 "E	25°11'45.92 "N
Platform W/T24	13	600049,33	4570112,94	41°16'43.72 "E	25°11'47.18 "N
Platform W/T24	14	600052,96	4570094,07	41°16'43.10 "E	25°11'47.33 "N

1.3.3.3 Construction site - Control cottages

For the construction needs of the project, a construction site area will be created where construction machinery and other site facilities will be placed. It is envisaged that this site will be fully restored after the completion of the construction works of the ASPEI. The construction site area will be installed within the Platform of W/T07.

In addition, two areas will be designed for the installation of control panels. Two Control Houses will be constructed, one main and one auxiliary. The Main Control House will be installed close to W/T 18 and will be the outlet for the circuits from the Auxiliary Control House and the circuits from W/T 13 to 24. The Auxiliary Control Cubicle, which will be installed close to AG 7, will receive the circuits from AGs 1 to 12 and will then be connected to the Main Cubicle. The area of the Main Control Cradle will be approximately 280m^2 , while the area of the Auxiliary Control Cradle will be approximately 120m^2 .

In order to erect the specific building it is necessary to have a land of minimum area (integrity) E = 4.000 sq.m. The coordinates of the land for the installation of the O.E. are as follows:

Table 6: Coordinates of the Main Control Tower (MCC) field tops

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	597891,4	4568736,41	41°16'0.04 "E	25°10'13.64 "N
2	597877,22	4568743,46	41°16'0.28 "E	25°10'13.04 "N
3	597882,71	4568754,72	41°16'0.64 "E	25°10'13.28 "N
4	597888,8	4568762,51	41°16'0.89 "E	25°10'13.54 "N
5	597902,03	4568760,44	41°16'0.81 "E	25°10'14.11 "N
6	597918,4	4568757,3	41°16'0.71 "E	25°10'14.81 "N

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
7	597936,5	4568756,31	41°16'0.67 "E	25°10'15.59 "N
8	597948,42	4568754,22	41°16'0.59 "E	25°10'16.10 "N
9	597954,53	4568749,5	41°16'0.44 "E	25°10'16.36 "N
10	597965,65	4568746,46	41°16'0.33 "E	25°10'16.84 "N
11	597971,97	4568745,03	41°16'0.28 "E	25°10'17.11 "N
12	597981,54	4568743,83	41°16'0.24 "E	25°10'17.52 "N
13	597983,8	4568737,73	41°16'0.04 "E	25°10'17.61 "N
14	597986,07	4568733,15	41°15'59.89 "E	25°10'17.71 "N
15	597988,62	4568725,31	41°15'59.64 "E	25°10'17.81 "N
16	597990,14	4568717,53	41°15'59.39 "E	25°10'17.87 "N
17	597991,31	4568706,37	41°15'59.02 "E	25°10'17.92 "N
18	597993	4568695,65	41°15'58.67 "E	25°10'17.98 "N
19	597992,16	4568689,69	41°15'58.48 "E	25°10'17.94 "N
20	597974,15	4568687,89	41°15'58.43 "E	25°10'17.17 "N
21	597967,17	4568700,9	41°15'58.86 "E	25°10'16.88 "N
22	597958,5	4568710,51	41°15'59.17 "E	25°10'16.51 "N
23	597950,15	4568715,18	41°15'59.33 "E	25°10'16.15 "N
24	597943,66	4568719,4	41°15'59.47 "E	25°10'15.88 "N
25	597924,3	4568723,99	41°15'59.62 "E	25°10'15.05 "N
26	597908,01	4568727,04	41°15'59.73 "E	25°10'14.35 "N

Table 7: Coordinates of the tops of the Auxiliary Control Tower (ACS)

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	596835,3	4573115,91	41°18'22.49 "E	25°9'30.77 "N
2	596935,3	4573115,91	41°18'22.44 "E	25°9'35.07 "N
3	596935,3	4573075,91	41°18'21.15 "E	25°9'35.05 "N
4	596835,3	4573075,91	41°18'21.19 "E	25°9'30.75 "N

1.3.3.4 Road projects

Table 8: Indicative coordinates of road works

Industry		Geographical Coordinates (EAGGF 87)		Geographical Coordinates (WGS 84)	
		X	Y	λ	φ
OD1	Authority	595218,88	4571418,66	41°16'56.48 "E	25°9'55.84 "N

Industry		Geographical Coordinates (EAGGF 87)		Geographical Coordinates (WGS 84)	
		X	Y	λ	φ
	Middle	595213,97	4571528,31	41°16'57.73 "E	25°9'54.01 "N
	Finally	595248,62	4571639,41	41°16'55.42 "E	25°10'14.42 "N
OD2	Authority	595595,61	4572196,01	41°16'54.38 "E	25°10'7.84 "N
	Middle	595535,39	4572313,83	41°16'53.91 "E	25°10'1.73 "N
	Finally	595562,05	4572443,59	41°16'55.37 "E	25°10'19.37 "N
OD3	Authority	595596,88	4572479,41	41°16'44.72 "E	25°10'18.12 "N
	Middle	595825,77	4572610,21	41°16'38.45 "E	25°10'27.03 "N
	Finally	595858,43	4572848,97	41°16'0.15 "E	25°10'12.82 "N
OD4	Authority	595860,05	4572722,56	41°16'1.16 "E	25°10'11.07 "N
	Middle	596000,22	4572795,4	41°16'1.75 "E	25°10'9.18 "N
	Finally	596110,7	4572893,4	41°16'4.77 "E	25°10'25.44 "N
OD5	Authority	596252,82	4573014,97	41°16'0.77 "E	25°10'22.37 "N
	Middle	596411,27	4573086,17	41°15'54.87 "E	25°10'20.70 "N
	Finally	596576,36	4573070,44	41°15'55.85 "E	25°10'21.06 "N
OD6	Authority	597827,12	4572426,52	41°16'0.15 "E	25°10'24.49 "N
	Middle	597490,69	4573031,1	41°16'4.22 "E	25°10'28.52 "N
	Finally	596742,12	4573118,23	41°16'4.91 "E	25°10'36.84 "N
OD7	Authority	597204	4573039,18	41°16'7.59 "E	25°10'41.91 "N
	Middle	597023,68	4573192,58	41°16'7.47 "E	25°10'47.69 "N
	Finally	596903,78	4573412,27	41°16'6.47 "E	25°10'55.01 "N
OD8	Authority	596939,42	4573368,23	41°16'13.84 "E	25°11'7.49 "N
	Middle	597123,12	4573233,39	41°16'21.41 "E	25°11'18.90 "N
	Finally	597344,52	4573234,85	41°16'13.81 "E	25°11'13.07 "N
OD9	Authority	597340,35	4573246,36	41°16'12.86 "E	25°11'11.72 "N
	Middle	597210,31	4573376,72	41°16'12.58 "E	25°11'9.83 "N
	Finally	597056,08	4573520,86	41°16'21.38 "E	25°11'22.08 "N

Industry		Geographical Coordinates (EAGGF 87)		Geographical Coordinates (WGS 84)	
		X	Y	λ	φ
OD10	Authority	597093,13	4573484,34	41°16'33.24 "E	25°11'39.84 "N
	Middle	597207,18	4573480,68	41°16'38.80 "E	25°11'31.95 "N
	Finally	597235,33	4573584,33	41°16'36.73 "E	25°11'42.34 "N
OD11	Authority	597212,42	4573358,17	41°16'40.26 "E	25°11'42.66 "N
	Middle	597806,06	4573686,34	41°16'43.69 "E	25°11'42.39 "N
	Finally	598030,42	4573075,11	41°16'42.25 "E	25°11'43.31 "N
OD12	Authority	598012,6	4573020,04	41°16'38.07 "E	25°11'45.06 "N
	Middle	598292,9	4572704,37	41°16'33.69 "E	25°11'45.69 "N
	Finally	598651,82	4572419,54	41°16'35.28 "E	25°11'45.76 "N
OD13	Authority	598548,23	4572466,99	41°16'38.46 "E	25°11'46.27 "N
	Middle	598505,76	4572540,93	41°16'41.71 "E	25°11'46.57 "N
	Finally	598445,85	4572644,6	41°16'56.48 "E	25°9'55.84 "N
OD14	Authority	595050,71	4571361,59	41°16'57.73 "E	25°9'54.01 "N
	Middle	595459,52	4571598,64	41°16'55.42 "E	25°10'14.42 "N
	Finally	595602,45	4572029,48	41°16'54.38 "E	25°10'7.84 "N
OD15	Authority	597501,25	4570433,68	41°16'53.91 "E	25°10'1.73 "N
	Middle	597453,83	4570471,37	41°16'55.37 "E	25°10'19.37 "N
	Finally	597410,75	4570509,31	41°16'44.72 "E	25°10'18.12 "N
OD16	Authority	597886,59	4570444,44	41°16'38.45 "E	25°10'27.03 "N
	Middle	597733,83	4570410,29	41°16'0.15 "E	25°10'12.82 "N
	Finally	597591,89	4570393,87	41°16'1.16 "E	25°10'11.07 "N
OD17	Authority	598001,72	4570444,5	41°16'1.75 "E	25°10'9.18 "N
	Middle	597977,12	4570115,55	41°16'4.77 "E	25°10'25.44 "N
	Finally	598186,89	4569924,98	41°16'0.77 "E	25°10'22.37 "N
OD18	Authority	597872,19	4568739,39	41°15'54.87 "E	25°10'20.70 "N

Industry		Geographical Coordinates (EAGGF 87)		Geographical Coordinates (WGS 84)	
		X	Y	λ	φ
	Middle	597830,98	4568770	41°15'55.85 "E	25°10'21.06 "N
	Finally	597786,89	4568787,74	41°16'0.15 "E	25°10'24.49 "N
ID19A	Authority	598163,96	4568885,97	41°16'4.22 "E	25°10'28.52 "N
	Middle	598094,11	4568761,79	41°16'4.91 "E	25°10'36.84 "N
	Finally	598057,81	4568579,3	41°16'7.59 "E	25°10'41.91 "N
ID19B	Authority	598065,71	4568609,64	41°16'7.47 "E	25°10'47.69 "N
	Middle	598143,88	4568743,08	41°16'6.47 "E	25°10'55.01 "N
	Finally	598235,9	4568870,13	41°16'13.84 "E	25°11'7.49 "N
OD20	Authority	598429,14	4568894,02	41°16'21.41 "E	25°11'18.90 "N
	Middle	598545,88	4568978,27	41°16'13.81 "E	25°11'13.07 "N
	Finally	598680,49	4568976,17	41°16'12.86 "E	25°11'11.72 "N
OD21	Authority	598851,16	4568947,78	41°16'12.58 "E	25°11'9.83 "N
	Middle	599138,46	4569178,84	41°16'21.38 "E	25°11'22.08 "N
	Finally	599400,9	4569416,01	41°16'33.24 "E	25°11'39.84 "N
ID22	Authority	599268,27	4569179,74	41°16'38.80 "E	25°11'31.95 "N
	Middle	599237,35	4569150,04	41°16'36.73 "E	25°11'42.34 "N
	Finally	599193,58	4569140,73	41°16'40.26 "E	25°11'42.66 "N
OD23	Authority	599474,7	4569416,25	41°16'43.69 "E	25°11'42.39 "N
	Middle	599883	4569787,54	41°16'42.25 "E	25°11'43.31 "N
	Finally	599697,16	4569956,62	41°16'38.07 "E	25°11'45.06 "N
ID24	Authority	599939,71	4569895,84	41°16'33.69 "E	25°11'45.69 "N
	Middle	599945,65	4570005,06	41°16'35.28 "E	25°11'45.76 "N
	Finally	599937,94	4570110,75	41°16'38.46 "E	25°11'46.27 "N
OD25	Authority	599959,95	4570066,62	41°16'41.71 "E	25°11'46.57 "N
	Middle	600002,27	4569938,3	41°16'56.48 "E	25°9'55.84 "N
	Finally	600018,88	4569803,28	41°16'57.73 "E	25°9'54.01 "N

Industry		Geographical Coordinates (EAGGF 87)		Geographical Coordinates (WGS 84)	
		X	Y	λ	φ
OD26	Authority	600019,84	4569852,49	41°16'55.42 "E	25°10'14.42 "N
	Middle	600030,38	4569950,7	41°16'54.38 "E	25°10'7.84 "N
	Finally	600035,93	4570050,75	41°16'53.91 "E	25°10'1.73 "N

1.3.3.5 Technical

Finally, the coordinates of the construction points of the technical parts of the project are listed. The technical installations consist of tubular culverts on the new opening.

Table 9: Coordinates of technical installation

Serial number	Road Network	H.T.	Geographical Coordinates			
			(ΕΓΣΑ87)		(WGS 84)	
			X	Y	λ	φ
OX.01	O.D.1	0+060	595210,4	4571477,9	41°17'30.08 "E	25°8'19.98 "N
OX.02	O.D.2.	0+040	595072,3	4571378,1	41°17'26.90 "E	25°8'13.99 "N
OX.03	O.D.2.	0+550	595434,3	4571569,6	41°17'32.96 "E	25°8'29.66 "N
OX.04	O.D.2.	0+730	595401,6	4571713,4	41°17'37.63 "E	25°8'28.34 "N
OX.05	O.D.2.	1+000	595594,1	4571889,8	41°17'43.27 "E	25°8'36.71 "N
OX.06	O.D.3	0+110	595548,2	4572282,8	41°17'56.03 "E	25°8'34.96 "N
OX.07	O.D.4.	0+060	595635	4572498,3	41°18'2.98 "E	25°8'38.82 "N
OX.08	O.D.4.	0+290	595832,3	4572611,5	41°18'6.57 "E	25°8'47.36 "N
OX.09	O.D.5	0+060	595889,8	4572772,2	41°18'11.75 "E	25°8'49.93 "N
OX.10	O.D.5	0+290	596085,8	4572863,7	41°18'14.63 "E	25°8'58.40 "N
OX.11	O.D.6	0+260	596453,7	4573083,9	41°18'21.61 "E	25°9'14.35 "N
OX.12	O.D.7	0+380	597700,9	4572741,3	41°18'9.97 "E	25°10'7.77 "N
OX.13	O.D.7	0+730	597524	4573034,8	41°18'19.56 "E	25°10'0.34 "N
OX.14	O.D.7	1+360	596915,2	4573122,3	41°18'22.66 "E	25°9'34.21 "N
OX.15	O.D.8	0+100	597109,3	4573070,1	41°18'20.88 "E	25°9'42.53 "N
OX.16	O.D.12	0+290	597348,8	4573580,5	41°18'37.33 "E	25°9'53.12 "N
OX.17	O.D.12	0+720	597699,2	4573746,2	41°18'42.55 "E	25°10'8.28 "N
OX.18	O.D.12	1+530	598144,5	4573207,7	41°18'24.89 "E	25°10'27.12 "N
OX.19	O.D.13	0+050	598011,4	4572987,1	41°18'17.80 "E	25°10'21.26 "N
OX.20	O.D.13	0+380	598260,7	4572805,8	41°18'11.81 "E	25°10'31.88 "N
OX.21	O.D.13	0+920	598617,9	4572436,1	41°17'59.67 "E	25°10'47.02 "N
OX.22	O.D.15	0+140	597788,4	4570431,4	41°16'55.04 "E	25°10'10.19 "N

OX.23	O.D.15	0+270	597665,7	4570399,7	41°16'54.06 "E	25°10'4.90 "N
OX.24	O.D.16	0+020	597492,9	4570441,5	41°16'55.50 "E	25°9'57.50 "N
OX.25	O.D.17	0+070	597987,1	4570401,5	41°16'53.98 "E	25°10'18.72 "N
OX.26	O.D.17	0+390	597987,8	4570126,6	41°16'45.07 "E	25°10'18.59 "N
OX.27	O.D.17	0+550	598016,4	4569994,5	41°16'40.77 "E	25°10'19.74 "N
OX.28	O.D.19A	0+050	598135,2	4568847,5	41°16'3.53 "E	25°10'24.18 "N
OX.29	O.D.19B	0+220	598188,4	4568787,2	41°16'1.56 "E	25°10'26.43 "N
OX.30	O.D.20	0+275	598646,8	4568998,5	41°16'8.21 "E	25°10'46.25 "N
OX.31	O.D.21	0+420	599033	4569208	41°16'14.83 "E	25°11'2.97 "N
OX.32	O.D.21	0+840	599239,3	4569334,2	41°16'18.83 "E	25°11'11.91 "N
OX.33	O.D.21	0+940	599305	4569371,4	41°16'20.01 "E	25°11'14.76 "N
OX.34	O.D.23	0+100	599518,2	4569474,7	41°16'23.26 "E	25°11'23.98 "N
OX.35	O.D.23	0+490	599820,7	4569658,9	41°16'29.10 "E	25°11'37.09 "N
OX.36	O.D.23	0+980	599858,7	4570055,3	41°16'41.93 "E	25°11'38.96 "N
OX.37	O.D.24	0+130	599952,3	4570023,4	41°16'40.85 "E	25°11'42.96 "N
OX.38	O.D.25	0+150	600007,2	4569925,9	41°16'37.67 "E	25°11'45.26 "N
OX.39	O.D.26	0+100	600030,4	4569950,7	41°16'38.46 "E	25°11'46.27 "N

1.4 Classification of the project

The project under study refers to a total capacity of 148.8 MW. Thus, the ASPHE under consideration and its accompanying projects are classified, based on the Ministerial Decision on the classification of projects and activities (Y.A. YPEN/DIPA/17185/1069/2022 (Government Gazette 841/B` 24.2.2022) "*Modification and codification of the ministerial decision "Modification and codification of the ministerial decision 1958/2012 - Classification of public and private projects and activities in categories and subcategories according to par. 37.37.3. 4014/21.9.2011 (A' 209), as amended and in force" (B' 2471)*") to the following categories:

i. ASPHE is classified in 10η Group (Renewable Energy Sources - a/a 1.a: Onshore wind power generation and in particular in Subcategory A1 (*projects with P > 35MW and within Natura 2000 sites*).

ii. Road works are companion works and follow the category of the main project, therefore they are included in Subcategory A1.

iii. The electrical interconnection projects (33kV MT interconnector) are associated projects and follow the category of the main project, therefore they are included in Subcategory A1.

Therefore, the competent authority for the issuance of the environmental conditions of the project is the Environmental Licensing Department (DIPA) of the General Directorate of Environmental Policy of the Ministry of Environment and Energy (MoEPEN).

In addition, according to the Greek and European statistical classification of economic activities (STAKOD and NACE respectively), the Activity Code Numbers (2008) are defined by the 1100330/1954/DMV΄/POL 1133/6.10.2008 (Government Gazette 2149Β΄/ 16.10.2008 decision of the Minister of Economy and Finance, as amended by 1061748/987/DMV'/POL 1086/22.6.2009 (Government Gazette 1285/B/30-6-2009) and for the project in question is:

35.11.10.03 : Production of electricity from wind energy conversion

Finally, according to the Decree 3137/191/F.15/12 (B'1048) on the correlation of electricity activities with the degrees of nuisance mentioned in the urban planning decrees, the W/F under study is classified as a medium degree of nuisance (>700kW).

1.5 Project organisation

The executing and operating agency of the project is the company HELPE Renewables S.A., The company has the following contact details:

Address:	4A Gravias, 151 25, Maroussi
Telephone:	+30 2106302000, +30 2107725694
Fax:	+30 210 6302245
Email address:	info@elperes.gr

The executing and operating entity of the project is the company HELPE Renewables S.A., with Sotirio - Alexandros Fragoulis as its legal representative. The company has the following contact details:

Address:	4A Gravias, 151 25, Maroussi
Telephone:	+30 2106302000, +30 2107725694
Fax:	+30 210 6302245
Email address:	info@elperes.gr

The contact person for the MPE is Sotirios - Alexandros Fragoulis with the following contact details:

Address:	4A Gravias, 151 25, Maroussi
Telephone:	+30 2106302000, +30 2107725694
Kin	6974261644
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1.6 Author of the study

The present environmental impact study is signed by George Sioulas, Environmental Scientist of the University of the Aegean, holder of a B class degree (Designers' Register number 15564) in category 27 (Environmental studies).

Labour Directorate: K. Karatheodoris 11, P.O. Box 69131 Komotini

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The following study team worked for the implementation of the study:

- Georgios Sioulas Environmental Scientist (coordinator)
- Dimitrios Tsekoglou Geotechnical Engineer & Environment
- Athanasios Psarikidis Forestry - Environmental Scientist.

2 NON-TECHNICAL SUMMARY

2.1 Summary description of the main elements of the project - Location - Administrative affiliation

This Environmental Impact Assessment (EIA) and the accompanying Special Ecological Assessment Study (SEA) concerns the construction and operation of a Wind Power Plant (WPP) with a total installed capacity of 148.8MW and its accompanying works (33kV medium voltage external grid, new substation and high voltage grid for the electrical interconnection of the WPP with the grid of ADMIE).

The project is located at the sites "Xefoto, Samarano, Iskima & Mesovouni" in the Municipal Unit of Satra, Municipality of Myki, Regional Unit of Xanthi.

In summary, the proposed project includes the following:

- Configuration of 24 Platforms for the installation of wind generators (W/T).
- Construction and operation of 24 gensets with a nominal capacity of 6.2 MW each. The wind turbines will be electrically interconnected through 0,69kV/33kV stand-alone step-up transformers with an underground medium-voltage line to be constructed along the roads to be used for access to the installation sites of the wind turbines. The transformers are foreseen to be placed inside the fuselages of the gensets and depending on the technical solutions of the final studies and the suggestions and regulations of the AMDIE for the uninterrupted and safer maintenance and operation of the gensets.
- Configuration of two areas for the installation of control panels. Two Control Houses will be constructed, one Main (C.C.E.) and one Auxiliary (A.C.E.). The Main Control House will be installed close to W/T 18 and will be the outlet for the circuits from the Auxiliary Control House and the circuits from W/T 13 to 24. The Auxiliary Control Cubicle, which will be installed close to AG 7, will receive the circuits from AGs 1 to 12 and will then be connected to the Main Cubicle.
- Underground Medium Voltage (MV) 33 kV network that will electrically connect the gensets to the substations and then to the existing substation (substation) "Iasmos". For the interconnection of the wind farm with the interconnected system, approximately 32.4 km of underground medium voltage line will be required, which will connect the wind turbines to the substations and 29.66 km of underground medium voltage line, which will start from the installation site of the wind farm and end at the "Iasmos" substation.
- Road projects: A total of 14,884m of improvements to existing dirt roads and construction of new roads are required.

Based on the road study carried out for the ASPEE "Xefoto", the opening of an internal road network with a length of 14,884 m is foreseen.

2.2 The distances of the project

The area where the project under study is proposed to be located is outside of established settlement boundaries or approved urban planning or other regulatory plans (e.g. G.P.S., ZOE, etc.).

It should be noted that in the Municipal Unit of Satra there are no defined settlement boundaries. In order to apply the landscape integration criteria, the settlements were delimited with a wide zone around the perimeter of the dwellings.

The nearest settlement from the nearest A/E is the settlement of *Kalotycho* located at a distance of 632m north of A/E 23, while the closest is the settlement of Gidotopos located to the east of A/E 15 but at a distance of more than 799m.

On the other hand, Echinos is located 13.5 km to the west (see map below). As for Bulgaria, the nearest settlement is that of "Kousla", 780 m north of W/T 08.

The Iasmos TSO is located south of the installation area of the W/F and at a distance of about 16.3km from W/T 17, measured in a straight line, which is the closest.

The project under study is located entirely, within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Kompsatou Valley", code GR009.

However, it should be noted that within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SPA) called "Rodopi - Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

The project under study is located outside the boundaries of any other protected areas of Law 3937/2011 (A/60).

The area where it is proposed to install the proposed RES-E is mostly located within forested areas. The total area of occupation falling within forest land in general is 276,827.9sq.m., while 81,677.1sq.m. . are located on other types of land (including the existing road surfaces to be used for the project roads and Platforms).

The wider study area belongs to the forest complex of Satra, which is under the supervision and management of the Forestry Department of Xanthi.

It is noted that for the study area a relevant Forest Map has been posted in the Greek Cadastre according to the document of the Forestry Department of Xanthi (IDA: Ω2ΖΧΟΡ1Υ-3ΘΤ).

Regarding the social infrastructure, utilities, etc. as defined in Decree 59/2018, in the area under study and within a radius of at least 2 km from the boundaries of the intervention area, no such facilities are found in both Greek and Bulgarian territory.

The area under study is connected by road to the capital of the Municipality of Mykes (Sminthis) through the existing forest roads and the Provincial Road Xanthi - Echinos - Potamochori in a westerly direction towards Echinos and from there through the provincial road Xanthi - Echinos

from where in a south-westerly direction Sminthis is approached and then in a southerly direction the capital of the Municipality of Xanthi - Xanthi is approached.

Finally, with regard to the declared archaeological sites, it is stated that the nearest declared archaeological site on Greek territory is located at a distance of more than 2.34 km southeast of the ASPHE installation area and specifically: the demarcated archaeological site of Mount Papikios as defined in the Ministry of Culture and Environment, No. The area of the Archaeological Site of Archipelago Peloponnese is the area of the Greek Archaeological Site of Archipelago Peloponnese as defined in the terms of the relevant statutes of the Ministry of Culture/ARX/B1/F37/15352/389 p.e. (Government Gazette 364/B/2-6-1986) "*Characterisation of the Papikios Mountain, part of Rodopi.*" και ΥΠΠΟ/ΑΡΧ/Β1/Φ37/15352389π.ε. (Government Gazette 284/Β΄/9-6-1987) '*Characterisation of the Papikios mountain, part of the Rhodope region*'.

There are also the stone bridges of Tsalapeteinos and Xiropotamos that have not been classified as archaeological sites, but in any case they are located at a great distance from the location of the proposed ASPHE and specifically at a distance of 1.86km west of W/T 1 (bridge of Tsalapeteinos) and 6.28km west of W/T 4 (bridge of Xiropotamos).

It should also be noted that no archaeological sites have been identified within the Bulgarian territory and within a radius of at least 2 km from each of the proposed EAFPPs.

2.3 The significant environmental impacts

In general, RES projects and in this case RES projects and in this case RES projects are eminently environmentally friendly projects, where, especially in the case of Greece, they constitute a set of significant positive components for the economy and the environment of the country:

(i) They have a catalytic contribution to the achievement of the Kyoto Protocol targets for the reduction of greenhouse gas emissions and to the achievement of Greece's targets, which by extension are incorporated at EU level, for the promotion of the use of energy from RES (EU Directive 20158/2001). The delay in the promotion of renewable energy sources does not only mean no improvement in the quality of the air environment, but also significant damage to the national economy, based on the implementation of the EU-25 Emissions Trading Scheme.

(ii) The country's high dependence on oil makes it imperative to promote renewable energy sources, so that they take a larger share in the country's energy mix. In this case, it is clear that economic growth and sustainable development are two separate objectives.

(iii) Greece has one of the highest wind potentials in Europe. This means that for a given energy production a smaller number of wind turbines and associated projects are required.

(iv) The country's energy production is mainly based on lignite-fired power stations, with the dramatic consequences this has for the health of the inhabitants of large areas of the country.

CCGTs have zero emissions of solid, liquid and gaseous pollutants. Thus, they do not have a negative impact on the natural environment of the area where they are installed, but also on the climate of the planet in terms of air pollutants.

On the other hand, there is no doubt that, like any project, from the simplest and smallest to the most complex and large, the GIS has a range of impacts on the environment. In most cases, however, the intensity and extent of these impacts are small and should not lead to the non-installation of RES-E.

Based on the analysis of the chapters of the EIA, it is possible to summarize the expected environmental impacts of the construction and operation of the project, as shown in the following tables. In each case, the overall assessment of the impacts for the project under study is presented in the chapter on the project. 9 of this document and in the Special Ecological Assessment Study (SEA).

Table 10 Summary table of the environmental impact assessment of the project under study during the construction phase

Environmental parameters	Probability	Land area	Complexity	Time horizon	Positive (F)/ Negative (A)	Tension	Prevention	Avoidance	Reversal	Minimization	Cooperative (S) or Transnational (D) effects
Climatic & bioclimatic characteristics						O					
Morphological & landscape characteristics	5	T	A	M & Π	A	---	Not	Not	Partly	Partly	Δ
Geological, tectonic and soil characteristics	5	T	A	Π	A	--	Not	Not	Partly	Partly	
Natural environment	5	T	A & E	M & Π	A	---	Partly	Partly	Partly	Partly	Δ & Σ
Anthropogenic environment	3	T	A & E	Π	A	-	Partly	Not	Fully	Partly	
Socio-economic environment	2	T	A	Π	Θ	+					
Technical infrastructure	3	T	A	Π	A	-	Partly	Not	Fully	Partly	
Anthropogenic pressures on the environment	2	T	A	Π	A	-	Partly	Not	Partly	Partly	
Atmospheric environment - air quality	5	T	A	Π	A	--	Not	Not	Fully	Partly	Δ
Acoustic environment & vibration	5	T	A	Π	A	-	Partly	Not	Fully	Partly	Δ
Electromagnetic fields	1	T				O					
Water	2	T	A	Π	A	-	Partly	Not	Fully	Partly	

SUBMISSION

Probability of occurrence	"1" Unlikely to "5" Probable
Land area	Local (T), Regional (R), National (N)
Complexity	Direct (A), Indirect (E)
Time horizon	Temporary (P), Permanent (M), Repeatability (E)
Prevention, avoidance, reversal or minimisation	Fully reversible, Partially reversible, Irreversible
Extent of estimated impacts:	+++= Positive and strong, ++=Positive and moderate, += Positive and weak +/O = Positive negligible, O = Neutral, -/O = Negative negligible -=:Negative and weak, --=Negative and moderate, ---= Negative and strong

Table 11: Summary table of the environmental impact assessment of the project under study during the operational phase

Environmental parameters	Probability	Land area	Complexity	Time horizon	Positive (F)/ Negative (A)	Tension	Prevention	Avoidance	Reversal	Minimization	Cooperative (S) or Transnational (D) effects
Climatic and bioclimatic characteristics	5	E	E	M	Θ	+					
Morphological and landscape characteristics	5	T	A	M	A	--	Not	Not	Partly	Partly	Δ
Geological, tectonic and soil characteristics						O					
Natural environment	5	T	A & E	M	A	--	Partly	Partly	Partly	Partly	Δ & Σ
Anthropogenic environment	3	T	A & E	M	A	-/O	Partly	Not	Partly	Partly	
Socio-economic environment	3	T	A & E	M	Θ	+					
Technical infrastructure						O					
Anthropogenic pressures on the environment	4	T	A	M	A	-	Not	Not	Partly	Partly	
Atmospheric environment - air quality	5	E	A & E	M	Θ	++					
Acoustic environment and vibration						O					
Electromagnetic fields						O					
Water						O					

SUBMISSION

Probability of occurrence	"1" Unlikely to "5" Probable
Land area	Local (T), Regional (R), National (N)
Complexity	Direct (A), Indirect (E)
Time horizon	Temporary (P), Permanent (M), Repeatability (E)
Prevention, avoidance, reversal or minimisation	Fully reversible, Partially reversible, Irreversible
Extent of estimated impacts:	+++= Positive and strong, ++=Positive and moderate, += Positive and weak +/O = Positive negligible, O = Neutral, -/O = Negative negligible -=:Negative and weak, --=Negative and moderate, ---= Negative and strong

2.4 Environmental impacts of a cross-border nature

Impacts related to climatic and bioclimatic characteristics

During both the construction phase and the operation phase of the project, no impacts on any climatic parameters such as temperature, rainfall, hail, snowfall or humidity in the wider project development area, and therefore of a transboundary nature, are expected in any case.

By their nature, wind farms and their accompanying projects do not have any negative impact on the climatic and bioclimatic characteristics of the area in which they are installed.

As regards the production of greenhouse gases, not only will no such gases be produced, but on the contrary, the nature of the project is expected to reduce the production of both greenhouse gases and other harmful pollutants in the atmosphere as it contributes to the reduction of emissions of environmental pollutants associated with conventional energy production (fossil fuels).

Impact on morphological and landscape characteristics

Initially, the impacts on topography and soil morphology from the construction and operation of the project are limited to Greece, as they arise primarily from the excavation of the soil for the foundation of the W/T, the excavations for the installation of the M.T. network, the installation of the control panels and the interventions for access to the site. These structural works are very simple and do not entail any significant changes to the topography and relief of the land mass.

On a transboundary basis, the impacts on landscape characteristics can be assessed as the nearest settlement to the ESDP site (north of it) is that of "Kushla" in the Bulgarian territory, which is 0.77km from the nearest W/T site (W/T8).

Any visual burden due to the size of the figurine is considered to be particularly significant. The distance is such that there is no problem of shading, and the paint on the wind turbines (pillar and rotor) will be 'absorbent' and therefore there will be no reflections of incident light.

Of the remaining 6 settlements located at a distance of up to 10 km from the ESDP "XEFOTO" only one (1) A/V is visible in the settlements of Dzanggalovma (in part of the settlement) and Gorski Izvor; these settlements are approximately 4 km from the nearest A/V and therefore any visual impact is particularly small due to the size of the idol. The distance is such that there will be no shading problem, and the paint on the turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will occur.

It should be noted that the proposed A/Es are visible in the immediate study area where there are no other settlements, other than those mentioned above, which are on the whole small rural settlements, or other significant anthropogenic activities. It should also be noted that the sparse, in terms of spacing, siting of the W/Ts minimises visual disturbance, further limiting the estimated impacts.

Therefore, from all of the above and following site visits to the area and assessment of the situation from various viewpoints, it is concluded that the affected ESPO is not expected to

constitute a significant visual intrusion into the characteristics and physiognomy of the immediate or wider area, therefore any transboundary impacts are considered to be strong.

Impacts related to geological, tectonic and soil characteristics

Impacts related to the geological, tectonic and soil characteristics of the area are limited to the construction part of the project.

The impacts of these interventions on the soil at a general level are characterised in the majority of cases as negative in nature, with varying magnitude (intensity) and duration, partially or fully manageable and local in terms of their geographical scope, i.e. limited to the Greek territory, but without bringing about changes in the geological and tectonic characteristics of the study area (and therefore of a transboundary nature).

According to the above, no negative transboundary impacts related to geological, tectonic and soil characteristics are expected from the construction and operation of the project.

Impact on the natural environment

The project under consideration exploits wind energy, which is a clean form of energy since the operation of the RES-E generators does not give rise to the emission of gases, liquids or solid waste that would in any way pollute the air, soil or water table of the area. Nor is any other conventional form of energy used.

Regarding the transboundary impacts of the project on the natural environment, it should be noted that the Special Conservation Area (SCA) of the Natura 2000 network, named "Rodopi - Iztochni" and coded BG0001032, is located within the Bulgarian territory and on the border with the Greek border. This protected area has been included in the Special Ecological Assessment Study prepared by a special study group on the requirements of the legislation for this project. Based on the due assessment, evaluation and summary of the conclusions in Chapter 10 of the SEA for the species populations of the Natura 2000 network sites EEZ BG0001032 and ZEP GR1130012, it is concluded that the considered project of the ASPE "Xefoto" (subject to the implementation of all mitigation measures):

- It is not likely to delay or interrupt progress towards the conservation objectives of the Natura 2000 sites concerned.
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.
- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is unlikely to interact with predicted or expected natural changes to the Natura 2000 sites concerned.

Therefore, no significant negative impacts on the natural environment at the transboundary level are likely to occur, while any impacts on the natural environment and in particular on protected areas will be limited to the Greek territory and mainly during the construction phase of the project.

Impact on the man-made environment

- Spatial planning - land use

When siting a wind farm, it has been estimated that only 1 to 3% of its total area is occupied by the wind turbines (pylon bases), whose foundations are mostly underground. If the area required for road construction is excluded, the remaining area (up to 99% of the total) is still available for other uses (e.g. grazing). Therefore, the installation and operation of the study project is not expected to result in a change to the existing anthropogenic activities and land uses of the wider area, which in the study area are crops and livestock with free grazing of livestock. Therefore, no impacts are expected at local let alone transboundary level.

- Structure and functions of the man-made environment

Any impacts are limited to local rather than transboundary impacts and mainly relate to recreation as the works during the construction phase will affect parts of the hiking trails in the area.

- Cultural heritage

There are no declared archaeological sites in the immediate study area and therefore no impacts on historical monuments or other sites of historical and cultural interest, both locally and transboundary, are expected from the construction and operation of the ASPHE.

Socio-economic impact

The socio-economic impacts from the construction and operation of the project are mainly positive and relate to the wider project area where they are located.

Impact on Technical Infrastructure

During the construction and operation of the project, the technical infrastructure of the wider area will not be affected and therefore there will be no impact at cross-border level.

More specifically, during the construction phase of the project, there will be a temporary, localized impact on road traffic due to the movement of vehicles and machinery of the construction sites and the transportation of the W/T and other necessary equipment, but this concerns the Greek territory. There are also no negative impacts on water supply, sewerage and telecommunication networks.

Impact on air quality

The negative impacts of NPPs on the atmosphere are small and limited to the construction phase.

It is estimated that there will be an increase in air pollutant emissions during the construction phase of the project under study, which may cause locally elevated pollutant concentrations. This impact however:

- It is typical and expected for projects of this kind.
- It can be minimised by complying with the current Greek and EU legislation on emissions from construction machinery and vehicles and by implementing the required good

construction practice and taking appropriate remedial measures during the construction phase.
- It is locally limited to the immediate area of the projects.
- It is temporary and will not cause significant irreversible degradation of the air environment of the immediate area.

Taking into account the size and nature of the project under study, it is estimated that the impacts during the construction phase on the atmospheric environment will be negative, generally moderate, localised, partially manageable with the adoption of appropriate measures and immediately reversible after the completion of construction works.

It is also estimated that the impacts during the operational phase of the project on the atmospheric environment will be moderately positive and long-term.

In conclusion, taking the above into account, no significant negative impacts are expected at local, let alone transboundary level, while in the long term the impacts on air quality are considered positive.

Noise effects

The impacts expected on the acoustic environment during the construction phase are expected to be negative, particularly in the immediate area of the works, i.e. within the Greek territory, partially reversible with the adoption of the preventive remedial noise abatement measures proposed in this study, temporary and fully reversible after the completion of the construction works.

In the operational phase, for the nearest settlement to the studied ESDP in the Bulgarian territory (Kusla), in the Bulgarian territory which is 0.78km from the nearest W/T (W/T8) and the nearest in the Greek territory (Kalotycho) which is about 0,63 km from the nearest W/T (W/T 23) and based on the isothermal curves carried out for the purposes of this report, it is concluded that there is no expected noise impact, since according to the assessment carried out, the noise level is below the level of 40 dB(A) which is lower than the 45 dB(A) which is the limit for all residential activities.

Therefore, the settlements in the wider area (and therefore also at cross-border level) are not expected to suffer any impact from the noise emitted by the Gensets of the considered RES-E.

Effects related to electromagnetic fields

No electric and magnetic fields are expected during the construction phase of the project, while during its operation any radiation emitted (Medium Transmission Lines) is negligible, non-ionizing, therefore no negative impacts are expected at domestic and transboundary level.

Impact on water

There is no transboundary impact on water, as the main project of the ESDP is not constructed in or near watercourses. Due to the location of the project on the ridge, there is no established hydrological network in the area of intervention.

Any potential negative impact is limited to possible spills of small amounts of wastewater from the construction site that will be installed in the project area, but through the implementation of good prevention and response practices and through the proper use of machinery, these

possibilities are minimized. In any case, these potential negative impacts are local and not transboundary.

Impact - Vulnerability to the risks of major accidents or disasters

The installation of wind turbines in an area is a project that is not associated with chemical or radiation emissions. There is no risk of explosion because the operation of wind turbines does not require the use of flammable or explosive materials. Furthermore, the operation of a Genset does not require flammable fuels, reactive acids or other combustibles and there is no potential for combustion, making it extremely safe because it is purely electrical. Because the W/Ts operate at ambient temperature, there is no risk of accidents due to contact with hot surfaces of the installation.

In conclusion, no significant risks to the environment are expected during the construction and operation phase of the NPP and associated works at the Xefoto site, given its limited scale and the evolution of the technology involved, as well as the safety measures taken during the execution of the works and the subsequent operation of these facilities. Thus there is no risk of a serious accident or disaster which would lead to possible negative effects, initially at local and subsequently at transboundary level.

2.5 The measures, actions and initiatives to protect the environment.

2.5.1 Environmental Management

In this Environmental Impact Assessment (EIA) and in the Special Ecological Assessment Study that accompanies the EIA, a series of preventive, remedial and compensatory measures have been proposed to protect the environment.

In order to better implement the proposed measures, it is proposed to implement (by the project promoter) an Environmental Management System (EMS) for the operation of the project, with at least the following objectives:

- Implementation of the environmental conditions of the Environmental Terms Approval Decision of the project and all preventive, remedial and compensatory measures proposed in this study.
- Prevention and/or control of any environmental impacts due to extraordinary events.
- Disclosure of records, impact monitoring activities and indicators of environmental performance to citizens and stakeholders or Services, both via the internet and through the submission of a periodic annual report.
- Implement and adhere to the monitoring programme proposed in this study.
- Effective protection of the environment on the basis of existing legislation.

International standards and procedures (e.g. ISO 14001 and 14004 standards) can be used to ensure the proper design and effective implementation of the EMS. It is noted that the project promoter has an ISO 14001 certified Environmental Management Plan which it applies to all its operational projects.

2.5.2 Monitoring Programme

The following paragraphs list the proposed parameters of the monitoring programme.

1. Flora

Correct application of the terms of the AEPO and the instructions of the Forestry Department and the obtaining of the necessary permits.

- Monitoring changes in flora
- Review of the cleanliness of the occupied areas of the works and removal of potential debris to avoid fire incidents.

2. Birdlife and handstones

Exactly as proposed in the SEA, it is proposed that during the operation of the ESPO, the monitoring and recording of its operational impacts be entrusted to qualified personnel who will be regularly on site and can act as a source of baseline information and continuous baseline observation. This staff should consist of qualified relevant scientists who will monitor the accuracy of the predictions of this study, possible variations in the use of the field survey area by the important bird species in the area that may be due to random or currently unforeseeable factors (e.g., the occurrence of a forest fire in the area that would create "open areas") varying the degree of use of the area by the different bird species, the effectiveness During the monitoring programme for avifauna, it is proposed to apply in parallel (if required, based on the above) an appropriate corresponding programme for chironomid mammals (limited in time to the period during which the mammal group in question is active, both during the 24-hour period and during the year).

It is recommended that the monitoring and recording of impacts that will be carried out should be at least 4 years and should be carried out during both the preconstruction and construction phases, as well as during the first two years of operation of the project and should include the following:

- Regular surveys (proposed every 15 days (2 times per month) during critical periods and every 20 days (3 times per 2 months) the rest of the time) related to the risk of collision and the detection of nests in the area.
- Inventory of project area use data and record the flights of important species in the project area and their interaction with the turbines.
- Display of the above on a map to assess the situation.
- Checking and recording of possible mortality in a special protocol that will be maintained by the company and will be available to the competent services - agencies for the control of incidents of impacts in the area.
- Training of the employees of the W/Fs to deal with incidents of injured birds and the immediate notification of the competent services - agencies.
- Training of the employees of the W/Fs to scan the area of the wind turbines for dead individuals of avifauna and checking the correct application of the procedure with inspections.
- Assessment of the situation based on the information gathered

On the basis of the above programme, it will be possible to assess the progress of the operation of the project and determine whether or not additional measures or modifications to the proposed measures are necessary in order to minimise any potential impacts.

3. Water resources - soil

In order to safeguard the status of the aquifer, a clear method for the management of hazardous waste is proposed in the EIA in accordance with current legislation.

To ensure no change in surface water runoff is avoided, regular visual inspection of all civil engineering structures by operations staff is recommended to identify any changes. This monitoring shall include the construction phase of the projects as well as the improvement works of the existing road sections for the transfer of equipment to the ASPHE with special attention to the intersections of the road network with local streams.

4. Landscape

The smooth integration of the W/T into the landscape is ensured during the design, siting and construction of the AECS. Therefore, no further monitoring actions are proposed, except for the systematic maintenance of their metallic parts to avoid corrosion phenomena.

5. Sound environment

The use of the newer type of W/Ts ensures the protection of the acoustic environment while the W/Ts have relevant certificates. Therefore, no further monitoring actions, with the exception of the management of construction and maintenance works, are proposed for the machinery used by the subcontractors to ensure that they have the appropriate EEC type certificates for operating noise levels.

2.6 The benefits of the project

Following the above, the benefits expected from the construction and operation of the project under study, both locally and regionally, are summarized below:

- Job creation mainly during the construction phase of the project
- Capital inflow in the region for the implementation of the project, which implies the strengthening of the local market as there will be needs to cover various supplies of materials and needs for the accommodation of specialized staff (in local accommodation)
- Creating new infrastructure (e.g. access roads) and compensatory measures (e.g. sponsorship) in local communities

Finally, according to Law 3468/2006 as amended and in force today, the relevant local authorities and consumers will be reimbursed through the contribution fee from the operation of this project.

At national level, the expected benefits are:

- improving the overall energy supply-demand balance, strengthening the internal energy market,

- to meet the country's commitments for a higher penetration of RES in the Greek energy system,
- the use of domestic potential to secure energy supply and reduce dependence on imported fuels and energy; and
- the smoother functioning of the electricity market with obvious benefits for consumers.

2.7 The viable alternatives

In the context of the siting of the project, alternatives regarding the location and the number of gensets and accompanying works were examined. More specifically:

Alternative positions

Two other locations were considered for the installation of the ASPHE south of the proposed ASPHE site.

Scenario 1 faces a proximity problem with two Egyptian Vulture nesting sites, which have been identified and recorded in the framework of the European LIFE project "Urgent Actions to Strengthen the Balkan Population of the Egyptian Vulture and Secure Its Flyway" - LIFE16 NAT/BG/000874 ("Urgent Actions to Strengthen the Balkan Population of the Egyptian Vulture and Secure Its Flyway"). In particular, the southern polygon of scenario 1 did not meet the minimum distance of 5 km from the Egyptian Vulture nesting site.

As for Scenario 2:

Regarding scenario 2, it was found that the polygons and the locations of the AGs of scenario 2 fall largely within the protection zone ZPF-01[1] (Nature Protection Zone) where, among other various special land uses, the installation of wind farms is not allowed.

Alternative in size and scale

The alternative considered was to locate 31 smaller 4.8MW and smaller scale gensets each in different locations but in new larger installation polygons than the ones considered in this study .

In this scenario, the final access solution (proposed) was also evaluated, but since these are the same extended topographic locations, access is achieved in exactly the same way as the final selected solution, which is optimal.

The differentiation in this alternative scenario is the need for additional access roads for the approach to the W/T and the need for more W/T installation platforms. In essence, in this scenario the location of the GIS installation remains the same but with more GIS and access to the site remains the same with more openings within the siting polygons.

[1]Proposed delimitation of Protection Zones within the protected area "Composite Biodiversity Protection Area of the river and the Komsatou Valley" of Study 1: Preparation of EIA and SE for the Natura2000 sites of the region of AMTH.

This scenario was rejected in an attempt to improve the siting by limiting the area of occupation and the number of W/Ts.

Alternative to the design

Regarding the electrical interconnection alternatives of the project, it should be noted that in the wider study area there is a Medium Voltage substation of Iasmos available, so the interconnection is the only solution.

The route of the medium voltage network was similarly chosen based on the shortest possible route to the new substation. Alternatively, the routing of the external MT network from W/T 14 in the east to the settlement of Tsalapeteino and then to the settlement of Satrai, following a southern route to the settlement of Amaxades was considered. From there and up to the "Iasmos" substation, the route follows an easterly course on the Xanthi Iasmos road. A map is provided below. In either option, the route runs along the existing forest, rural or provincial road network.

This alternative was rejected because it requires interventions over a much longer length, as well as increased maneuvers and interventions compared to the selected access scenario.

Alternative as the technology

Due to its wind potential, the area is suitable only for the development of RES-E.

On the other hand, W/Ts were selected according to the standards proposed by the manufacturer.

Alternative to the production process:

No alternatives to the "production process" were explored as it is a primary exploitation of the wind potential of the area and the production of clean energy.

Alternative to the manufacturing process:

The W/Ts consist of prefabricated parts that are assembled on site according to the manufacturer's instructions and in a specific order as described in detail in the previous chapter. The assembly procedure is the only technically appropriate one and cannot be varied.

On the other hand, the accompanying interventions such as the installation platforms and road works follow specific specifications in order to ensure both the safe transport of the W/T components in the field and the necessary space for their assembly. The MT network is designed exactly according to the standards of ADMIE.

Therefore, no alternatives to the construction process were considered.

More information on the alternatives as well as the No Action Alternative is provided in Chapter 7 of this EIS.

2.8 Summary of the conclusions of the Special Ecological Assessment Study (SEA)

The project under study is located within the protected area of the Natura 2000 network Z.E.P. GR1130012, as well as within the SPA GR009. It is also adjacent to the Bulgarian Natura 2000 network protected area BG0001032, and is located more than 18 km from the nearest SPA GR1130010, whose protected object is the bird fauna. (as regards the SPA and SPA) and the habitat

types listed in Annex I to Directive 92/43/EEC, as well as the fauna and flora species listed in Annex II to the above Directive (as regards the SPA).

Throughout this study, following a literature review and field observations for the period November 2021 - October 2022, all necessary records and assessments were made in order to specifically assess the ecological evaluation of the project in relation to the neighbouring protected areas. Based on these, and subject to the condition of implementing all of the mitigation measures for potential impacts listed in this EIS (with the grouped priority listed), it is assessed that the proposed project:

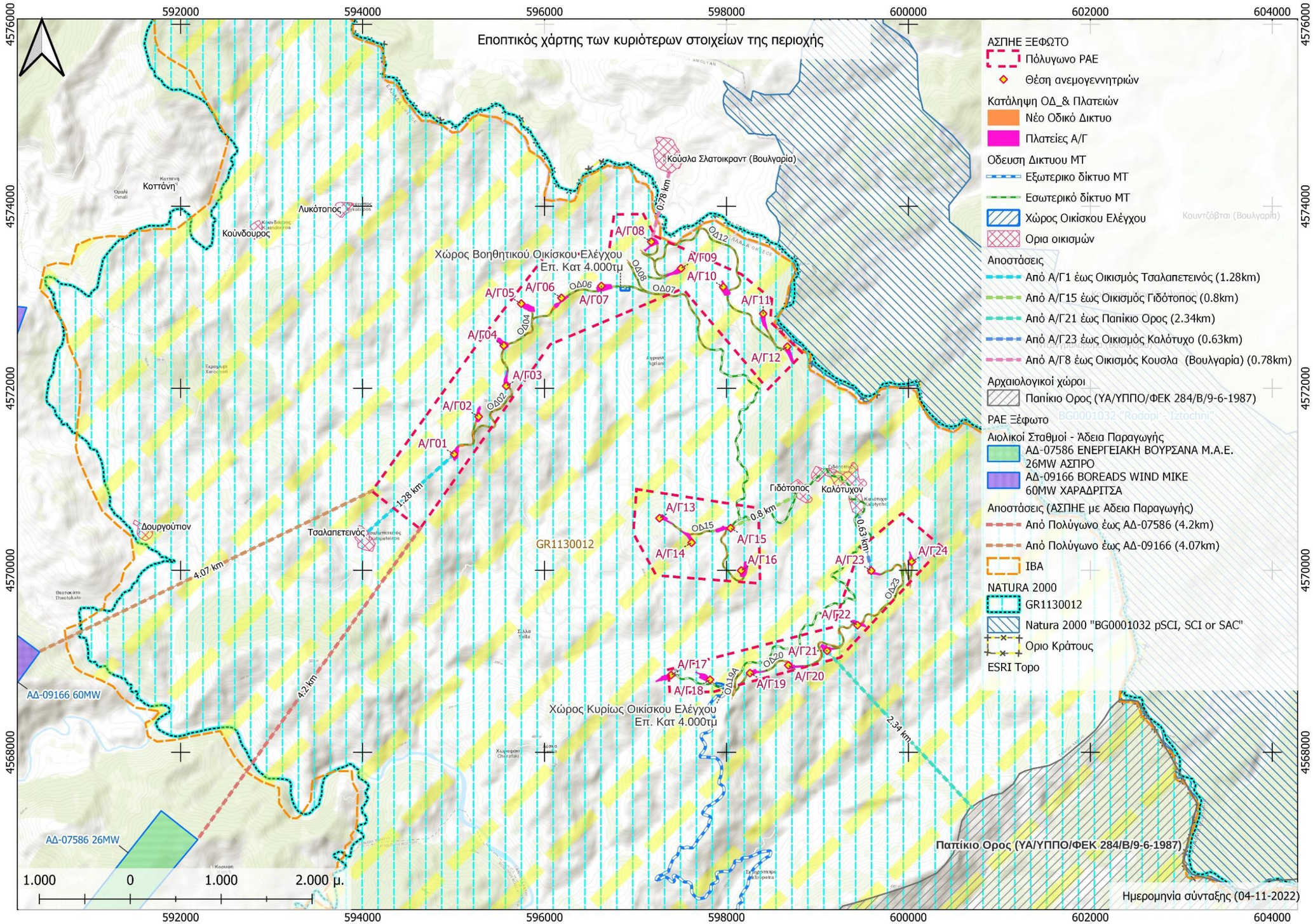
- It is not likely to delay or interrupt progress towards the conservation objectives of the Natura 2000 sites concerned.
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.
- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is unlikely to interact with predicted or expected natural changes in the Natura 2000 sites concerned.

The accompanying works of the specific ESDP project are not considered to have an adverse impact on the site and its integrity, nor on the species living in it due to the proposed undergrounding of the cabling for the transmission of the electricity generated. The new borehole for the installation of the wind turbines is relatively short and will not cause any adverse effects on the Natura 2000 site and its protected objects, due to the correct siting (and the relevant proposals herein).

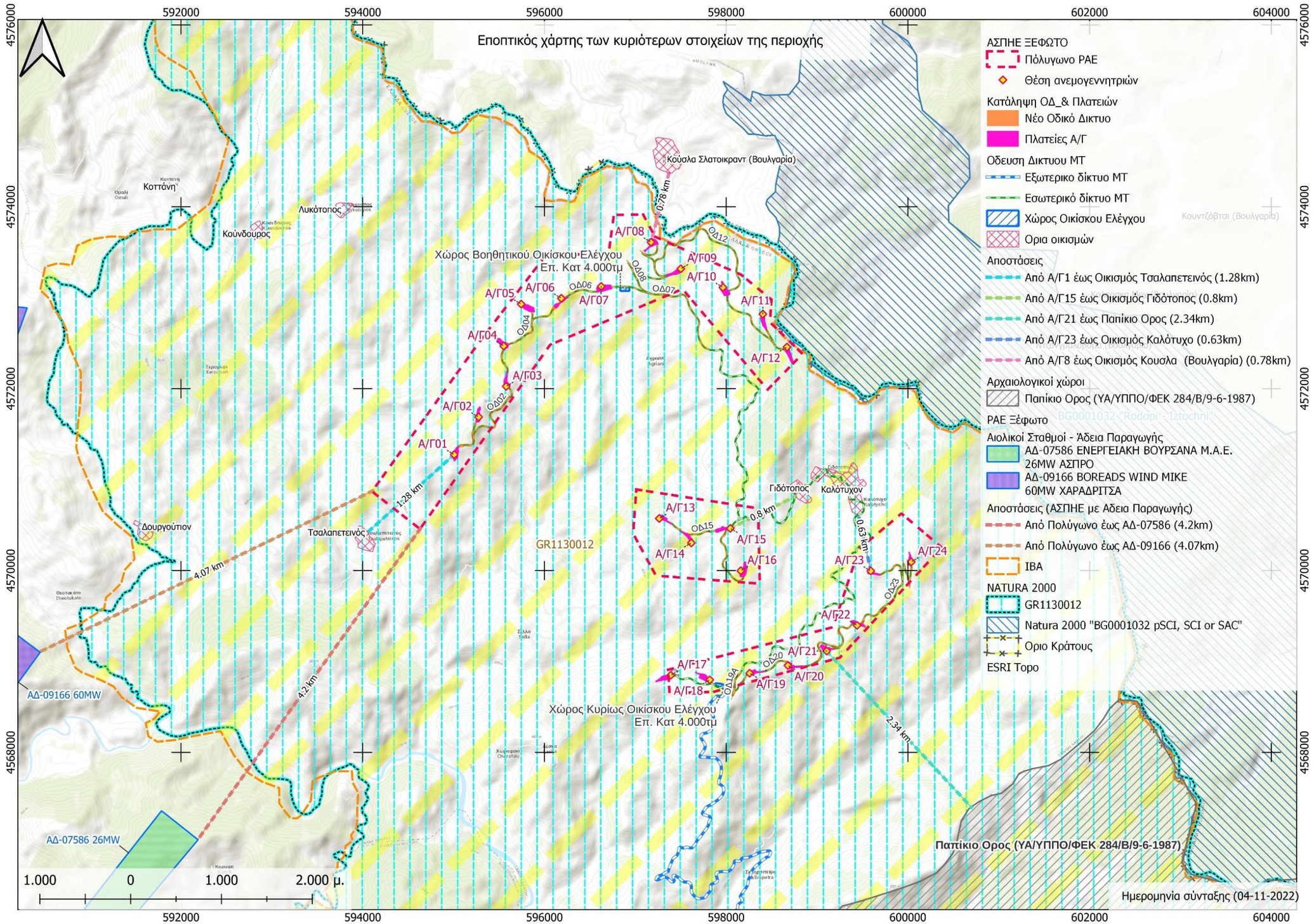
The impacts of the project synergistically with other related (under permitting) projects in the area are not considered to be significant given that all of the mitigation measures for potential impacts identified in this EIR will be implemented.

2.9 Supervisory map of the main features of the area

Map 2: Surveillance of the main features of the area - Department of ASPHE.



Map 3: Overview of the main features of the area - Part of the MT network.



3 SUMMARY DESCRIPTION OF THE PROJECT

3.1 Key elements of the project

The proposed installation is a Renewable Energy Sources (RES) project by the company "HELPE Renewable S.A." and specifically it is a Wind Power Plant (WPP) with a total capacity of 148,8MW. With wind as the primary form of energy, the kinetic energy of the wind is converted through the blades of the wind turbine into mechanical energy on the low-speed main shaft of each Wind Turbine Generator (WTG). Subsequently, the mechanical energy is converted into electrical energy through the electrical generator.

The installation is a typical application of converting mechanical work into electricity through a rotating spindle and an electric generator. The specificity of the installation lies in the fact that the mechanical work is provided exclusively by the wind, without any other operation that could potentially be a source of pollution.

The RES-EPP will consist of a total of 24 gensets with a nominal capacity of 6.2 MW each, manufactured by SIEMENS GAMESA RENEWABLE ENERGY S.A. The gensets of this type have a blade diameter of 170m and a tower height of 135m. For the installation of the gensets, the same number of platforms will be created, adapted to the topographical configuration of each site, and will be constructed either by widening when placed at the end of the roads or by widening the roadway on both sides when placed in the path of the roads. The platforms have an average occupied area of 8,000 m^2 each with an average deck area of 5,800 m^2 . The platforms house the erection machinery (cranes, hoists) and the construction/assembly materials (pylon section wings and nacelle).

For the foundation of each wind turbine, a circular foundation with a diameter of approximately 20 m and a depth of approximately 3.7 m will be constructed.The wind turbines will be electrically interconnected through autonomous 0.69kV/33kV step-up transformers with an underground medium voltage line that will be constructed along the roads that will be used for accessibility to the installation sites of the wind turbines. The transformers are foreseen to be placed inside the fuselages of the gensets and depending on the technical solutions of the final designs, but also on the indications and regulations of AMDIE for their uninterrupted and safer maintenance and operation. The underground medium-voltage lines will be concentrated in the control house. Lightning rods will also be installed on the wind turbines in order to reduce the possibility of lightning strikes, while to ensure flight safety, the wind turbines will be marked with flashing lights in accordance with the instructions of the competent Civil Aviation Authority.

Regarding the control house, two control houses will be constructed, one Main and one Auxiliary. The Main Control House will be installed close to W/T 18 and will be the outlet for the circuits from the Auxiliary Control House and the circuits from W/T 13 to 24. The Auxiliary Control Cubicle, which will be installed close to DG 7, will receive the circuits from DGs 1 to 12 and will then be connected to the Main Cubicle. These connections will form the Internal Interconnection Network. From the Main Scaffolding the interconnection circuits connecting the A/P to the S/S "IASMOY" will leave the Main Scaffolding and will form the External Interconnection Network

The area of the Main Control House will be approximately 280 m^2 , while the area of the Auxiliary Control House will be approximately 120 m^2 , and each Control House will be installed within a 4,000.00 m area.^{2}

For the installation of the W/F site, the site of the W/T7 Platform will be used. Within this area the construction machinery and other site facilities will be located. The space that will not be required for the operation of the ASPHE will be restored after the completion of the construction works. The land has a surface area of 10,991.61 m^2 . This area will be restored after the completion of the construction works of the W/F.

Based on the road study prepared for the W/F "XEFOTO", the opening of an internal road network with a total length of 14.884,00m is foreseen. The access is carried out starting from an existing agroforestry road network, which passes through the polygons of the licensed wind turbine installation sites of the project to the south and approaching it to the north. New roads are joined and started on parts of the existing network, which will be used to access the wind turbine sites.

For the connection of the ASPEE to the Transmission System, the construction of an underground Medium Voltage (MV) 33 kV network and its connection to the existing Y /S "Iasmos" . The line will be underground along its entire length except for a small section of only 129.24 m in length to cross the river Komsato. The entire development of the underground 33 kV M.T. line is through existing public roads and will have a total length of 29,652.16 m. The circuits will be installed alongside the road construction in channels and the cables will be of XLPE 3x1x1000mm^2 Al type arranged in a trefoil formation. Their exact cross-section and number of circuits will be determined after the Final Connection Offer is received. The 33 kV underground M.T. line will be installed within a trench of approximately 1.20 m depth and 1.00 m width.

For the construction of the project, it is estimated that 20 jobs of various specialties (workers, engineers, contractors, etc.) will need to be created, while the necessary staff for the operation of the W/F consists of 2-3 full-time employees.

The total generated capacity of 148.8 MW will be injected into the electricity distribution system and will be sufficient to serve approximately 69,500 households on an annual basis.

3.2 Key elements of the construction and operation phase

If the project under study secures the necessary permits (environmental, urban planning, etc.) and all kinds of approvals from the competent authorities and bodies, it can proceed to the construction and operation phases.

The construction of the ESDP and its accompanying works can be broadly divided into the following tasks:

- Improvement - Opening of the access road network,
- Excavation and resurfacing of W/T bases - Shaping of W/T platforms,
- Excavation and resurfacing of cable channels,
- Development of 33kV MT network,
- Construction of a control centre site,

- Transportation - Erection of towers and W/T,
- Construction of a medium voltage transmission line to the existing substation "Iasmos".

The technical elements for the installation of the W/T and the accompanying works are described in detail in the next chapter (chapter 6).

Regarding the transport and the erection of the towers and the W/Ts:

Transport requirements

The transport of the W/Ts requires special transport solutions at the installation site and is carried out according to the specifications of the manufacturer. Indicatively, the vehicles to be used will consist of three-axle tractors, swing-axle platform trailers (for the blades), 7 or 8-axle semi-trailers (for the fuselage), and trailers with a fully controlled rear-axle 8-axle series with a semi-flat floor with a recessed floor (for the tower).

Transfer plan

The preparation of the plan for the transfer of the W/T is based on the minimum possible interventions and the minimum possible traffic disturbance.

Thus, in order to find possible solutions, the following are taken into account:

- the existing roads and their type,
- the topography of the transit areas,
- the status of the land on either side of the road at junctions and closed bends
- points along the route (bridges, transport lines, buildings at closed bends).

No permanent interventions are required for the crossing of the loads, except for the temporary lifting of cables and the removal of traffic regulation signs, while the crossing at the level junctions along the route will be vertical with special dampers to avoid the destruction of the pavements.

Erection - installation of tower, fuselage and wings

Each section of the tower is placed on top of the previous one using a net crane. Then, the erection staff connects and assembles the sections together.

The next step is the erection and installation of the spindle which is installed in the upper part of the tower. The electrical connections have already been made at the same time as the assembly of the W/T.

The assembly of the W/T is done by erecting the blades in series and connecting them to the fuselage hub.

When the fuselage is installed, the hub and cone are raised followed by the blades which are raised horizontally.

This method (as opposed to ground assembly) requires less land and makes assembly faster.

Image from 1: Erection of the W/T (indicative photo)

After the completion of the erection of the W/T and the assembly of the various parts within it (stairs, lofts, supports, electrical panels, wiring, elevators, etc.), the W/F is commissioned. During the "Commissioning" phase, the various sections of each W/T are powered, activated and all the necessary checks are made to ensure their correct status and operation. Once the Commissioning is completed, the test period of operation of the RES-E system follows during which all the gensets are commissioned and connected to the Transmission Grid. In this way, the energy produced is injected into the grid in order to reach the final consumers. During this trial period, the quality of the generated power is checked and the power injected into the grid must meet specific specifications mentioned in the Electricity Management Code, such as voltage, frequency, harmonics, active and reactive power, etc. The requirements are checked by the Grid Manager (TSO) for a period of two (2) months and in case the requirements are met the trial period of operation is completed and the TSO goes into commercial operation.

The gensets are automatically switched on, orient their blade plane perpendicular to the wind direction and are switched off in case of failure or very strong winds. The AHU is controlled through the Energy Control System (ECS) of the DETEC by the Load Sharing Centre with detailed specifications given by the DETEC during the signing of the Contract of Connection to the System. The connection costs shall be borne by the investor. Finally, there is a permanent staff responsible for the operation of the LDCA, which is well trained and legally qualified to supervise, maintain and repair the electromechanical equipment and manage the entire operation of the projects.

3.3 Expected quantities of raw materials, water, energy and waste

During the construction phase of the ESDP:

- for the needs of the construction of the project, where required, on-site power will be used, which will be supplied through a power generating set (generators).

- for the implementation of the project a mobile ready-mixed concrete plant will be installed The raw materials used for the production are concrete:
    - Bulk aggregates
    - Cements
    - Chemical concrete additives: Retarder - water-reducer - liquefaction retarder according to SK 308 EN 934-2, Concrete plasticizer, according to EN 934-2:T2
    - Water. The compositional proportions (depending on the use) of the concrete are within the following limits: Cement: 300 to 450 kg, Water: 180 to 240 kg, Aggregates: 1700 to 1900 kg. Water requirements are estimated at 180 - 240 lt per m^3 of ready-mixed concrete. Additional water is required to wash the concrete mixers/barrels (estimated around 12.2 m^3 /day in peak operation.
- for the construction of the control building, the usual construction materials needed in any building construction such as: concrete, steel, structural mesh, sand, gravel, bricks, tiles, lime, marble dust, insulating materials, tiles, paints, etc.) will be used and their transportation will be done by road by local suppliers.
- the materials for the construction of the accompanying works are aggregates found on site and are the products of the excavation, backfilling and surfacing of roads and cable ducts.
- there is a surplus in the balance of earthworks (roads, platforms, MT underground network, rehabilitation, etc.) from earthworks which amounts to 348,398.13m^3 approximately and is to be taken over by a collection and transport company for their transport and recycling after a relevant contract in accordance with the legislation in force (see detailed calculation in subsection 6.3.10 of this document).
- water is required for the wetting of materials and surfaces (estimated at around 3 - 5 m^3 /day) to avoid the dispersion of particulate dust. The wastewater from the wetting of materials and surfaces is adsorbed on site or in close proximity to the wetting area, which is the purpose of wetting to avoid the dispersion of particulate dust. The liquid waste resulting from the washing of mobile mixers is mainly water with suspended solids without organic load. The aforementioned process will be carried out on a sealed (cemented or covered with plastic film) sloping floor, with discharge into a settling tank. After settling, the water is reused in the production process, while the solids are removed monthly and used for the production of lower quality concrete and for any backfilling.
- the only other wastewater associated with the operation of the site is the urban-type wastewater from the construction personnel so chemical toilets will be installed.
- Solid residues will be generated during the construction phase, but these are not hazardous. The following table lists these, based on the European Waste Catalogue (EWC) codes, as well as the code of the planned disposal or recovery operation.

  Table 12: List of non-hazardous solid wastes generated or likely to be generated and how they are to be managed.

ECA code	Description	Source :	Process description
17 04 05	Iron and steel	Building material waste from construction	Pre-storage and delivery to an appropriately licensed operator for further management
17 05 06	excavation spoil other than those mentioned in 17 05 05*	Excavation materials 348.398,13m^3	Pre-storage and delivery to an appropriately licensed operator for further management
8 01 11*	waste paints and varnishes containing organic solvents or other hazardous substances	Organic solvents	Pre-storage and delivery to an appropriately licensed operator for further management
8 01 11*	waste paints and varnishes containing organic solvents or other hazardous substances	Waste from paints	Pre-storage and delivery to an appropriately licensed operator for further management
20 03 01	Mixed municipal waste	Household waste - municipal waste (from workers on site - soda cans, paper, food packaging waste, etc.)	Pre-storage and delivery to an appropriately licensed body for further management

During the operational phase of the ESDP:

- the nature of the project is not characterised by significant consumption of materials, energy and water. Water use is limited to the needs of the operating personnel at the facility, i.e. domestic water use, water used in the fire protection system and irrigation water to be used in the horticultural restoration works. In all cases, the quantities required are ensured by transporting water to the APEI (bottled water, tankers, tanks). The total volume of water required for watering the plants will depend on the extent and type of horticultural restoration, which will be finalised at a later stage.
- material inputs relate to the basic needs of employees (consumables and household essentials), supplies of spare parts and electromechanical components and materials, and fuel inputs for vehicles.
- the energy needs for the operation of the RES-EWS shall be derived from the self-consumption of the energy produced.

The basic liquid wastes that require special management in the operation of wind power plants arise from the basic maintenance of mainly mechanical parts and consist of:

- used mineral oils, or semi-synthetic oils or synthetic oils, from lubrication of gears and other moving parts and cooling systems (13 02 06* and 13 02 08*).
- Used oils of step-up transformers (13 03 08* and 13 03 10*)
- Used hydraulic oils from use in hydraulic pressure transmission units for braking systems (brake), blade rotation systems (pitch), aileron systems, etc. (13 01 11* and 13 01 13*).

The above materials fall under the legislation on hazardous waste. It should be noted that none of the oils used contain PCBs.

The use of other types of raw materials is not foreseen during the operation of the RES-EWS.

The basic solid wastes that require special management in the operation of wind power plants arise from the basic maintenance of mainly mechanical parts and consist of:

- Empty packaging of the above mentioned oils: metal drums and plastic containers (15 01 02 and 15 01 04 and 15 01 07 and 15 01 10*)
- Used filters impregnated with the above oils (usually paper and metal) (15 02 02* and 16 01 07*)
- Empty packages of lubricating greases based on mineral oils and special additives, in 250gr, 400gr, 18kg etc.
- Empty metal cans and sprays containing adhesives, pastes, lubricants, mild solvents and cleaners (15 01 02 and 15 01 04 and 15 01 07* and 15 01 10*)
- Cotton cloths used for cleaning surfaces and consequently impregnated with the above materials (oils, greases, detergents, etc.) (15 02 02)
- Low-capacity accumulators (batteries) for use in automatic gear cutting machines and small automatic machines in general (16 06 01* and 16 06 04)
- Higher capacity accumulators for use in UPS systems (16 06 01*)

The above materials fall under the legislation on hazardous waste.

- Waste of mechanical, electrical and electronic equipment

The above materials are not considered hazardous waste.

All of the above wastes will be properly managed and appropriate measures will be taken.

Chapter 6 of this study provides a detailed description of the entire project.

4 AIM AND PURPOSE OF THE PROJECT - BROADER CONTEXT

4.1 Objective and feasibility

4.1.1 Objective & Feasibility of carrying out the activity

Renewable energy sources (wind, solar, hydro, ocean, geothermal, biomass and biofuels) are alternatives to fossil fuels and contribute to reducing greenhouse gas emissions, diversifying energy supply and reducing dependence on unreliable and unstable fossil fuel markets, especially oil. The main harmful environmental impact of fossil fuel use is the increase in carbon dioxide (CO_2) levels in the atmosphere, which results in global warming.

Since 2009, the EU has set a target of a 20% share of EU energy consumption from renewable sources by 2020, while in December 2018, Directive (EU) 2018/2001 came into force to meet the EU's emission reduction commitments under the Paris Agreement. Thus, this Directive established a new binding target for renewable energy sources by 2030 of at least 32% of final energy consumption, with a clause for a possible upward review by 2023 and an increased target of 14% for the share of renewable fuels in transport.

To reach the target of a 32% share of renewables in the total amount of energy consumed in the EU by 2030 requires:

- further development of renewable energy sources in the electricity sector,
- integration of renewable energy sources in the heating and cooling supply,
- decarbonisation and diversification in the transport sector (with a renewable energy target for 2030 of at least 14% of total transport energy consumption),
- informing customers and enhancing their capacities,
- strengthening the EU's sustainability criteria for bioenergy,
- ensuring that the binding EU-wide target is achieved in a timely and cost-effective manner.

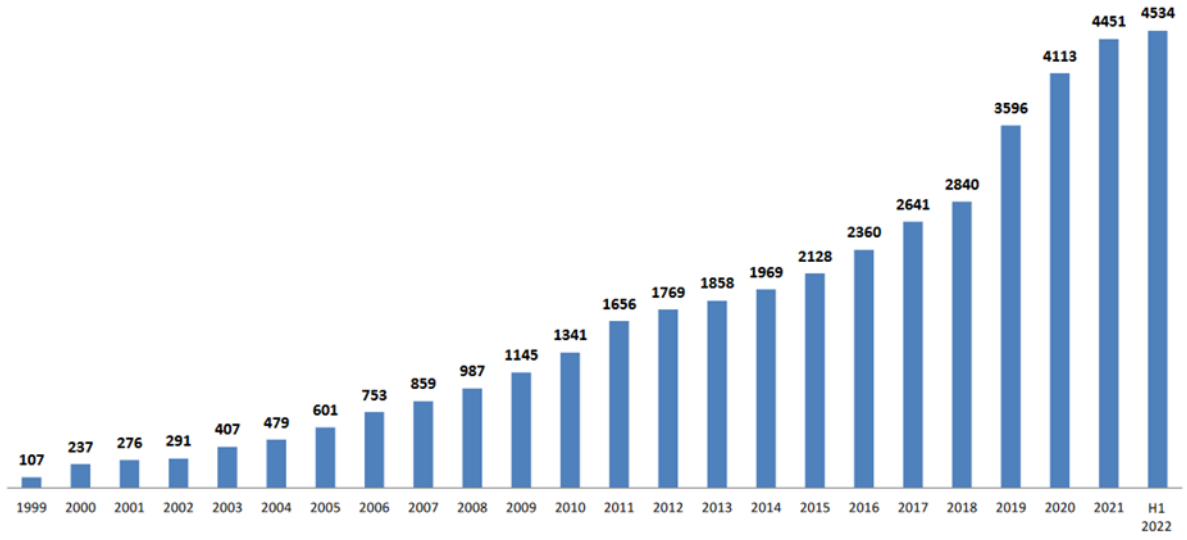
Eurostat data show that in 2019 Greece reached the EU average in terms of electricity production from RES. The share of electricity produced from RES increased from 7.2% in 2004 to 21.7% in 2020 (1.7% above the EU target for 2020 and 3.7% above the national target), while in 2019 it was 19.7%, the same as the EU share. In 2018, the corresponding rate for Greece was 18.1% and for the EU 18.9%.

The production of electricity from RES and in this case from wind turbines, contributes significantly to the reduction of carbon dioxide emissions as for every kilowatt hour (kWh) produced from wind energy, and therefore not from conventional fuels, it avoids the release of about 1 kg of carbon dioxide (CO_2) into the atmosphere, while for every MW of wind energy installed, the release of 3 thousand tonnes of CO_2 per year is avoided. In addition, it entails fewer emissions of other hazardous pollutants (such as suspended particulate matter, nitrogen oxides, sulphur compounds, etc.).

It should be noted that according to the 26-07-2022 Press Release of the Hellenic Scientific Association of Wind Energy ("ELETAEN"), the total installed wind power capacity in Greece reached 4,534MW in the first half of 2022 from 4,451MW at the end of 2021. Compared to the final data of the second half of 2021 and based on the statistics, 28 new wind turbines were connected to the grid during the first half of 2022 for a total attributable capacity of 83.1 MW. This figure is not significantly different from the capacity installed in the second half of 2021 and is 3 times lower than the capacity installed in the first half of the previous year. At the end of June 2022, over 650 MW of new wind farms were under construction, the majority of which are expected to be connected to the grid within the next 12 months.

Below is an indicative graph showing the penetration of wind energy in the National Interconnected System of the country from 1999 to the first half of 2022.

Chart 1 Installed wind power capacity in Greece.



At regional level, Central Greece remains at the top of the list of wind installations with 1,837 MW (41%), followed by the Peloponnese with 619 MW (14%) and Eastern Macedonia - Thrace with 501 MW (11%).

Furthermore, it is mentioned that recently and specifically with the Decision No. 4/2019 of the Governmental Council for Economic Policy (Government Gazette B' 4893/2019) concerning the National Plan for Energy and Climate (NECC), following extensive consultation at national and Community level, a target was set for the coverage by 2030 of at least 35% of energy production from renewable sources, which corresponds to an approximately 65% penetration rate of RES in electricity production. This figure corresponds to the country's contribution to the European level targets for achieving the 32% penetration of RES in energy consumption at Community level. The key priorities of EU energy policy are to address the EU's growing dependence on non-EU energy imports, to tackle climate change, to improve energy efficiency with a focus on the construction/building sector and to meet the general and specific targets of the Kyoto Protocol to reduce CO_2 emissions.

The main axes for achieving the above national objective are the following:

a) the massive penetration of new RES projects with emphasis on wind and photovoltaic technologies (expected installed capacity in 2030, 7 and 7.7GW respectively) in combination with the development of energy storage projects,
b) the complete de-lignification of the national energy mix by 2028 at the latest; and
c) the interconnection of the autonomous island systems of the Aegean, which will allow the cessation of the operation of local polluting oil stations on the one hand and the exploitation of their abundant wind and solar potential on the other.

According to the above, RES investments are the most effective ally in achieving the ESDP objectives.

Finally, the project also keeps pace:

a) with the EU Green Deal as one of the 9 key objectives of the Green Deal is clean, affordable and secure energy. Further reducing the use of carbon in the energy system is critical to achieving the climate targets set for 2030 and 2050. In order for this to happen, it is necessary to ensure that the European energy market is fully interconnected and digitalised, and

b) with UN Sustainable Development Goal 7. The UN Sustainable Development Goal 7 is about cheap and clean energy. Among other things, Goal 7 seeks, by 2030:

- ensuring universal access to affordable, reliable and modern energy services,
- a significant increase in the share of renewable energy in the global energy mix.
- doubling the global rate of improvement in energy efficiency.

4.1.2 Development, environmental, social and other criteria that are relevant to the implementation of the project or activity.

The production of clean electricity from RES, which in this case involves the exploitation of wind potential, has been studied as a solution to the problem of the expected depletion of (non-renewable) fossil fuel reserves. Renewable energy sources form the basis of the green economy economic development model promoted in the EU and many other countries. Although the penetration of RES in Greece has shown a remarkable increase in recent years, through the implementation of strong policy measures, it still has a high untapped potential.

In any case, the development of the wind farm contributes:

- the achievement of Greece's objectives, which are incorporated in the EU level, regarding the promotion of the use of energy from RES (EU Directive 20158/2001),
- promoting security of energy supply and sustainable and affordable energy,
- the decentralisation of the energy system and the servicing of the country's energy needs.

Besides, the target of penetration of RES in gross final energy consumption is achieved in the most cost-effective way for the national economy, through a significant increase in the contribution of wind and photovoltaic plants to electricity production. This is because these are technologies that already have a very low weighted cost of electricity generation on the one hand, and on the other hand, in the short term, they are directly more competitive in terms of the electricity market than conventional thermal plants.

According to ELETAEN's data (up to 2021), the new CCGTs in Greece produced 3-4 times cheaper electricity compared to the current cost of gas-fired power generation and 2-3 times cheaper compared to lignite.

In the context of the current, unprecedented energy crisis that has resulted in the rapid increase of electricity and gas supply prices, it should be noted that RES contribute to mitigate the consequences of the crisis, while otherwise the consequences would be over-generated and much more burdensome for consumers.

On the other hand, in the area where the project is proposed to be built there is significant - exploitable wind potential and the total generated power of 148 MW that will be injected into the electricity distribution system corresponds to the service of more than 69,000 households on an annual basis.

Moreover, this activity contributes positively to the local economy as it will support the labour market and employment after a prolonged period of recession, with unprecedented unemployment rates and lack of investment, which has been followed by a period of international instability due to the ongoing war in Ukraine which has caused an explosion of energy market prices across the European continent.

Moreover, as stated, the target of penetration of RES in gross final energy consumption is achieved in the most cost-effective way for the national economy, through the significant increase in the contribution of wind and photovoltaic plants to electricity production.

4.1.3 Benefits expected at local, regional or national level

Following the above, the benefits expected from the construction and operation of the project under study, both locally and regionally, are summarized below:

- Job creation mainly during the construction and operation phase of the project
- Capital inflow in the region for the implementation of the project, which implies the strengthening of the local market as there will be needs to cover various supplies of materials and needs for the accommodation of specialized staff (in local accommodation)
- Creating new infrastructure (e.g. access roads) and compensatory measures (e.g. sponsorships) in local communities.

Finally, according to Law 3468/2006 as amended and in force today, the relevant local authorities and consumers will be reimbursed through the contribution fee from the operation of this project.

At national level, the expected benefits are:

- improving the overall energy supply-demand balance, strengthening the internal energy market,
- to meet the country's commitments for a higher penetration of RES in the Greek energy system,
- the use of domestic potential to secure energy supply and reduce dependence on imported fuels and energy; and

- the smoother functioning of the electricity market.

4.2 Historical development of the project

For the project under consideration to date, the RAE has issued the Producer's Certificate No. BEV-3040/2021 (AD-08040) with a design for 148.8MW with 24 generators, each with a capacity of 6.2MW (IDA RTHX6IDX-R2N). In addition, a request has been submitted to RAE to modify the boundaries of the polygons and the locations of the wind turbines, in accordance with the design considered in this study, under RAE No. I-337906/11-10-2021 and I-3389028/10/2022.

4.3 Financial data of the project

4.3.1 Estimate of the total budget

The total budget of the project is estimated at approximately 180.000.000 €.

4.3.2 Estimation of individual approximate budget of proposed measures and actions for the environment

The project developer undertakes to restore the natural environment that will be disturbed during the construction of the works, following the recommendation of the competent Forestry Authority. The restoration of the natural environment will start after the other works have been completed and on the basis of the final restoration study, which will be carried out after the construction of the works, with the survey of the surfaces to be restored.

In accordance with the provisions of paras. 8,9,10 of article 45 of Law 998/79 as in force, the project developer will reforest or afforest an area similar to that indicated by the Forestry Authorities, if required. This area must be located in the same area or in an adjacent area, or in the absence of an area within the administrative unit or adjacent area, in another area indicated by the forestry service.

After the end of the operation of the works, the facilities will be dismantled and safely removed, the native vegetation will be restored and in general the area will be restored to its previous form if this is technically feasible as stated in Article 26 of the E.P.H.H.S.A.A. (Government Gazette 2464/B/3-12-2008).

Interventions in forest land will be restored to the status that applied before the change of use and will be restored in accordance with the environmental conditions, and in the absence of these, in accordance with a restoration study approved by the forestry service (Article 45 Para. 12 of Law 998/1979 as replaced by Article 36 of Law 4280/2014).

Finally, the costs for environmental measures and actions should take into account the costs required to implement an Environmental Management System for the project, both in the construction phase and in the operation phase of the project. These costs include costs for monitoring the implementation of the EIAs, but also costs for the implementation of EIAs, such

as monitoring programmes for environmental parameters, installation of monitoring and protection systems for avifauna, etc.

4.3.3 Project funding

The financing of the project is foreseen to be done through Bank Borrowing, and equity.

4.4 Relationship between the project and other projects

In the wider area of the installation of the project under study, according to the data of the Geo-Information Map of RAE (updated 14-10-2022), there is no accumulation of applications for wind power plants.

More specifically, the nearest NPPs (nearest polygons), in the area of the proposed project, that have an Operating Licence are 5, of which three are located more than 36 km to the east and the other two are located more than 16 km to the southwest. In addition, 9 NPPs with Generation Licence and AEP are located in a range from east, south to west of the study area with the nearest one located in the south at 8.42 km. Finally, according to RAE data, there are 19 NPPs with only Generation Licence in the wider area of the study project at a minimum distance of 4.07 km. The above licenses are depicted in more detail in the maps below while the tables show the minimum distances of the nearest TSOs from the project under study.

Table 13: Distances of neighbouring licensed RES-EEOs from the boundaries of polygons.

a/a	Institution	Location	AEO	Power (MW)	Operating License	Distance km
1	WIND FARM OF ORGANDY S.R.O.	FANDAROS	YES	20,7	AD-03295	40,46
2	LITHOS AIOLOS ENERGY A.E.	FLAMPOO	YES	27,6	AD-03375	36,32
3	LITHOS AIOLOS ENERGY S.R.O.	MANDRA	YES	14,4	AD-03390	37,85
4	PAWLIDIS A.S. MARBLE GRANITES	BIG STONE - BELL	YES	6,6	AD-03339	17,66
5	PAWLIDIS A.S. MARBLE GRANITES	MAYOR	YES	6,6	AD-03340	16,33
Total:				29,72		

The above mentioned RES-EEOs are already in operation.

Below is a map.

Map 4: Distances from the boundaries of the polygons to the nearest Wind Stations with an operating licence.

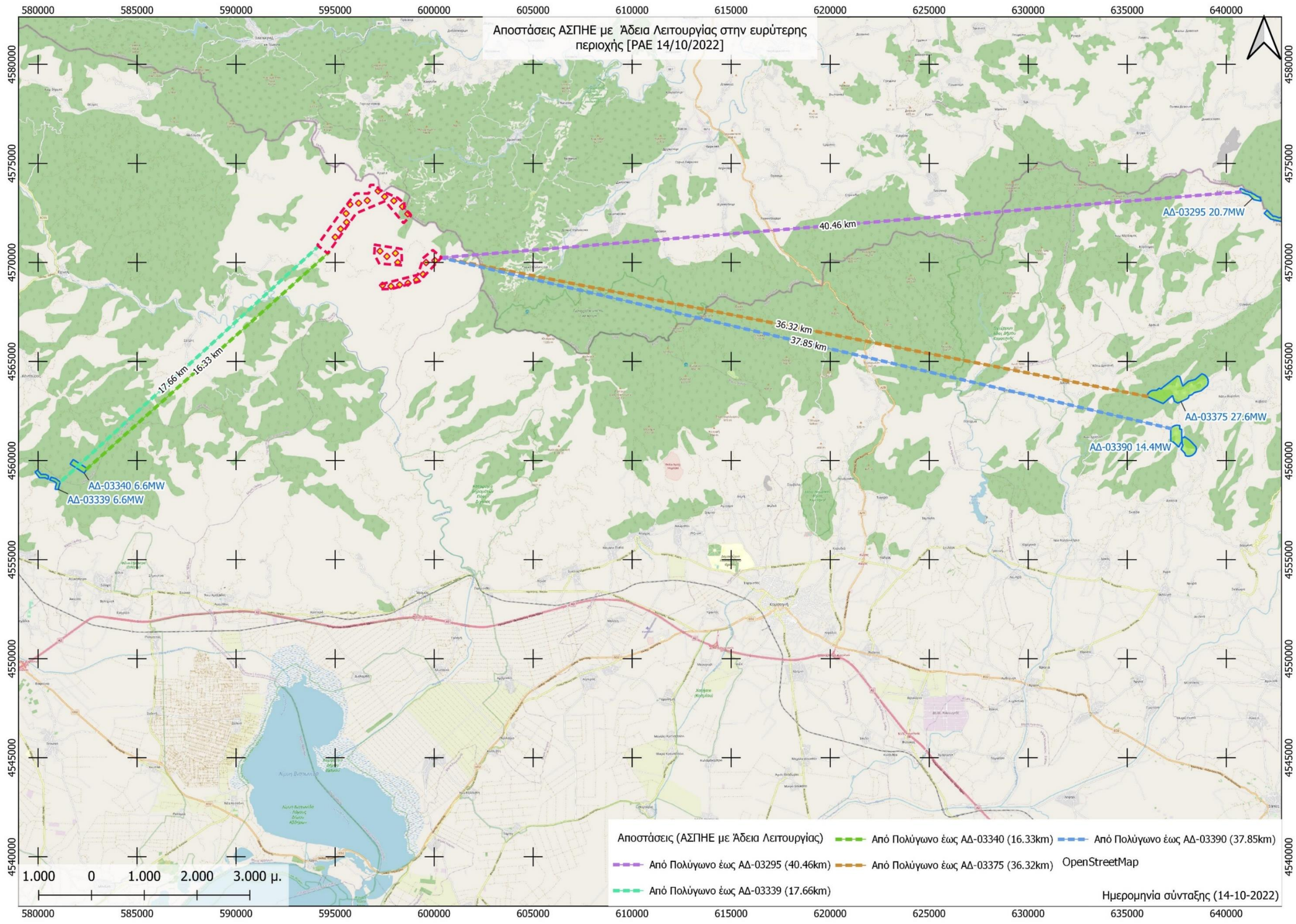


Table 14: Distances of the nearest Wind Stations with Production Licence and AEP from the boundaries of the polygons.

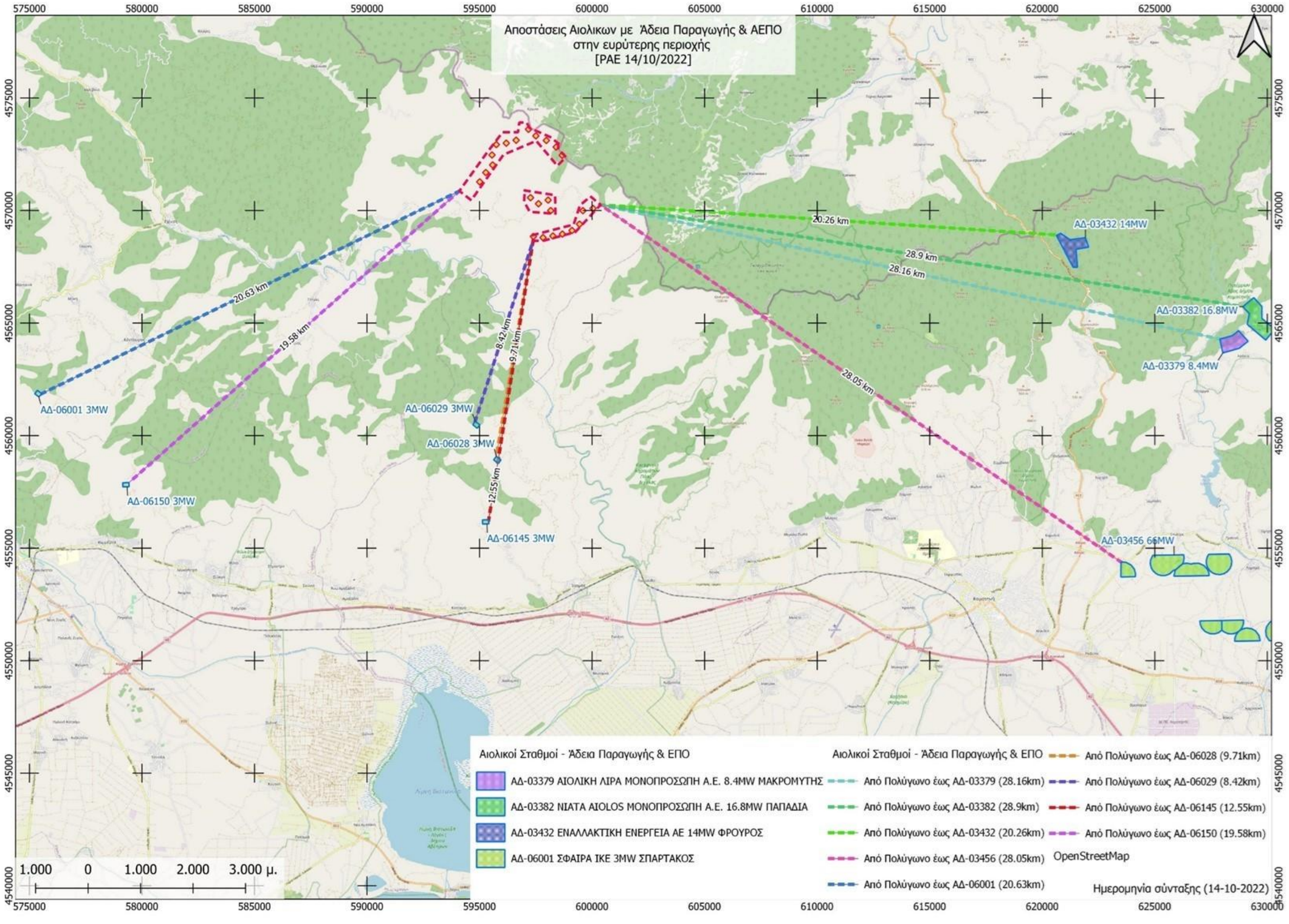
a/a	Institution	Location	Power (MW)	A/N RAC	Distance (km)
1	WIND POWER LIRA MONOPOLY S.R.O.	MAKROMYTHES	8,4	AD-03379	28,16
2	NIATA AIOLOS UNINCORPORATED S.R.O.	PAPADIA	16,8	AD-03382	28,9
3	ALTERNATIVE ENERGY GAS	FRUROS	14	AD-03432	20,26
4	CH.ROCAS S.R.O.	NERAIDES	66	AD-03456	28,05
5	SFAIRA IKE	SPARTAKOS	3	AD-06001	20,63
6	SKYRA I.K.E.	MONODENDRI	3	AD-06028	9,71
7	SKYRA I.K.E.	THRONOS	3	AD-06029	8,42
8	KADEL WIND ENERGY ONE PERSON PRIVATE LIMITED COMPANY	PENTHYMON	3	AD-06145	12,55
9	ILLYRIOS ENERGY WIND ENERGY PRIVATE LIMITED COMPANY	CARANOS	3	AD-06150	19,58
Total Power:			120,22		

Table 15: Distances of the nearest Wind Stations with Production Licence from the boundaries of the polygons.

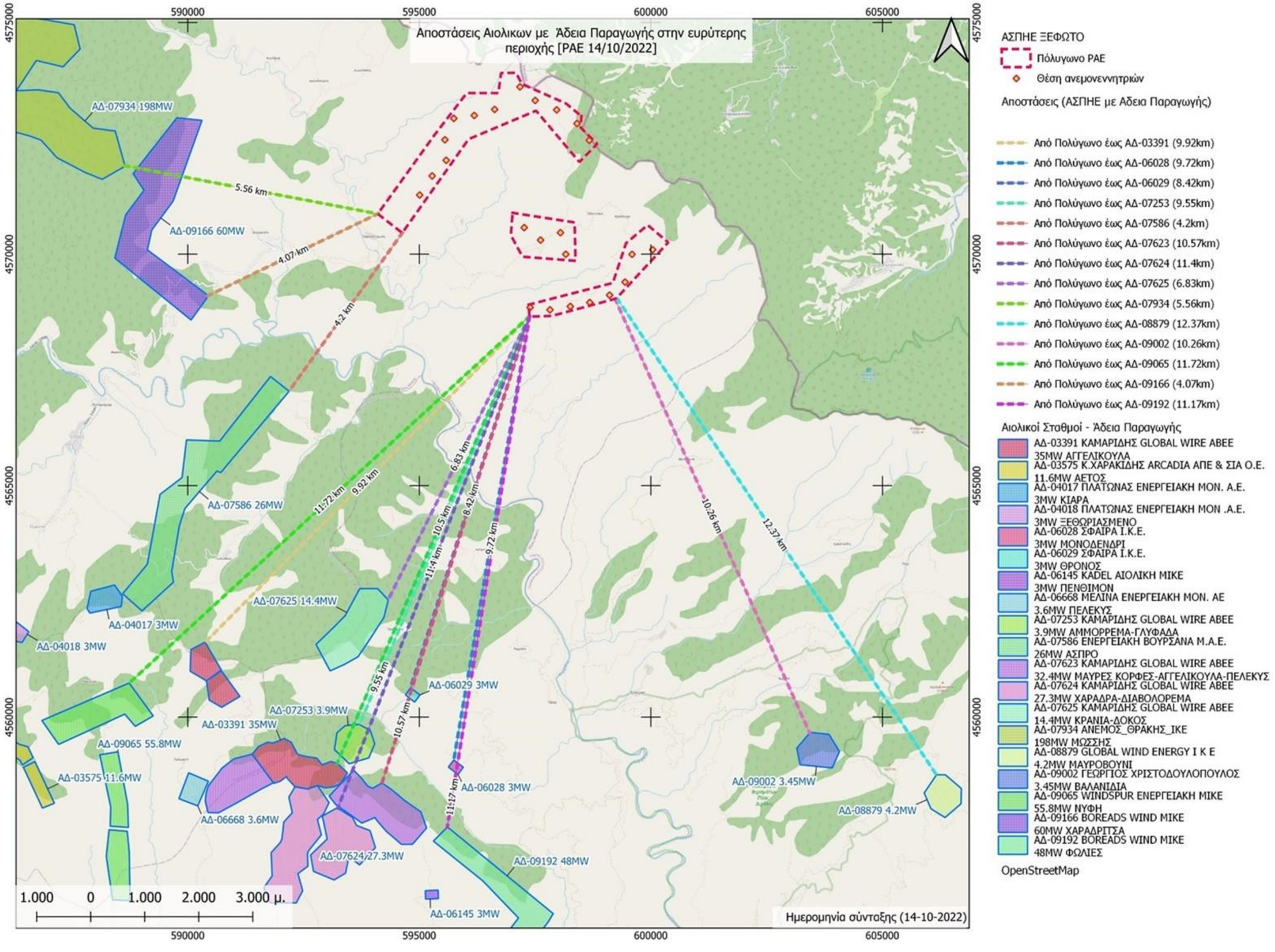
a/a	Institution	Location	Power (MW)	A/N RAC	Distance (km)
1	KAMARIDIS GLOBAL WIRE A.B.E.E.	ANGELICULA	35	AD-03391	9,92
2	SKYRA I.K.E.	MONODENDRI	3	AD-06028	9,72
3	SKYRA I.K.E.	THRONOS	3	AD-06029	8,42
4	KAMARIDIS GLOBAL WIRE ABEE PRODUCTION OF GALVANISED STEEL PRODUCTS TRADE GALVANISED WIRE PANELS	AMBERGRIS-GLYPHS	3,9	AD-07253	9,55
5	BURSANA ENERGY S.R.O.	ASPRO	26	AD-07586	4,2
6	KAMARIDIS GLOBAL WIRE A.B.E.E.	BLACK CORSETS-ANGELICULA-PICKY	32,4	AD-07623	10,57
7	KAMARIDIS GLOBAL WIRE A.B.E.E.	ENGRAVING-ENGRAVING	27,3	AD-07624	11,4
8	KAMARIDIS GLOBAL WIRE A.B.E.E.	CRANIA-DOKOS	14,4	AD-07625	6,83
9	THRACE_WIND_WIND_S	MOSSES	198	AD-07934	5,56
10	GLOBAL WIND ENERGY I N E	MAYROVUNI	4,2	AD-08879	12,37
11	GEORGIO CHRISTODOULOPOULOS	BALANDIA	3,45	AD-09002	10,26
12	WINDSPUR ENERGY ONE-MAN PRIVATE LIMITED COMPANY	NYFU	55,8	AD-09065	11,72
13	BOREADS WIND UNINCORPORATED LTD.	CHARADRITSA	60	AD-09166	4,07
14	BOREADS WIND ONE-PERSON COMPANY	PHOTOS	48	AD-09192	11,17
Total Power:			569		

Here are some maps.

Map 5: Distances of neighbouring Wind Stations with Production Licence and AEP from the boundaries of the polygons.



Map 6: Distances of neighbouring Wind Stations with Production Licence from the boundaries of the polygons.



The projects with a production license present a high degree of uncertainty both as regards the positive outcome or not of their environmental licensing (approvals, opinions, acceptance by the local community) and as regards their ability to be connected to the grid in the area under study. On the other hand, the projects that have an operating licence and an AEP are located at long distances, just as previously presented, thus dramatically limiting the cumulative impact of the project in combination with other similar projects in the area in question.

The closest polygon of another ASPIE to the polygons of the study is that of "BOREADS WIND S.A." at the location "CHARADRITSA" (with a Production License from RAE) at a distance of > 4 km. Compatibility rules set by the EIAPA for RES, stipulate the minimum distance between wind turbines to be 2.5 times the diameter of the wind turbine blade (2.5d). The diameter of the impeller of the RES under study is 170m while the diameter of the RES at the location "KARADRITSA" is 150m (according to the RAE License No. AD-09166 - ID: RLP6IDX-ΘM6).

Therefore, the minimum distance between the W/Ts (2.5x170m = 425m) is fully compatible with the rules of the EIAAP.

As demonstrated below, the Xephoto APEO meets the requirements set forth in the EIR as to minimum and maximum distances from adjacent uses.

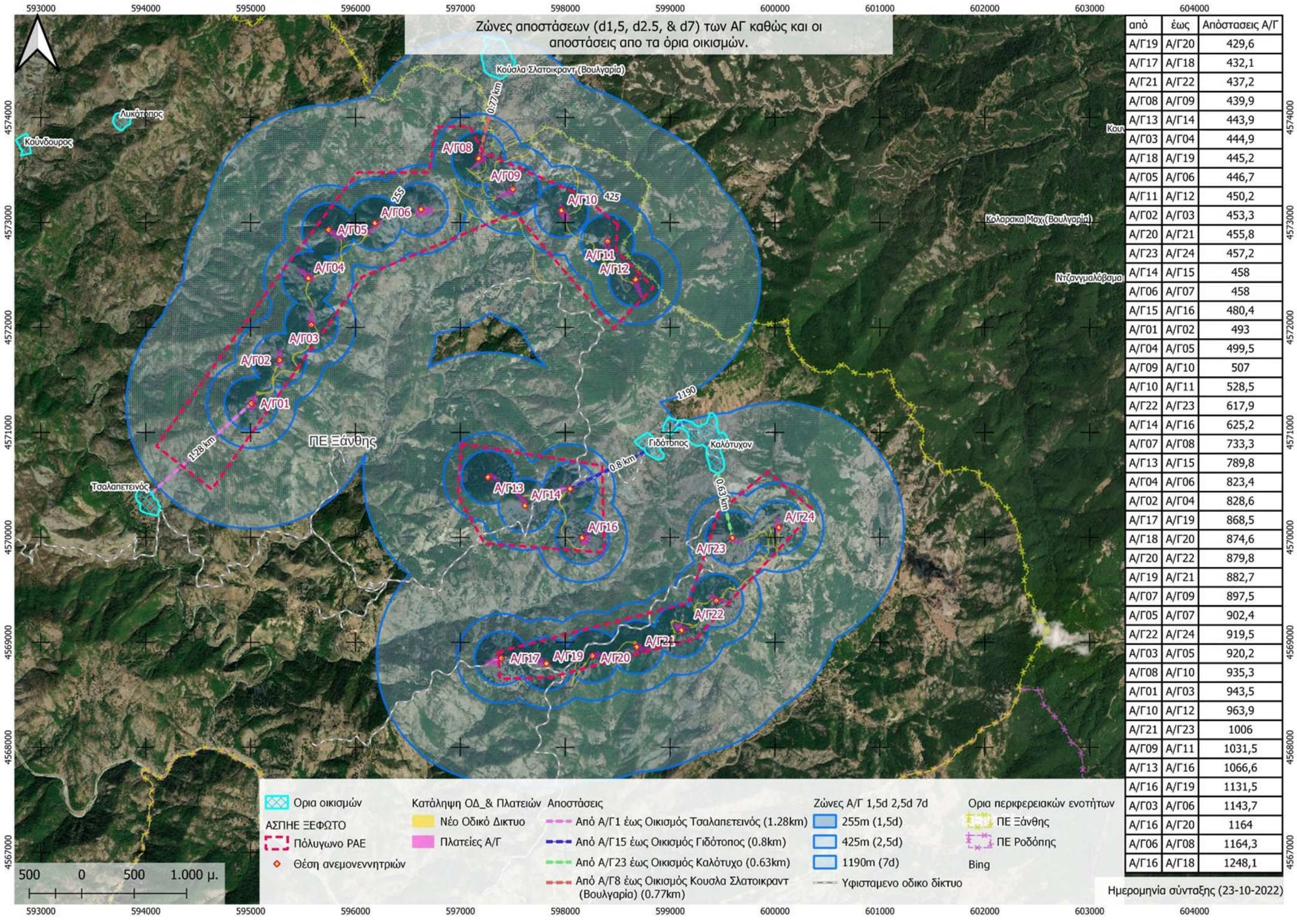
First of all, the map below shows the zones:

- 1.5d at 255m,
- 2.5d at 425m and
- 7d at 1.190m

of each Genset of the ESDP under study.

The closest distance between the substations of the studied UPS (within the same polygon) is ~429.6 m, between substation 19 and substation 20.

Map 7: Distance zones of the EAFS rules (1.5d, 2.5d, and 7d) and distance to the nearest W/T.



από	έως	Απόστασεις Α/Γ
Α/Γ19	Α/Γ20	429,6
Α/Γ17	Α/Γ18	432,1
Α/Γ21	Α/Γ22	437,2
Α/Γ08	Α/Γ09	439,9
Α/Γ13	Α/Γ14	443,9
Α/Γ03	Α/Γ04	444,9
Α/Γ18	Α/Γ19	445,2
Α/Γ05	Α/Γ06	446,7
Α/Γ11	Α/Γ12	450,2
Α/Γ02	Α/Γ03	453,3
Α/Γ20	Α/Γ21	455,8
Α/Γ23	Α/Γ24	457,2
Α/Γ14	Α/Γ15	458
Α/Γ06	Α/Γ07	458
Α/Γ15	Α/Γ16	480,4
Α/Γ01	Α/Γ02	493
Α/Γ04	Α/Γ05	499,5
Α/Γ09	Α/Γ10	507
Α/Γ10	Α/Γ11	528,5
Α/Γ22	Α/Γ23	617,9
Α/Γ14	Α/Γ16	625,2
Α/Γ07	Α/Γ08	733,3
Α/Γ13	Α/Γ15	789,8
Α/Γ04	Α/Γ06	823,4
Α/Γ02	Α/Γ04	828,6
Α/Γ17	Α/Γ19	868,5
Α/Γ18	Α/Γ20	874,6
Α/Γ20	Α/Γ22	879,8
Α/Γ19	Α/Γ21	882,7
Α/Γ07	Α/Γ09	897,5
Α/Γ05	Α/Γ07	902,4
Α/Γ22	Α/Γ24	919,5
Α/Γ03	Α/Γ05	920,2
Α/Γ08	Α/Γ10	935,3
Α/Γ01	Α/Γ03	943,5
Α/Γ10	Α/Γ12	963,9
Α/Γ21	Α/Γ23	1006
Α/Γ09	Α/Γ11	1031,5
Α/Γ13	Α/Γ16	1066,6
Α/Γ16	Α/Γ19	1131,5
Α/Γ03	Α/Γ06	1143,7
Α/Γ16	Α/Γ20	1164
Α/Γ06	Α/Γ08	1164,3
Α/Γ16	Α/Γ18	1248,1

Regarding the cumulative impacts that the operation of the ASPEEs in the wider area of the project, these are the visual and acoustic disturbance to the surrounding settlements, as there are no other activities or installations with characteristics that cause cumulative effects on the natural and man-made environment.

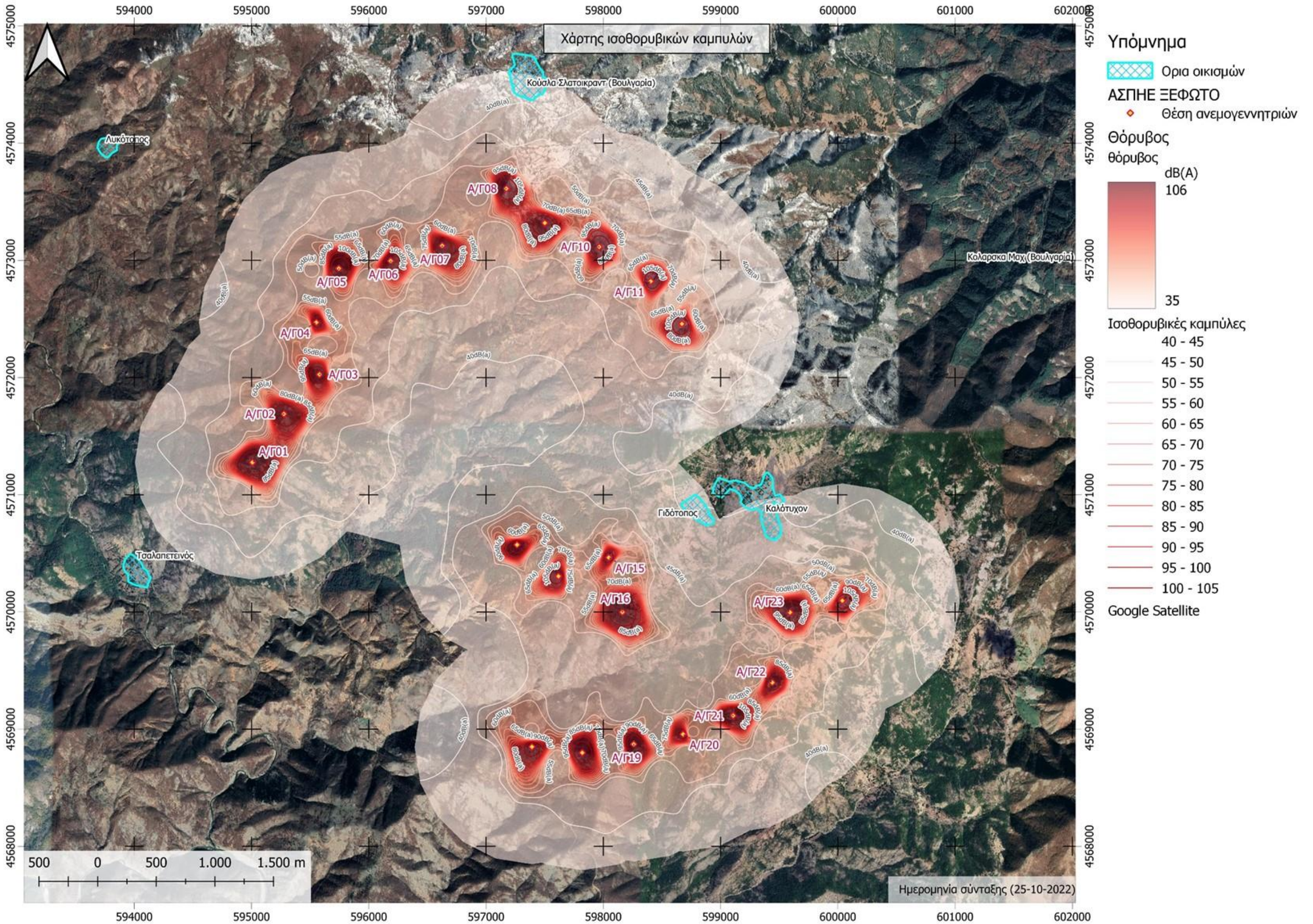
With regard to acoustic disturbance, and as stated in subsection 9.11 of this document (Noise Impacts), moderate impacts are expected from the operation of the site during the construction phase, but these will be temporary and fully reversible. On the other hand, during the operation of the project, the existing noise level in the area of the GESEPI site is not expected to increase significantly, since in the nearest settlements (Gidotopos and Kalotycho on Greek territory) and in the settlement of Kousla (on Bulgarian territory) the isothermal curves show that the noise levels are reduced below 40dB(A) at the boundaries of the settlements from the respective emission point (A/E) in the immediate area of installation and therefore the minimum level at the boundaries of the residential activities defined by the CEC is ensured.The minimum level of noise emission is determined in accordance with the provisions of the Decree No. 49828/08 (Government Gazette 2464B'/03.12.2008), which approved the EIA&RP for RES in Annex II, Table D.

In order to better capture the noise generated by the proposed project, a study was carried out to calculate and map the isodynamic curves of the noise generated on topographic relief.

Below are maps showing the isothermal curves around the installation sites of the W/Ts.

More information on the noise generated is given in subsection 9.11 herein.

Map 8: Equilibrium curves from the operation of the ASPHE.



On the other hand, as far as visual disturbance is concerned, in the nearest settlements:

- "Gidotopos" and "Kalotychion" which are located at a distance of 0.8 and 0.63km from W/Ts 15 and 23, respectively, it will be possible to view 20 W/Ts from W/Ts 24 of the W/F under study,
- "Tsalapeteinos" located at a distance of 1.28km from A/V 1, it will be possible to view 8 A/Vs throughout the settlement,
- "Lykotopos" located at a distance of 2.14km from A/V 5, it will be possible to view 19 A/Vs throughout the settlement.

Also from the settlements "Melitaina" (distance > 3.5 km. from the nearest wind turbine 21) and "Galini" (distance > 17 km. from the nearest wind turbine 19) it will not be possible to see the wind turbines of the ASPIE under study.

In the settlements of the wider area:

Table 16: Number of W/T sightings from the nearest to the most distant settlements in the wider area.

Settlements	Distance to nearest W/T (km)	Number of W/Ts that will be visible (part of the construction of the W/Ts)
Koundouros	> 2,9 from W/T 4	14 W/T in the whole settlement
Durgution	> 3 from W/T 1	15 W/T in the whole settlement
Kottani	> 3,9 from the W/T 5	14 W/T in the whole settlement
Signal	> 7 from W/T 20	3 in the whole settlement
Tangayon	> 7 from W/T 18	from 9 to 10 W/T in sections
Polyarnon	> 7 from W/T 17	15 W/T in the whole settlement
Extreme	> 7,2 from W/T 1	15 W/T in the whole settlement
Medusa	> 8 from W/T 5	from 13 to 16 W/T in sections
Polyskeion	> 8 from W/T 17	10 W/T in the whole settlement
Potamochorion	> 8 from W/T 1	from 10 to 13 W/T in sections
Satrai	> 8 from W/T 1	from 7 to 14 W/T in sections
Tricorfon	> 8 from W/T 19	2 W/T in the whole settlement
Cave	> 10 from W/T 20	3 W/T in the whole settlement
Recreation	> 10 from W/T 1	from 11 to 13 W/T in sections
Mosque	> 10 from W/T 1	from 8 to 9 W/T in sections
Thermal springs	> 11 from W/T 4	16 W/T in the whole settlement
Smokestack	> 11 from W/T 1	16 W/T in the whole settlement
Echinus	> 13 from W/T 1	From 1 to 3 in some parts of the settlement. In most of the settlement it will not be possible to see any W/T.
Donaris	> 13 from W/T 5	20 W/T in the whole settlement

Settlements	Distance to nearest W/T (km)	Number of W/Ts that will be visible (part of the construction of the W/Ts)
I remember	> 13,5 from W/T 4	16 to 17 W/T in the whole settlement
Equestrian	> 13,5 from W/T 17	from 9 to 10 W/T in sections
You are I am.	> 15 from W/T 5	from 8 to 13 W/T in sections

On the other hand, in the Bulgarian territory in the nearest settlements:

- "Kushla" (Kushla) located at a distance of 0.77km from A/V 8, it will be possible to view 18 A/Vs throughout the settlement,

In the settlements of the wider area of the Bulgarian territory:

Table 17Number of W/T sightings from the nearest to the most distant settlements in the wider area within Bulgaria.

Settlements	Distance to nearest W/T (km)	Number of W/Ts that will be visible (part of the construction of the W/Ts)
Kolarska mah	> 3 km from W/T 12	0
Kunjovci	> 3,5 km from the W/T 12	0
Dzangalobasm	> 3,9 km from the W/T 12	1 in part of the settlement
Drangovo	> 5 km from W/T 12	0
Chakalarovo	> 9 km from W/T 24	0
Gorsky Izvor	> 4 km from W/T 8	1 W/T in the whole settlement

Also from the city of "Zlatograd" which is located at a distance of about 9 km from W/T 8, it will be possible to see only 1 W/T almost all over the city except in some places where 2 to 3 W/T will be visible.

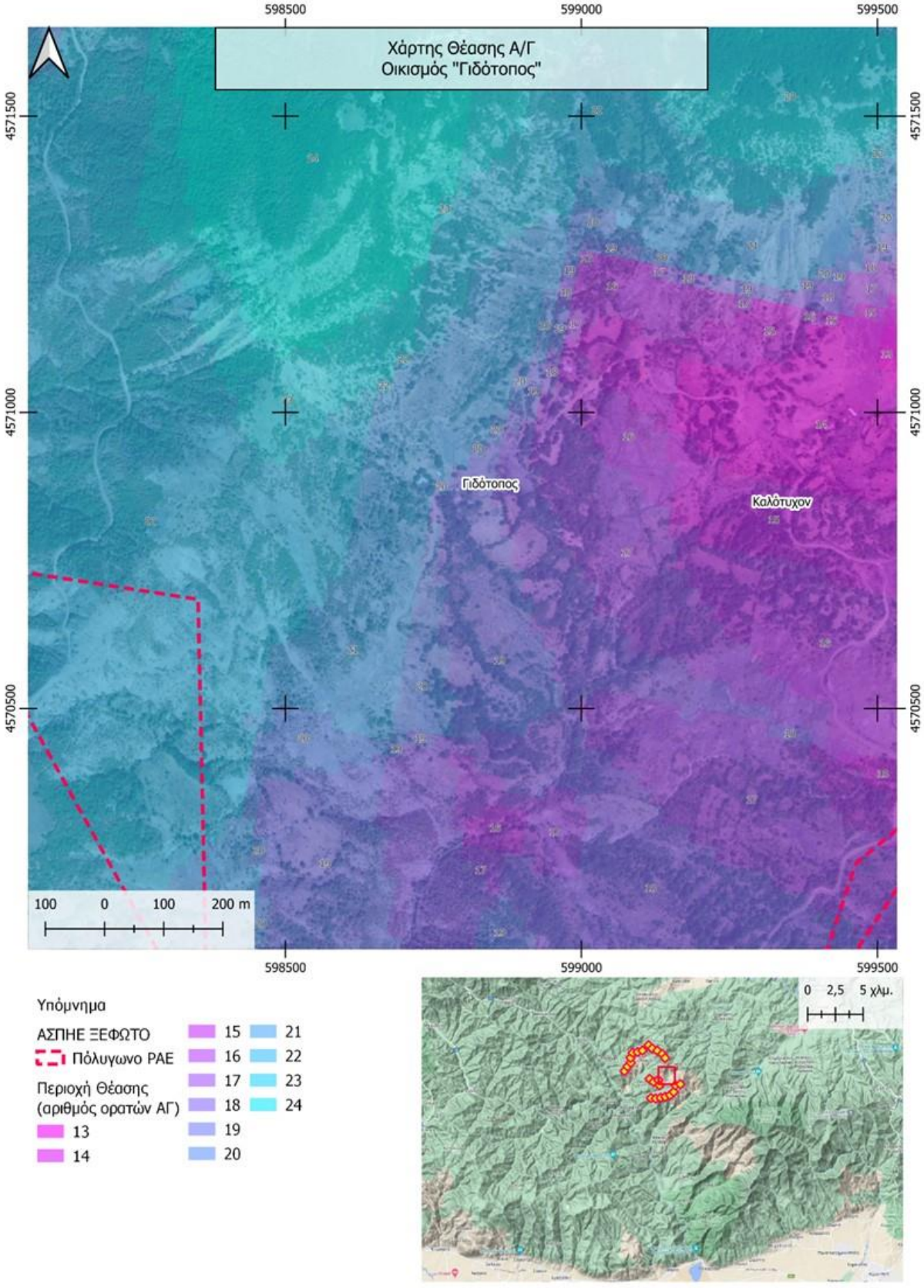
It should be noted at this point that at distances >5 km the relative size of the W/T pattern in relation to the field of view of the human eye is decreasing to the extent that the visual disturbance is much more limited (see also subsection 9.3.2).

With regard to shading, if the distances of the ESDP from the nearest settlements are taken into account (see section 5.1 below), clearly no such issue arises. On the other hand, the paint of the wind turbines (pillar and rotor) will be "absorbent" and therefore no reflections of incident light will be generated. In any case, the entire structures of the wind turbines will not be visible due to the combination of the presence of natural obstacles (natural vegetation) and the morphology - the slopes of the terrain.

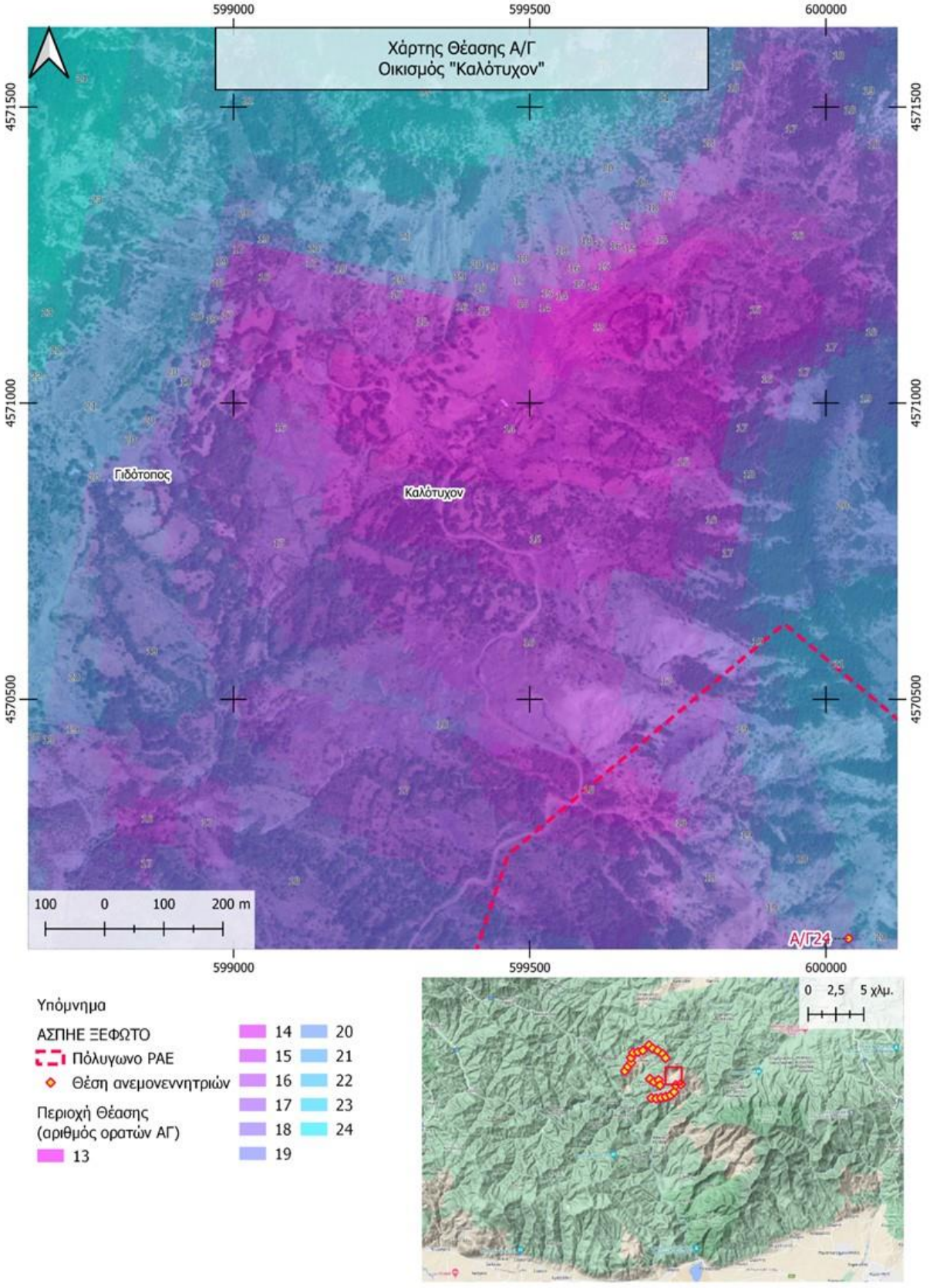
In conclusion, no cumulative visual impact is identified considering that there are no other similar projects in the area.

The following maps show the viewing areas of the project's A/Vs for each settlement in the order presented above up to a distance of 8 km. The sighting maps for all settlements are provided in the digital version of the EIS (CD).

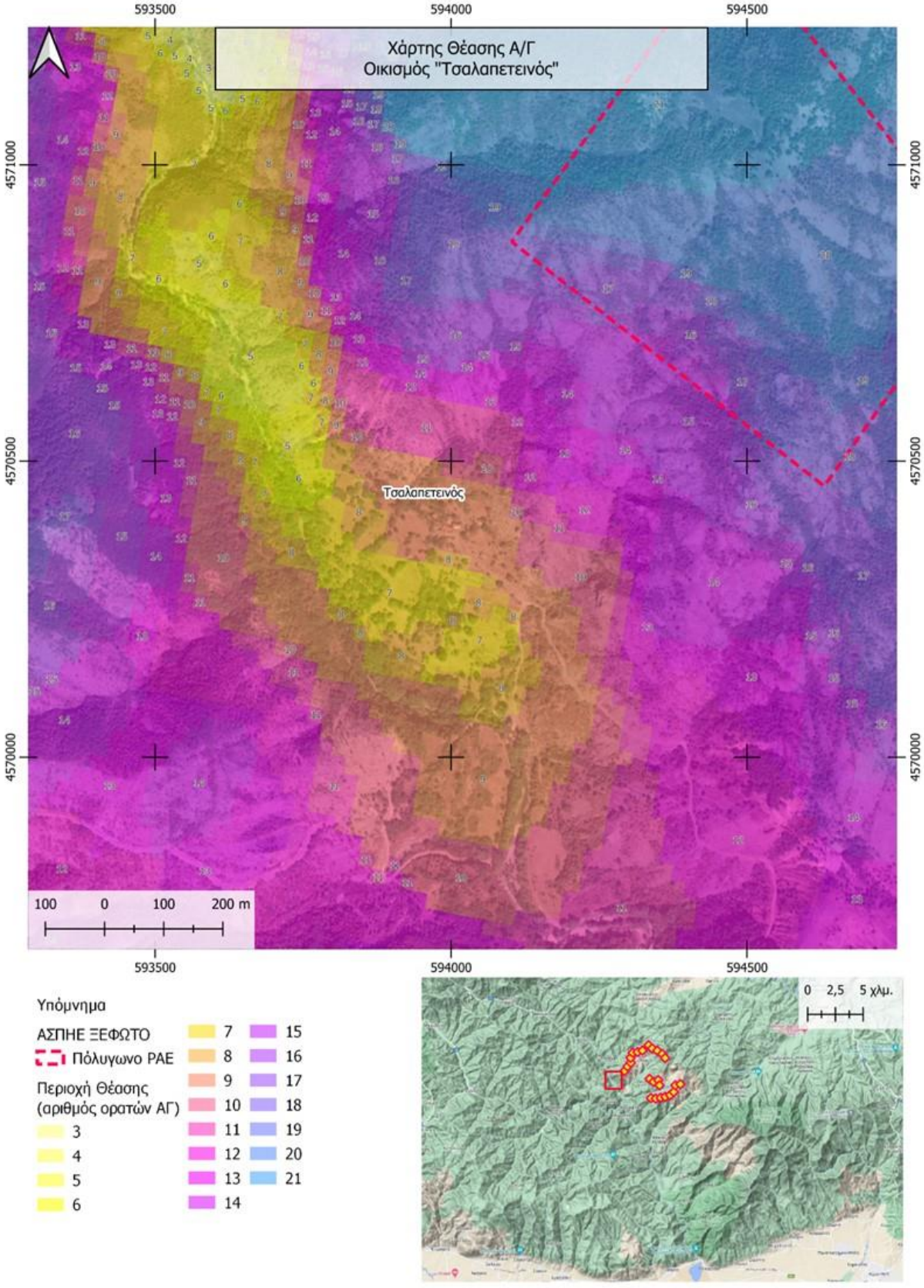
Map 9: Sighting areas of the settlement Gidotopo



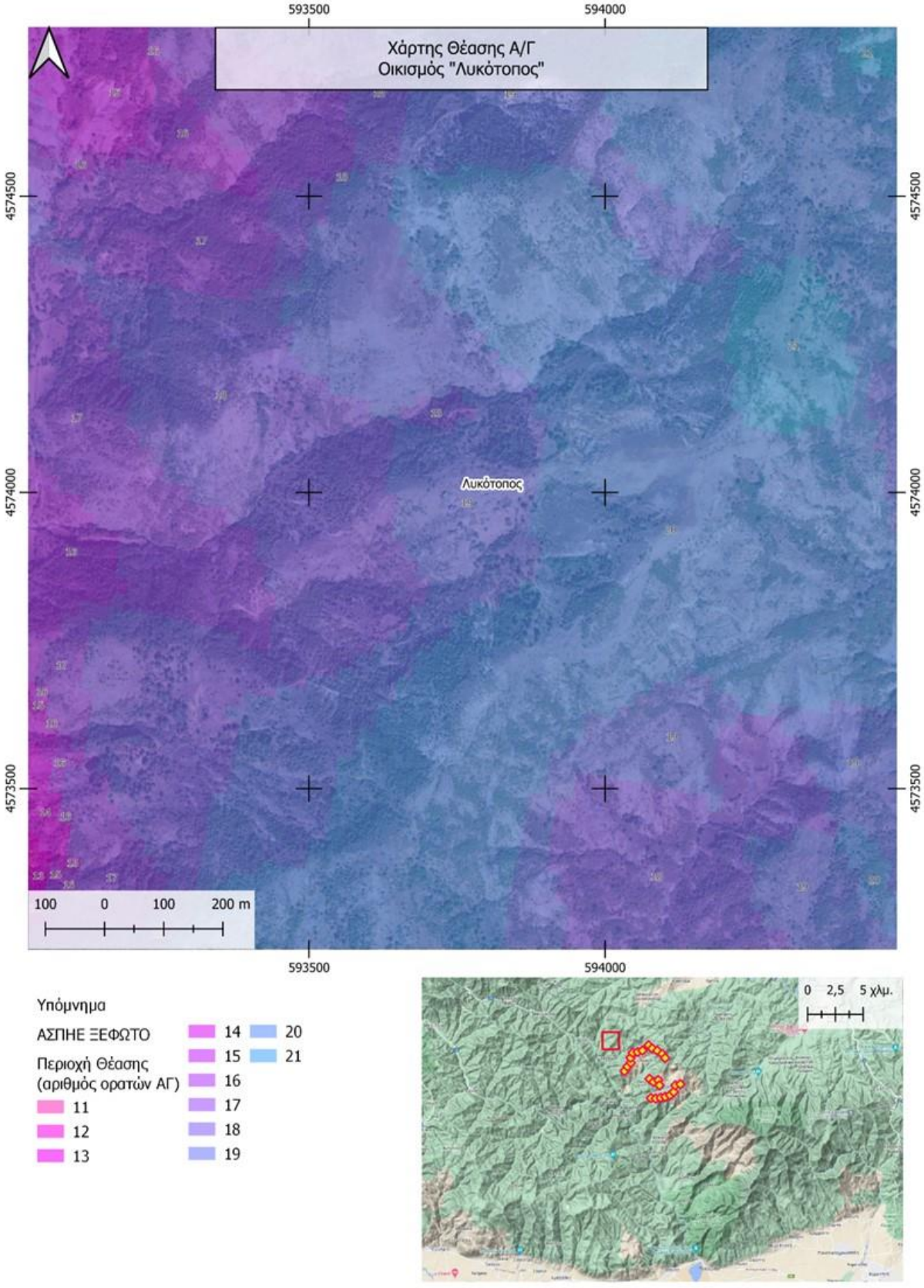
Map 10: Sighting areas of W/T in the settlement of Kalotycho



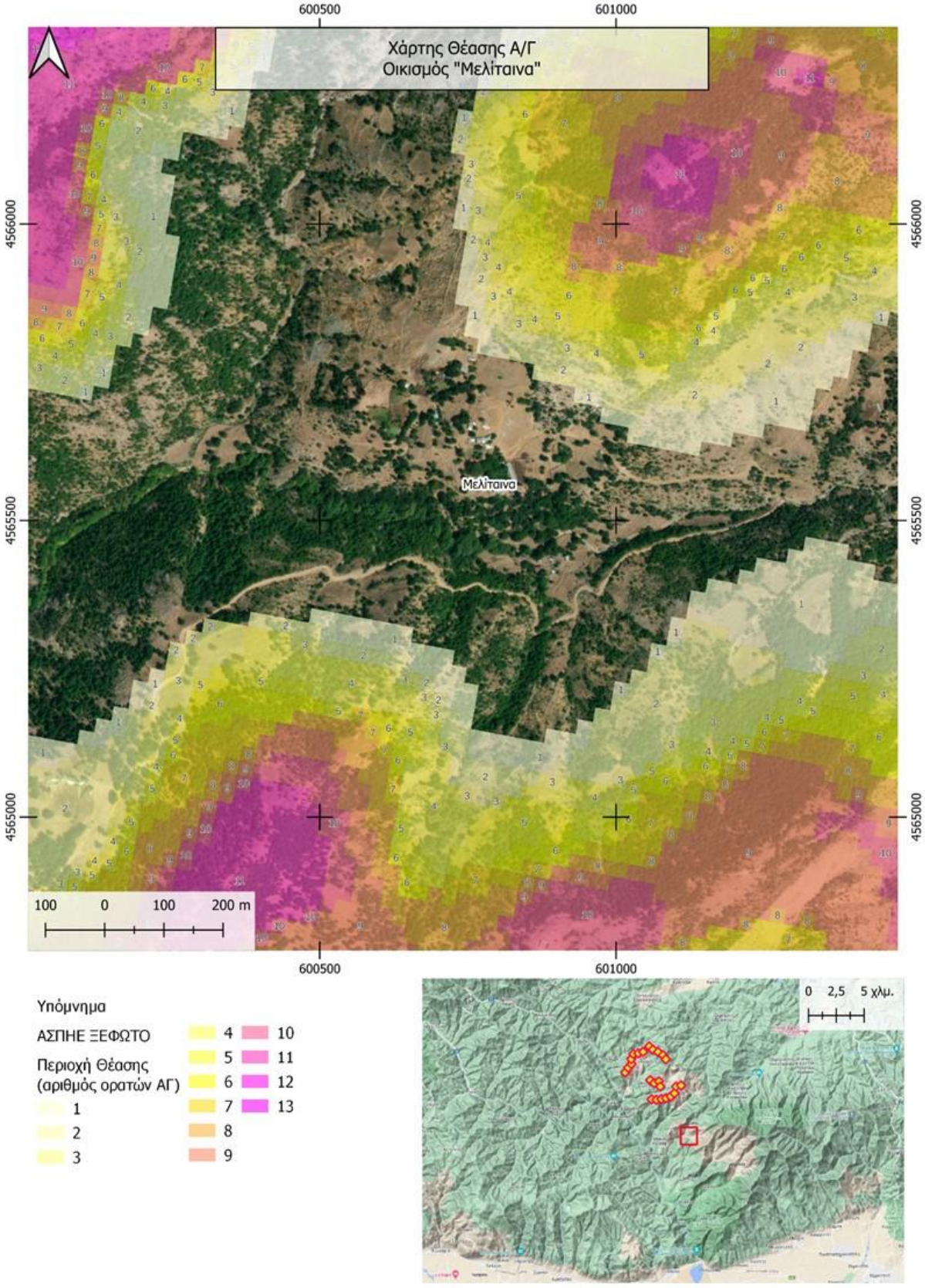
Map 11: Sighting areas of W/T in the settlement of Tsalapeteino



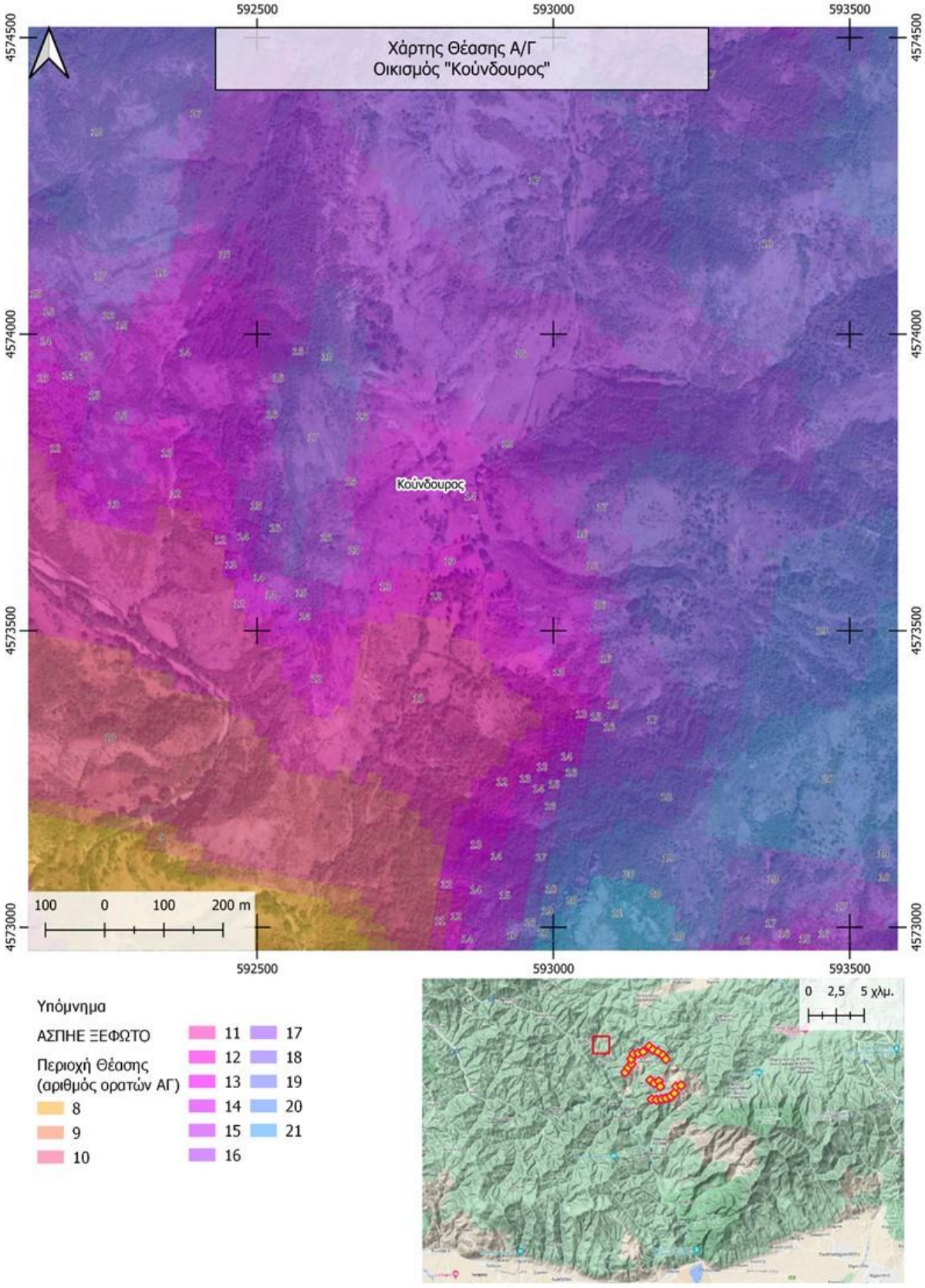
Map 12: Sighting areas of the W/T in the settlement of Lykotopo



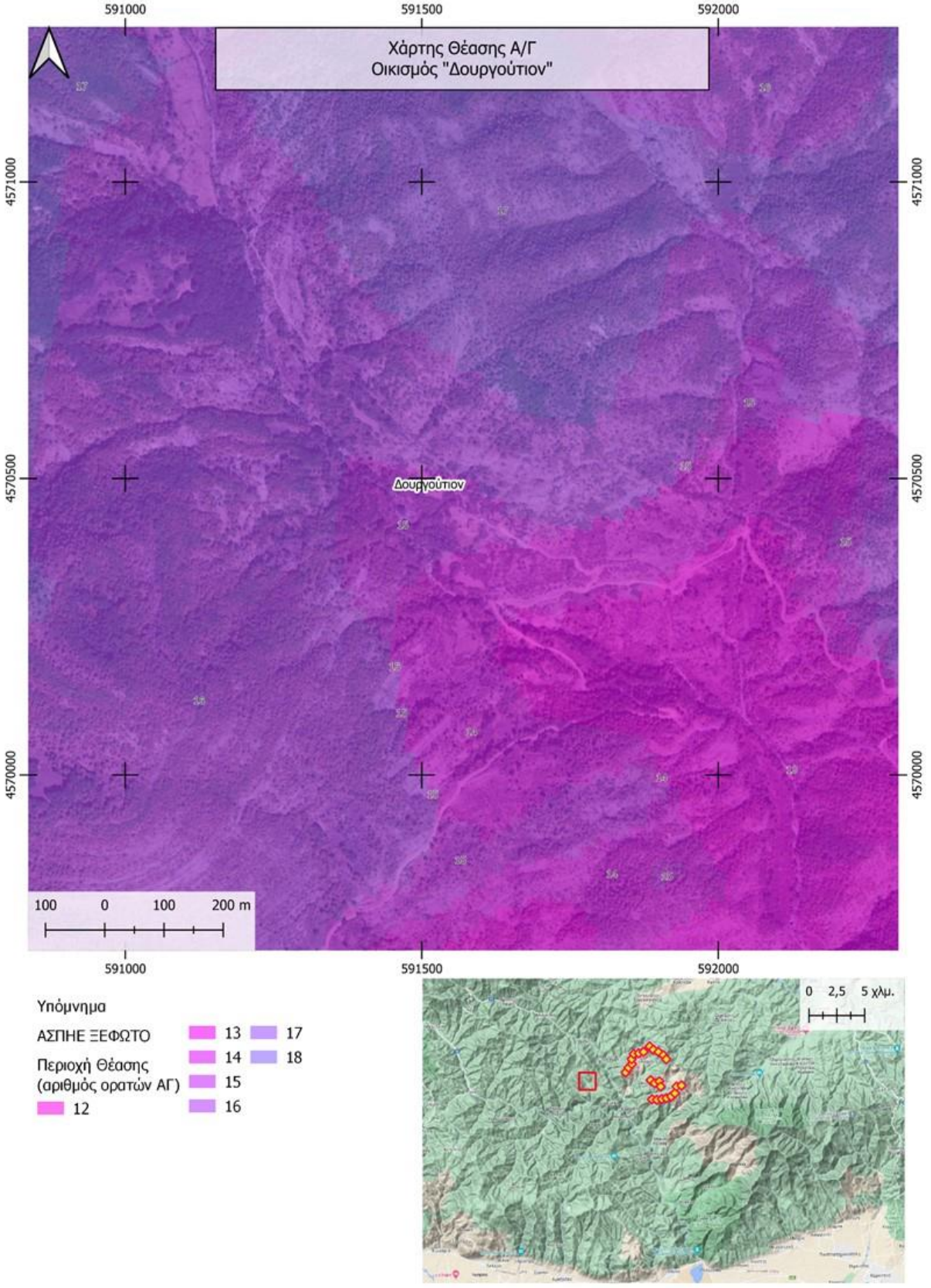
Map 13: Sighting areas of W/T in the settlement of Melitaina



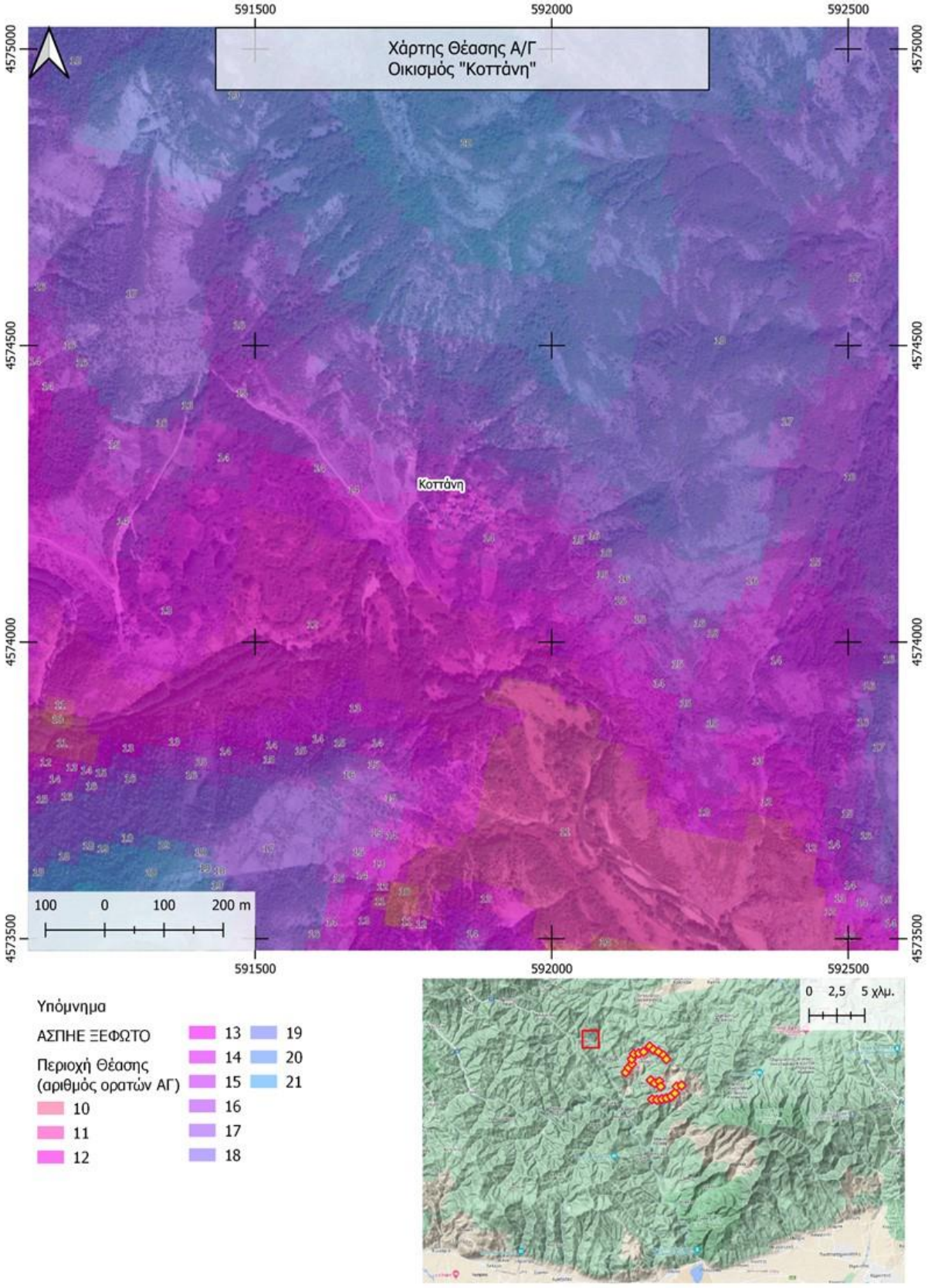
Map 14: Viewing areas of W/T in the settlement of Koundouros



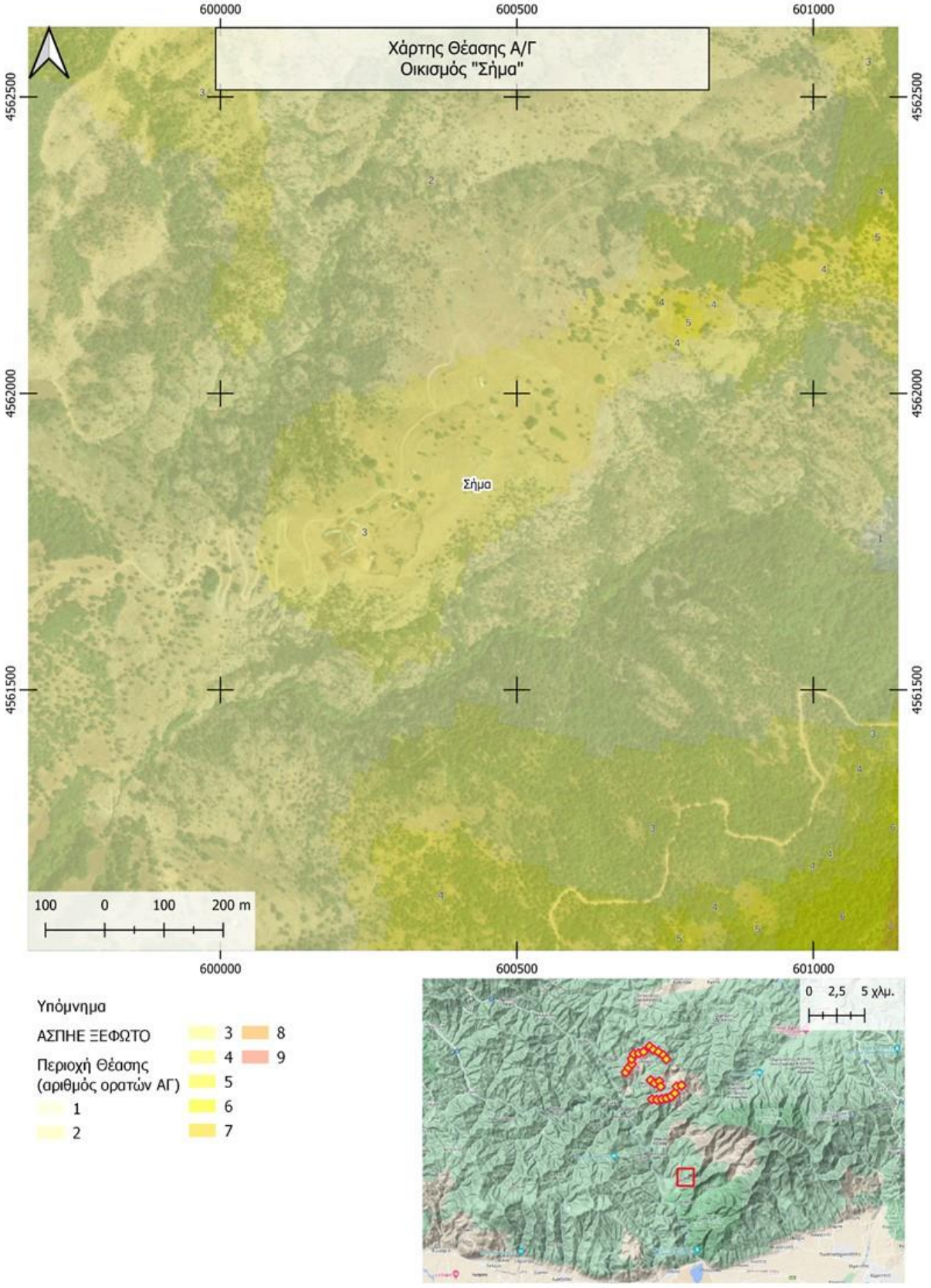
Map 15: Sighting areas of W/T in the settlement of Durgouti



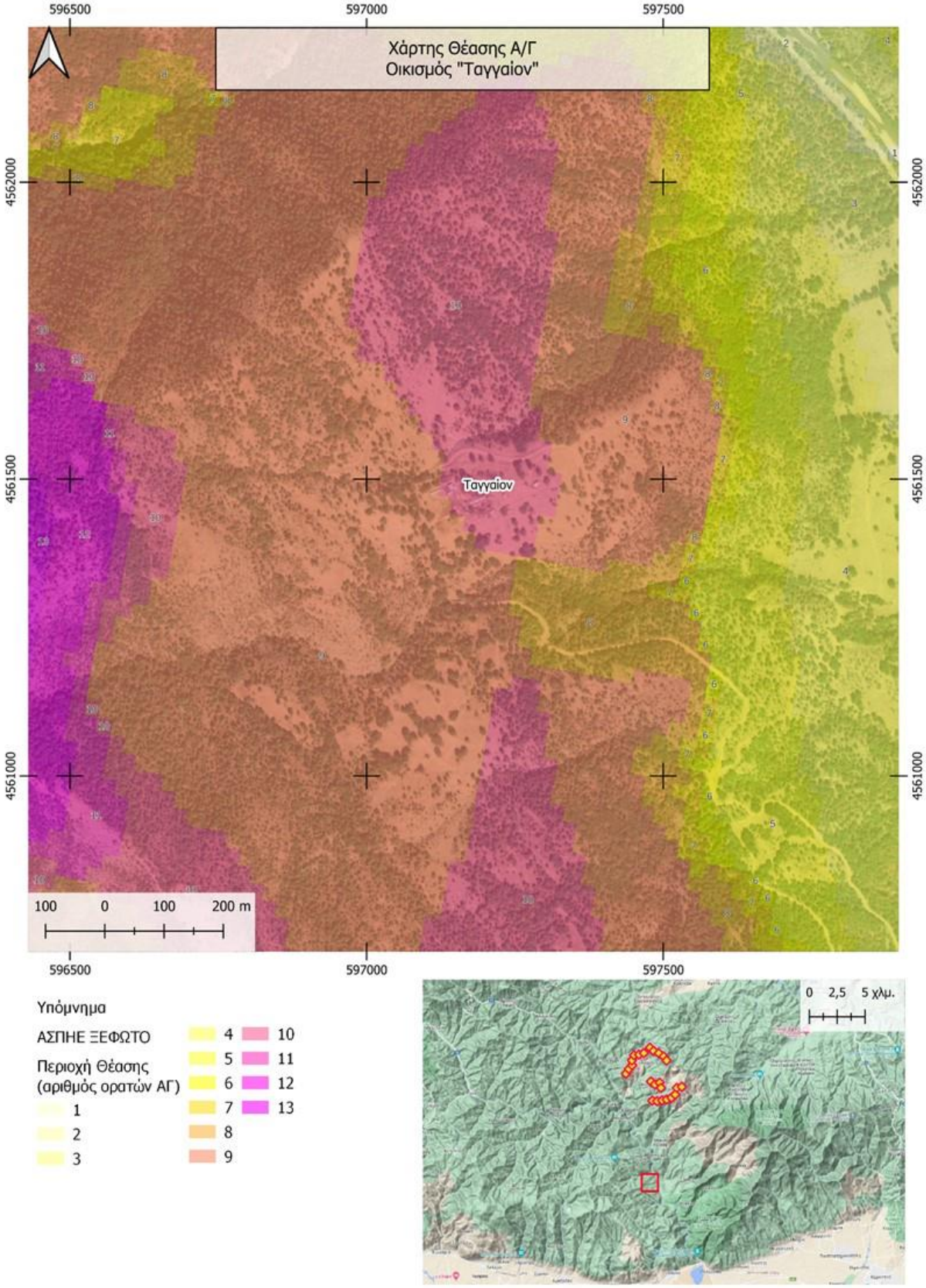
Map 16: Sighting areas of W/T in the settlement of Kottani



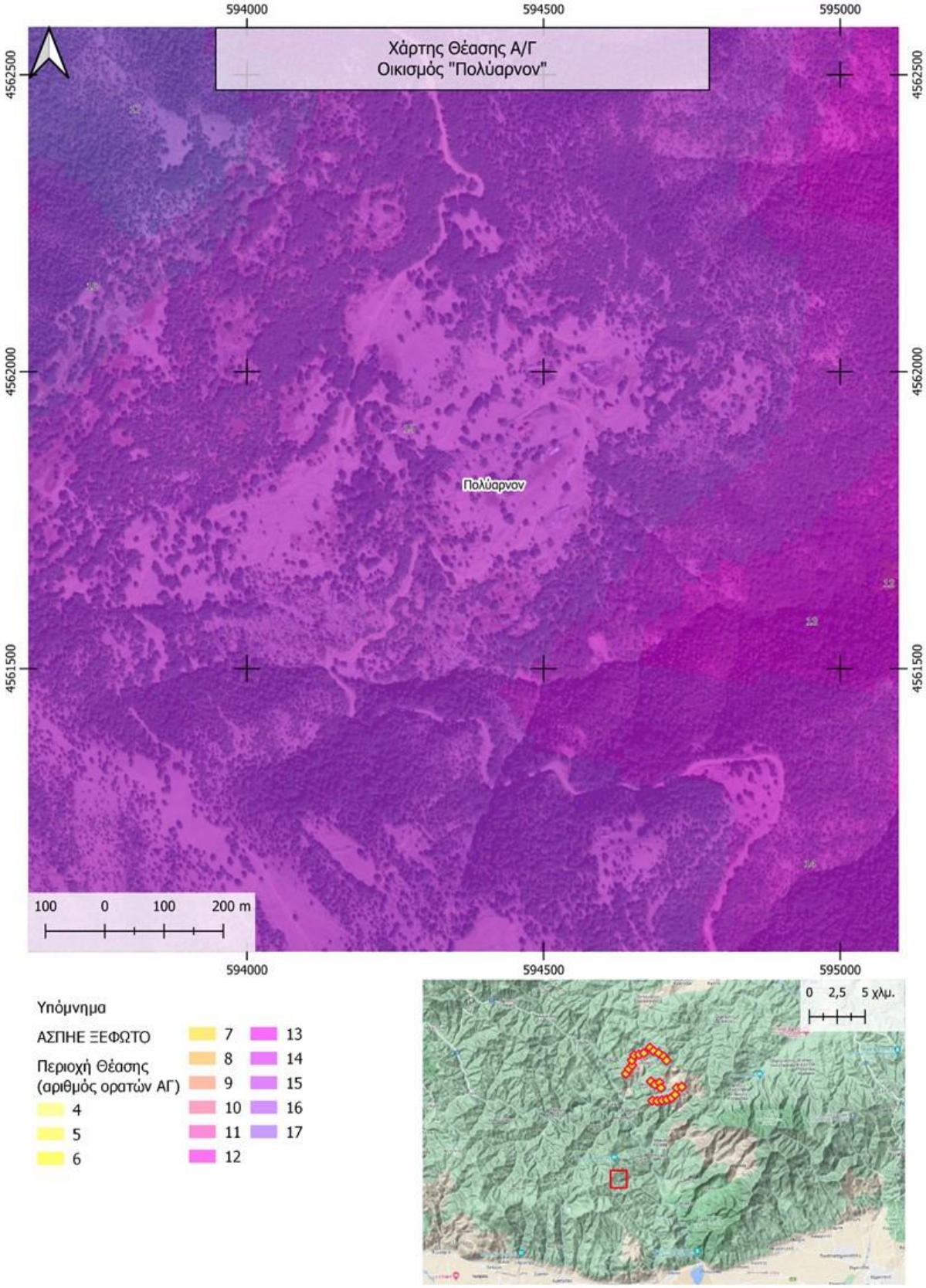
Map 17: Areas of sighting of W/T in the settlement of Sima



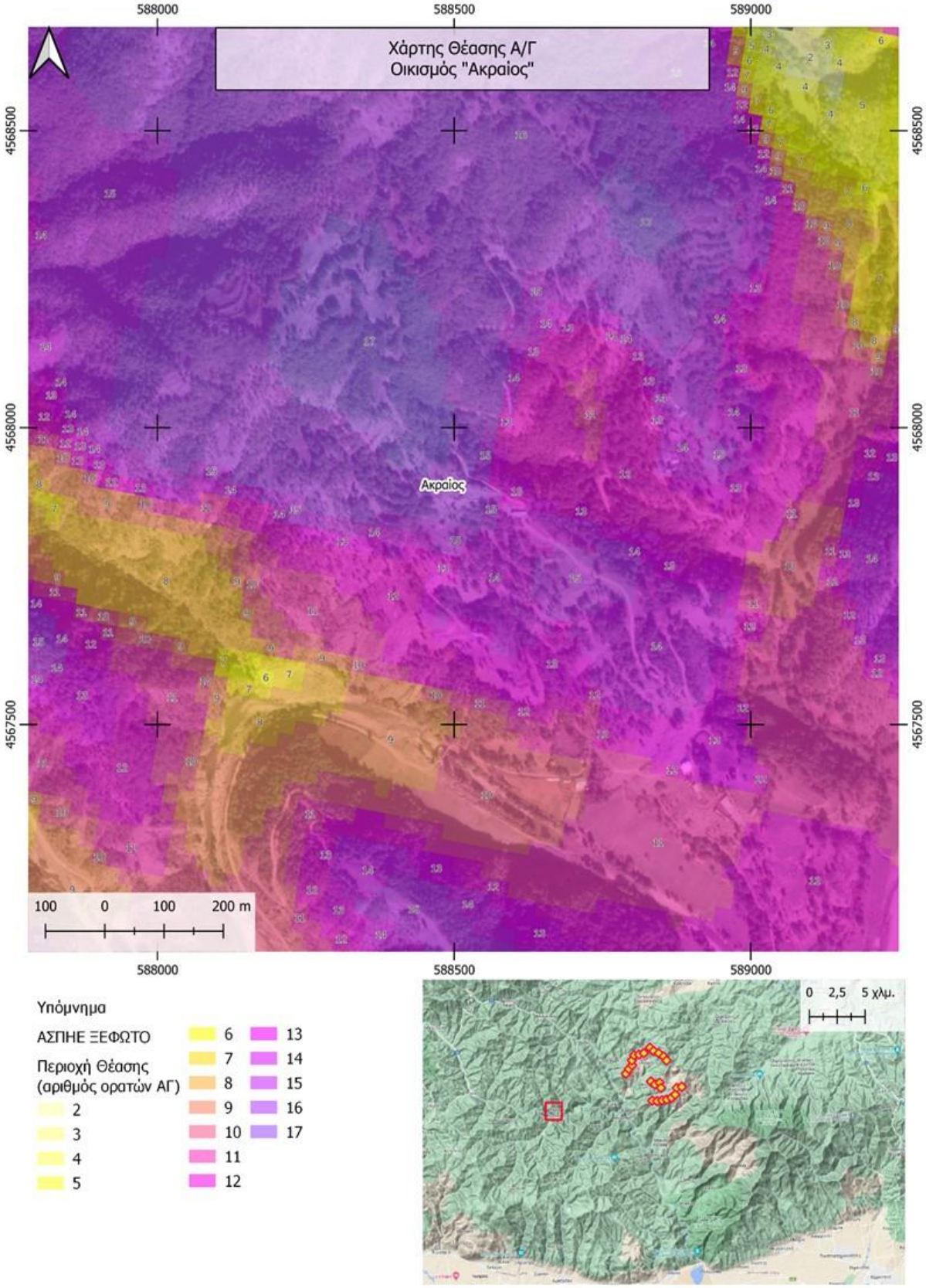
Map 18: Areas of sighting of A/V in the settlement of Tangaio



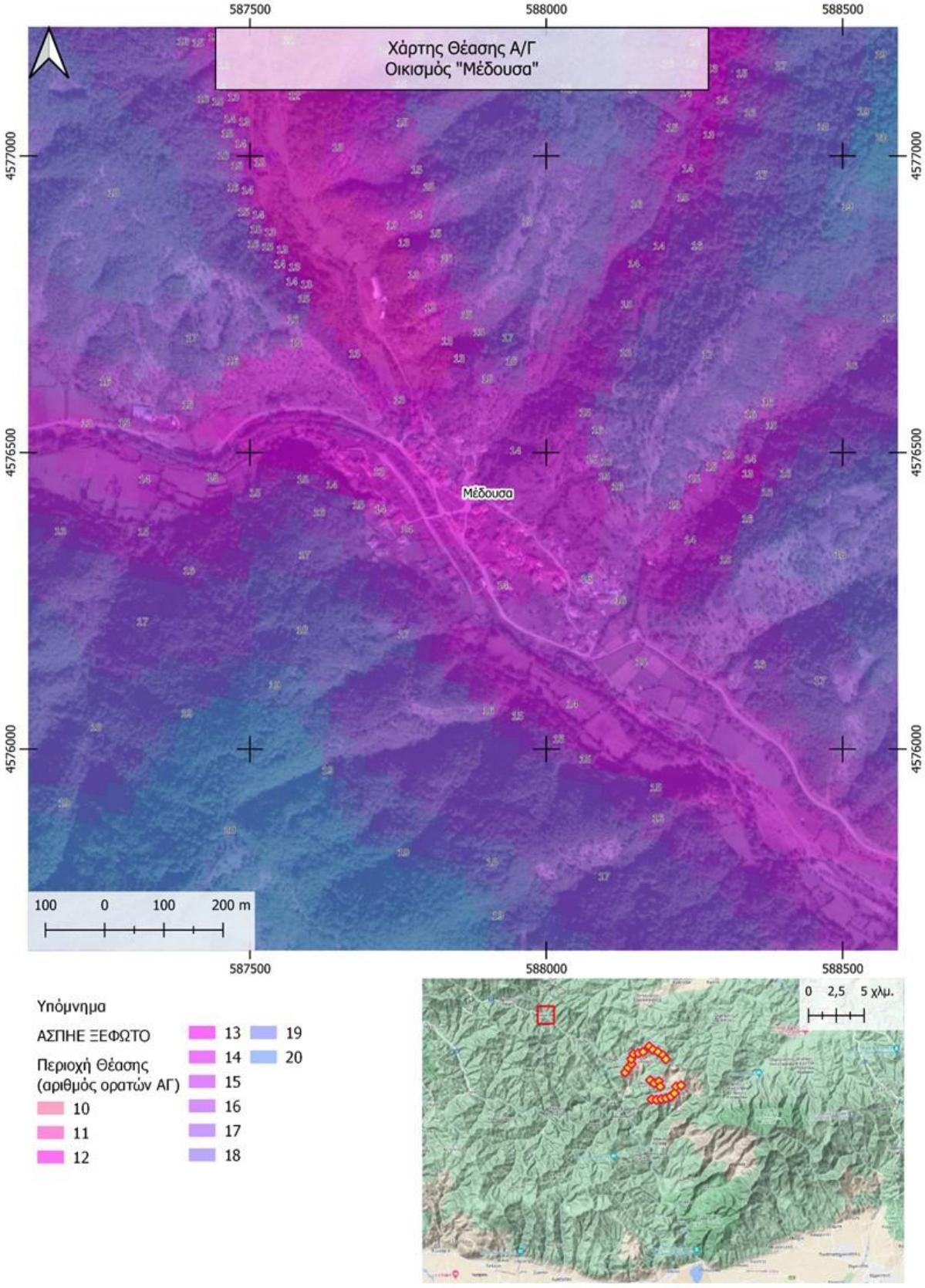
Map 19: Sighting areas of W/T in the settlement of Polyarno



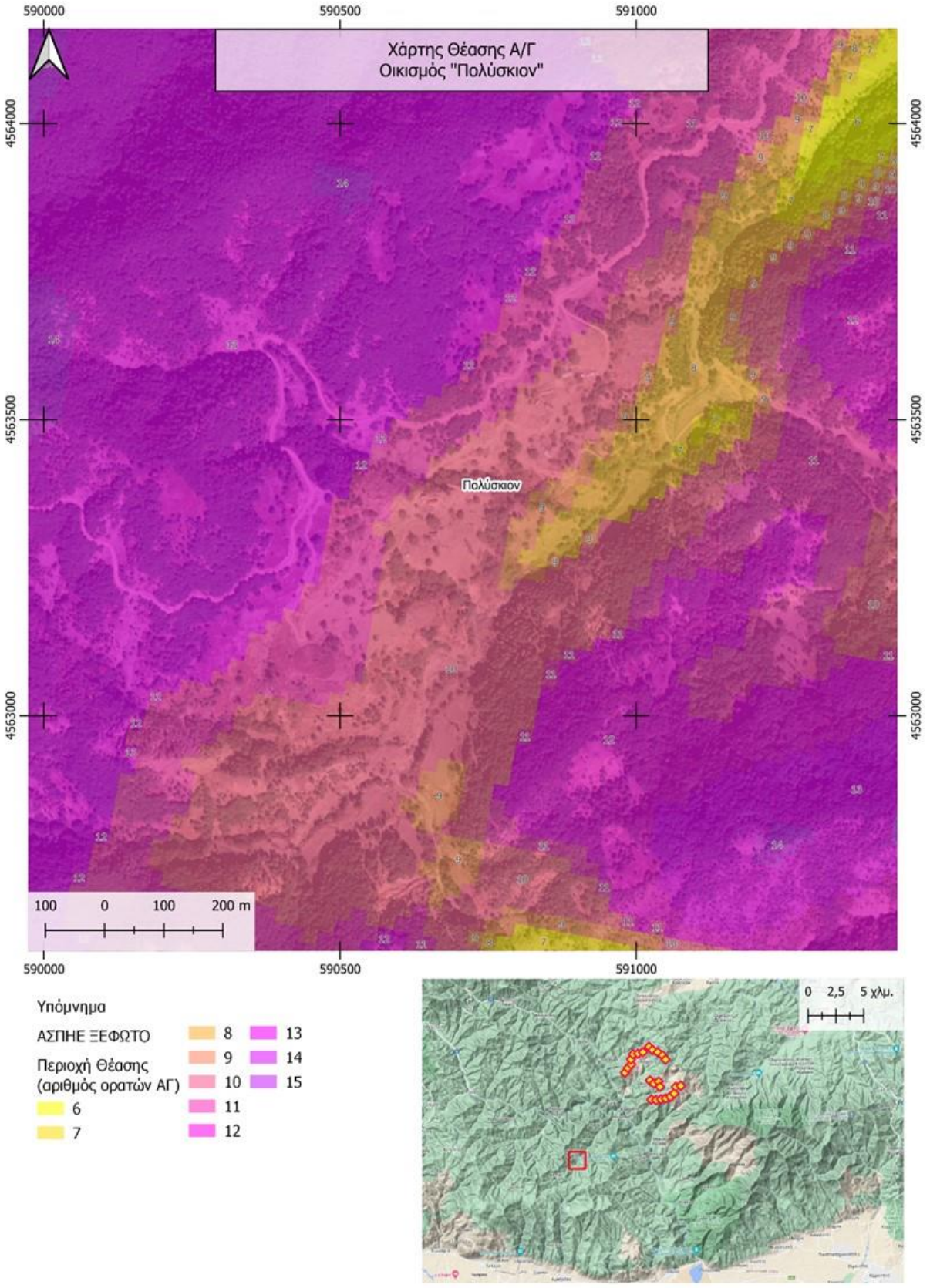
Map 20: Areas of sighting of W/T in the settlement of Akraio



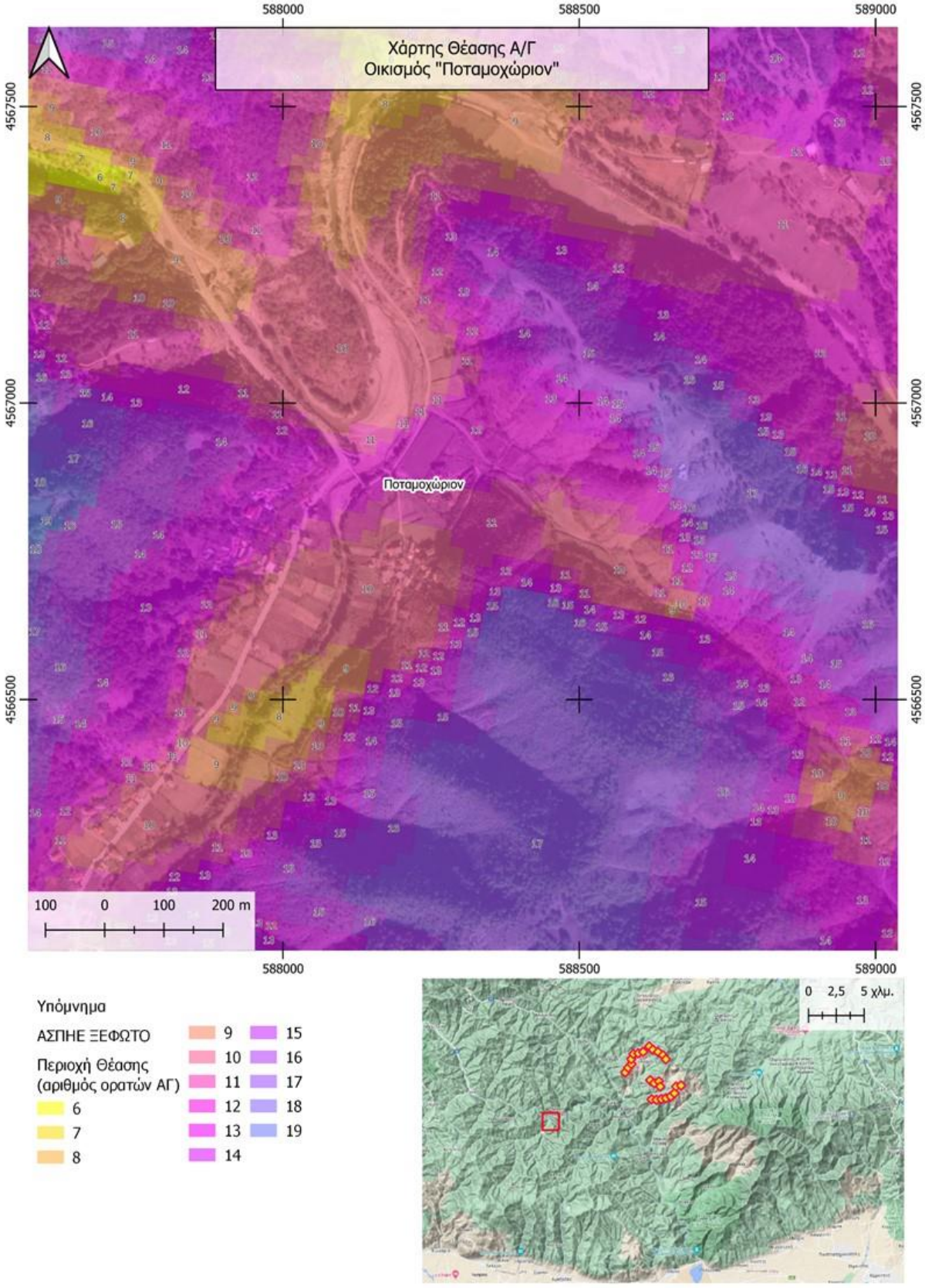
Map 21: Sighting areas of the W/T in the settlement of Medousa



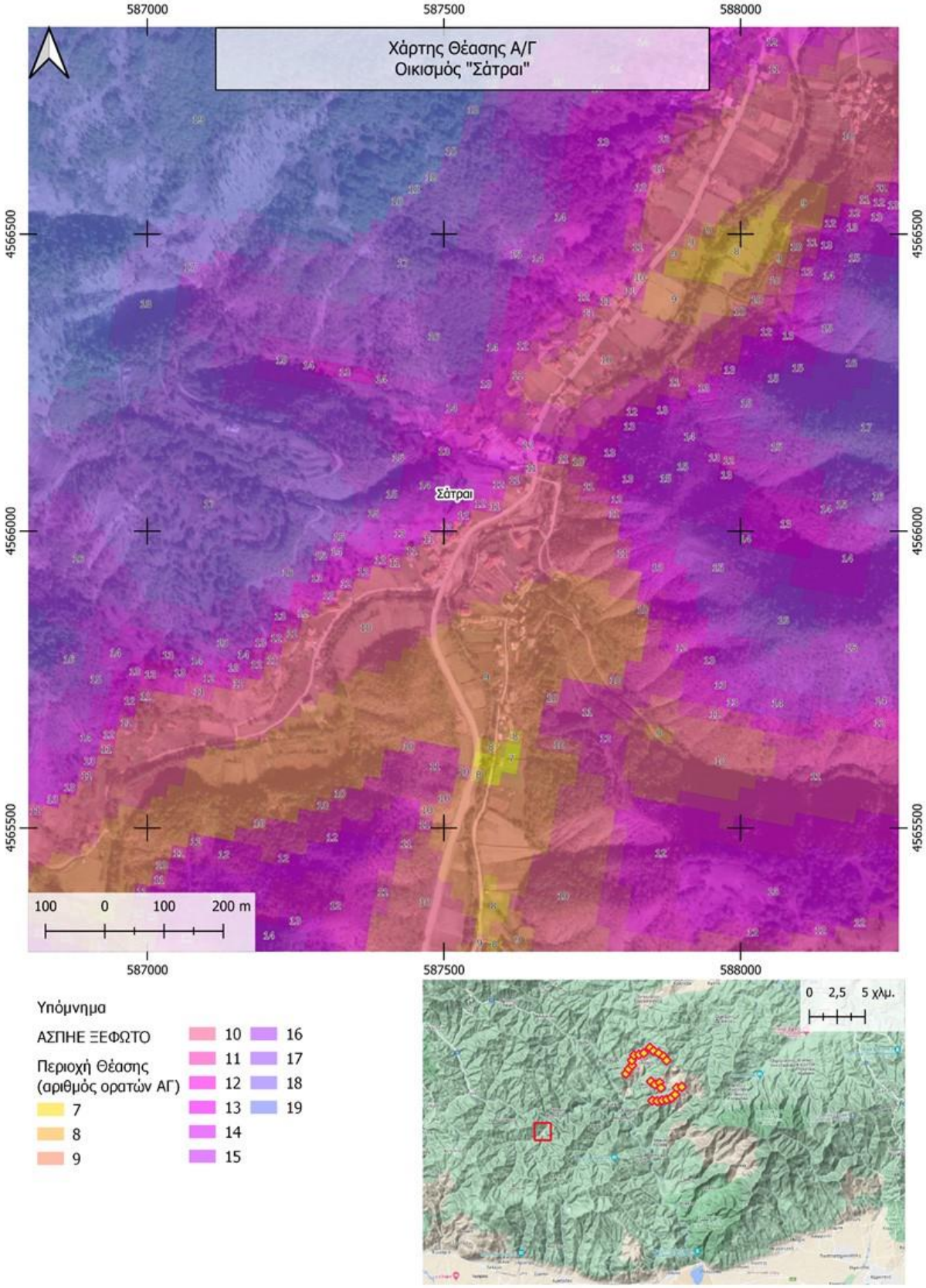
Map 22: Sighting areas of W/T in the settlement of Polyskios



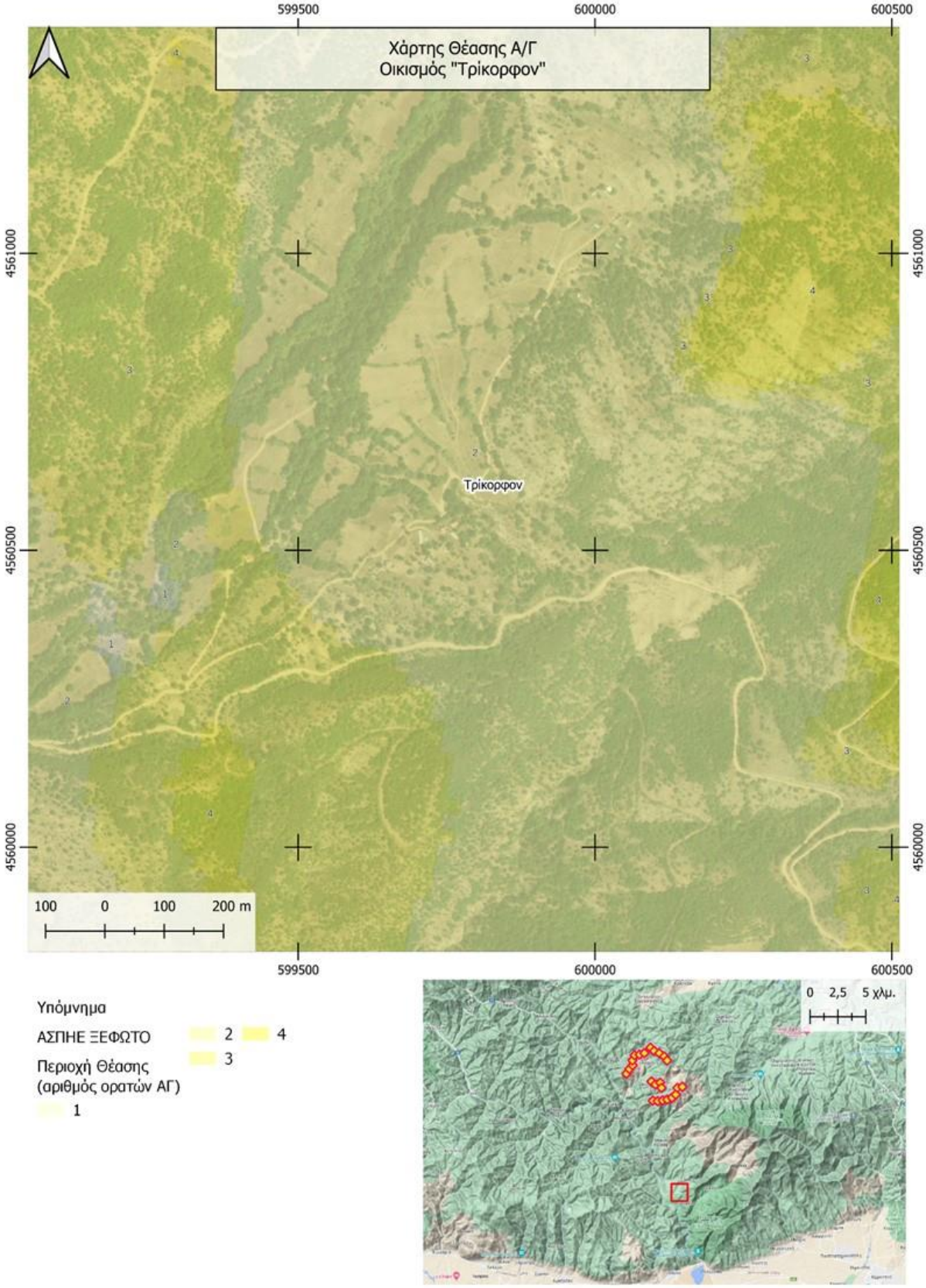
Map 23: Sighting areas of W/T in the settlement of Potamochori



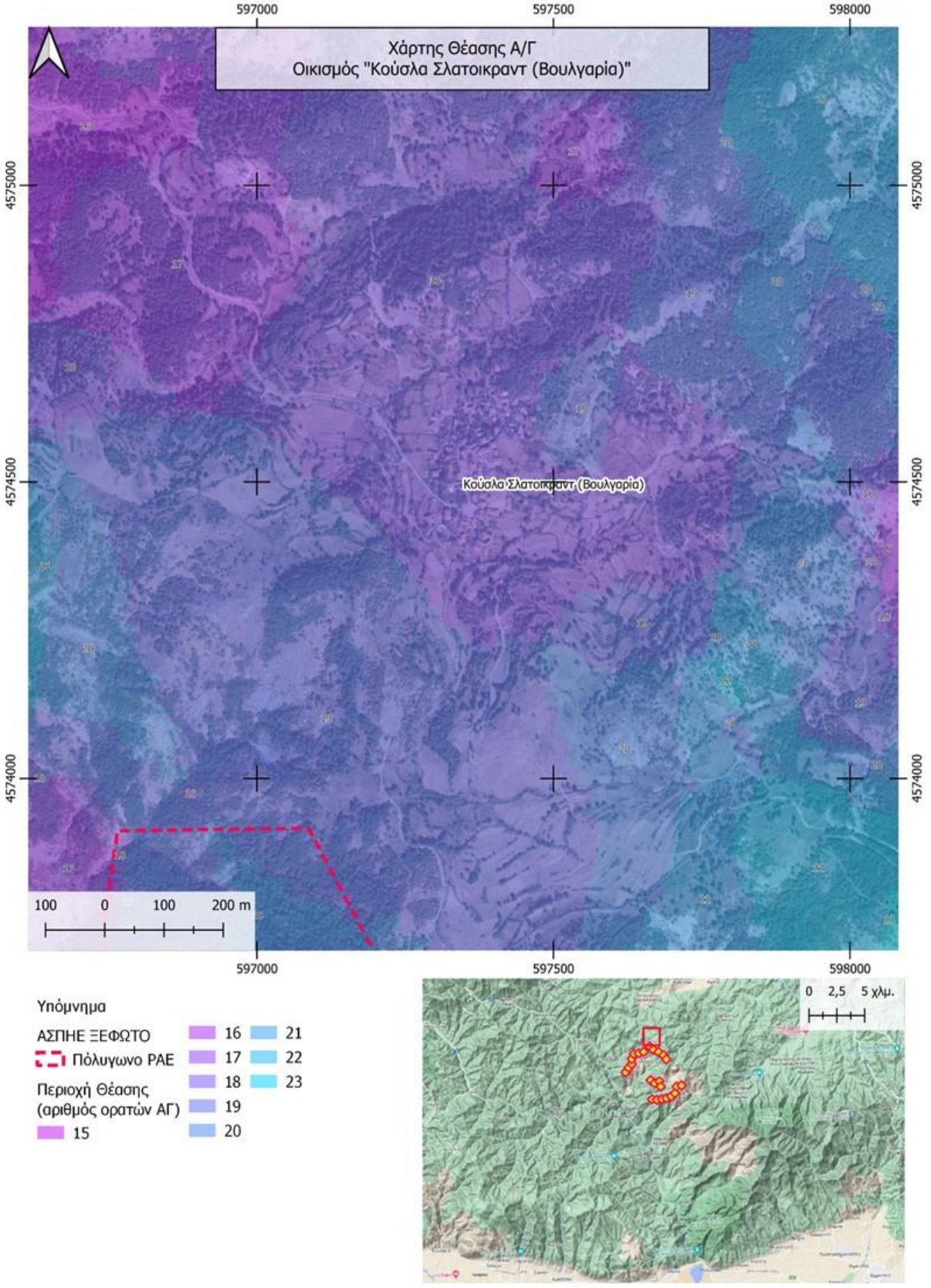
Map 24: Sighting areas of W/T in the settlement of Satres



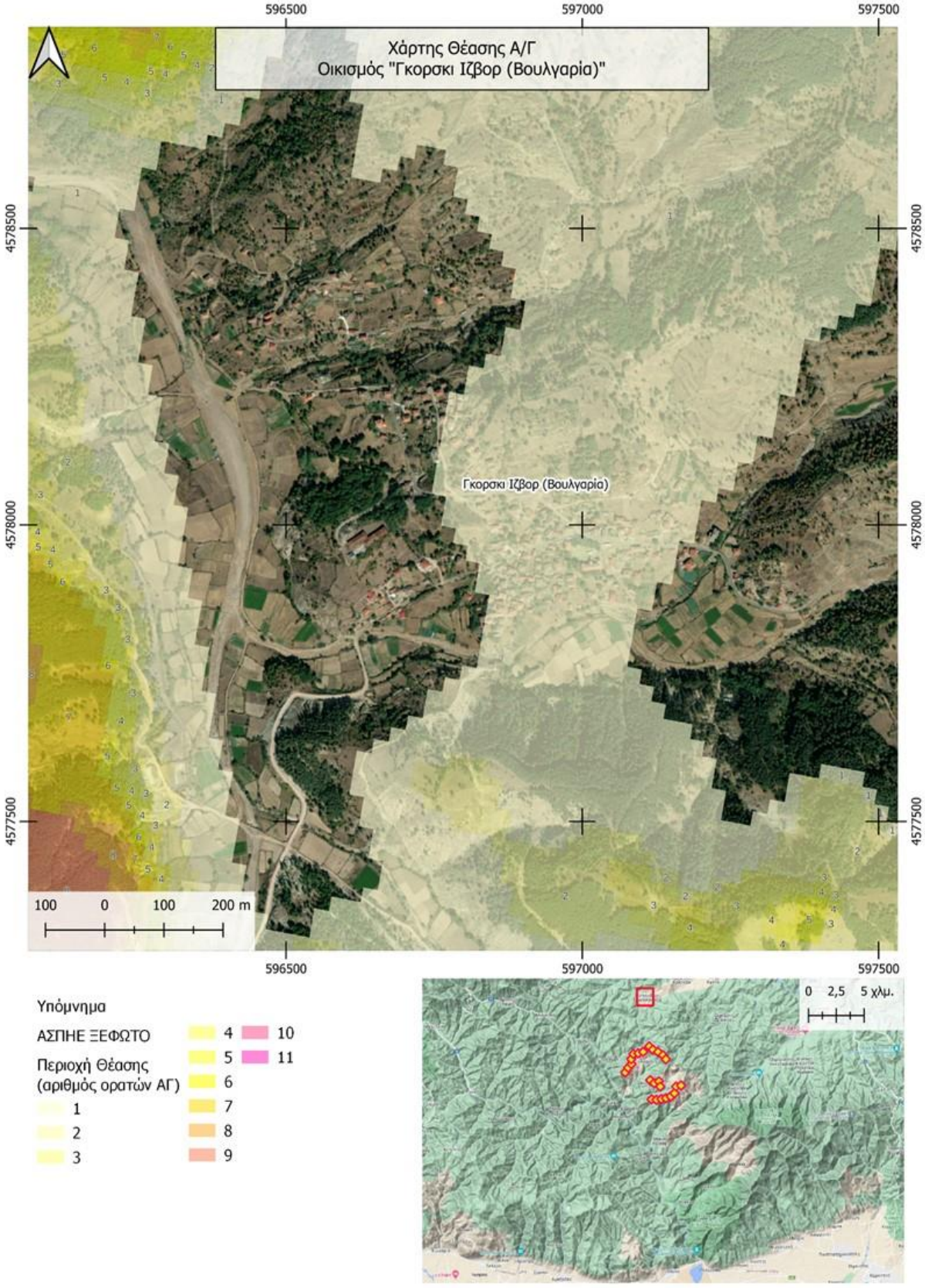
Map 25: Sighting areas of W/T in the settlement of Trikorfo



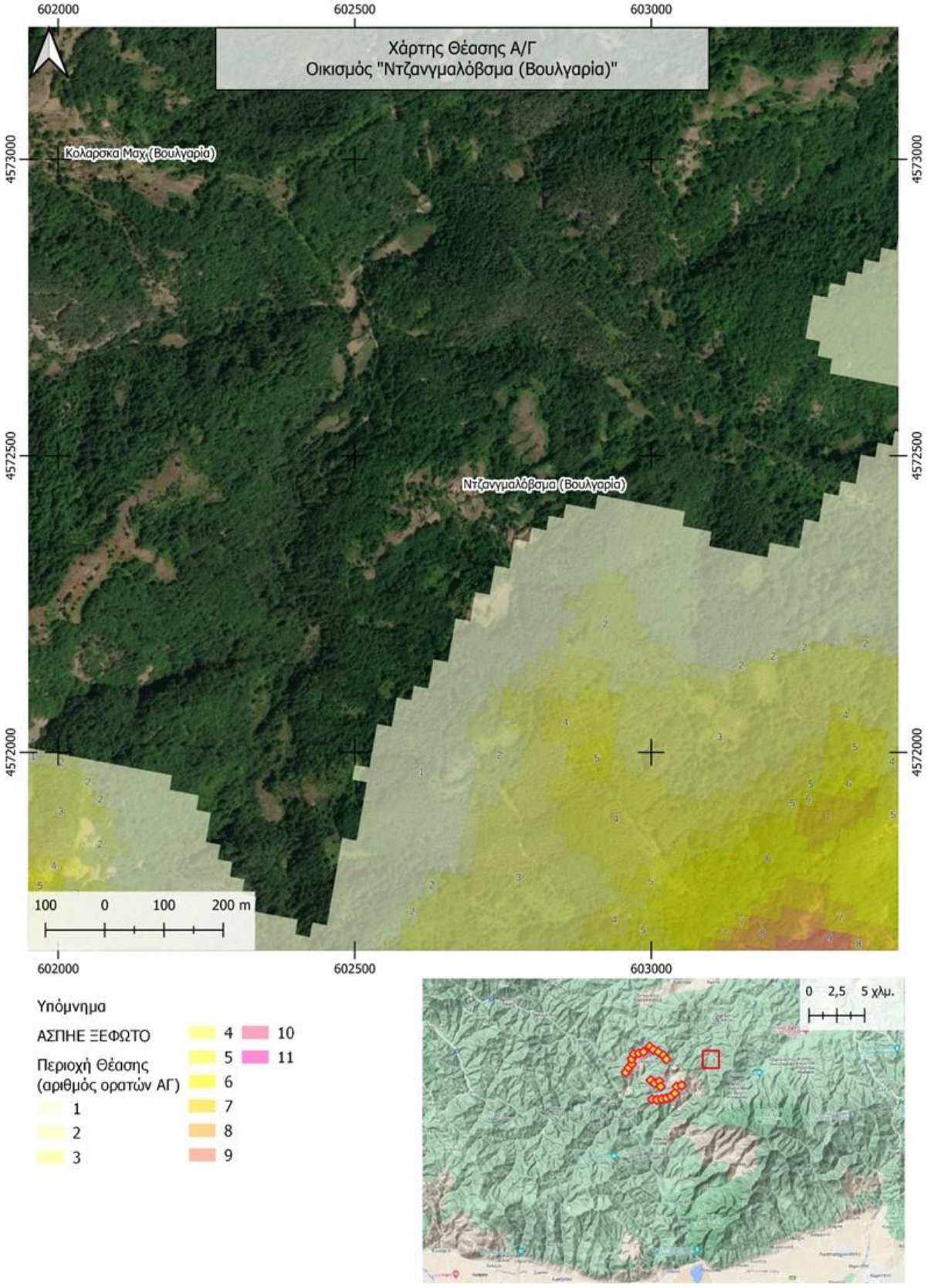
Map 26: Sighting areas of the W/T in the settlement of Kusla, Bulgaria



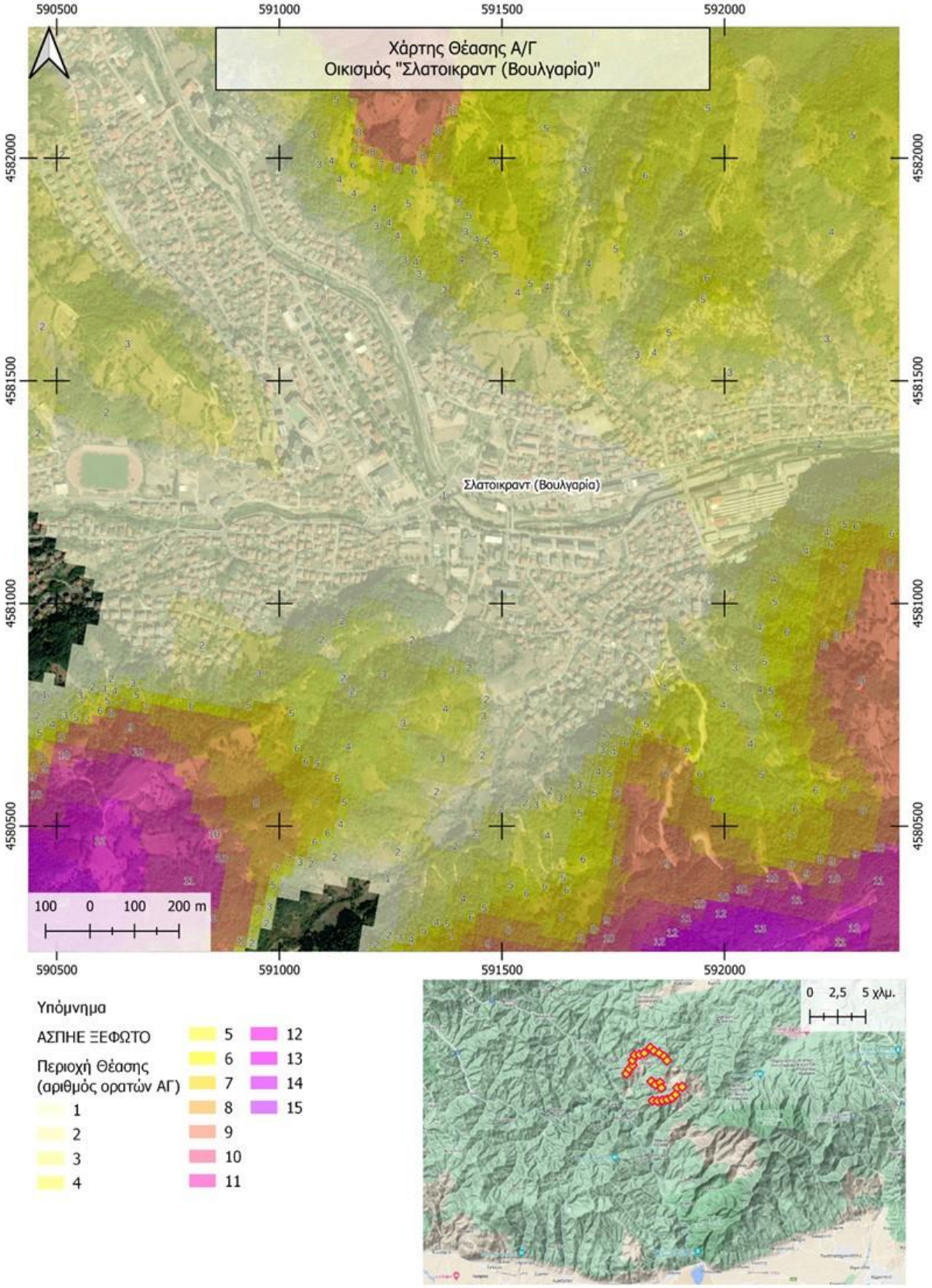
Map 27: Sighting areas of W/T in the settlement of Gorski Izvor, Bulgaria



Map 28: Sighting areas of W/T in the settlement of Dzangalovsma, Bulgaria



Map 29: Sighting areas of W/T in the city of Zlatograd, Bulgaria



The fact that, apart from the natural environment of the area itself, no other points of particular interest (archaeological sites and monuments, traditional and significant settlements, sites of special natural beauty, etc.) are identified negates the impact of the cumulative effect of the ESDP in the wider area. The size and location of the project under study in an area where there is no concentration of similar projects makes a significant contribution to this.

In addition, as regards the protected object of the Natura 2000 SPA area "Komsatou Valley" with code GR1130012, within which the project will be installed, there is no issue of potential cumulative impact because there are no corresponding infrastructures in the wider area. On the other hand, as the boundaries (along the Greek-Bulgarian border) of the SCI Natura 2000 site 'Rodopi - Iztochni' (code BG0001032) are located to the north of the site of the ASPEE installation. Species of interest and other biota and habitat types are discussed in detail in the Special Ecological Assessment Study (SEA) attached to the relevant Annex to this document and in subsequent chapters. In any case, the environmental impacts are dealt with in their entirety in Chapter 9 of this report.

At this point it should be noted that the approach of the present study regarding the construction and operation of this RES was made after taking into account all the relevant provisions and guidelines of the general and specific plans in terms of compatibility and are presented in the next chapter.

The project under study is located within the protected area of the Natura 2000 network Z.E.P. GR1130012, as well as within the SPA GR009. It is also adjacent to the Bulgarian Natura 2000 network protected area BG0001032, and is located more than 18 km from the nearest SPA GR1130010, whose protected area is the bird fauna. (as regards the SPA and SPA) and the habitat types listed in Annex I to Directive 92/43/EEC, as well as the fauna and flora species listed in Annex II to the above Directive (as regards the SPA).

The project under study is located within the protected area of the Natura 2000 network Z.E.P. GR1130012, as well as within the SPA GR009. It is also adjacent to the Bulgarian Natura 2000 network protected area BG0001032, and is located more than 18 km from the nearest SPA GR1130010, whose protected area is the bird fauna. (as regards the SPA and SPA) and the habitat types listed in Annex I to Directive 92/43/EEC, as well as the fauna and flora species listed in Annex II to the above Directive (as regards the SPA).

In the whole of the MEOA, following a literature review and field observations for the period November 2021 - October 2022, all necessary records and assessments were carried out in order to carry out a specific ecological assessment of the project under study in relation to the neighbouring protected areas. Based on these, and subject to the condition of implementing all of the mitigation measures for potential impacts listed in this EIS (with the grouped priority listed), it is assessed that the proposed project:

- It is not likely to delay or interrupt progress towards the conservation objectives of the Natura 2000 sites concerned.
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.

- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is unlikely to interact with predicted or expected natural changes in the Natura 2000 sites concerned.

The accompanying works of this particular ESDP project are not considered to have an adverse impact on the site and its integrity, nor on the species living in it due to the proposed undergrounding of the cabling for the transmission of the electricity generated. The new borehole for the installation of the wind turbines is relatively short and will not cause any adverse impacts on the Natura 2000 site and its protected objects, due to the correct siting (and the relevant proposals herein).

The effects of the project in synergy with other related (under permitting) projects in the area are not considered to be significant given that all of the mitigation measures for potential impacts identified in this EIA will be implemented

5 COMPATIBILITY OF THE PROJECT WITH ESTABLISHED SPATIAL AND URBAN PLANNING OBLIGATIONS OF THE AREA.

5.1 Location of the project in relation to areas of the natural and man-made environment of the area

5.1.1 Statutory settlement boundaries and approved urban plans

The area where the project under study is proposed to be located is outside of established settlement boundaries or approved urban planning or other regulatory plans (e.g. G.P.S., ZOE, etc.). Therefore, the off-plan building regulations apply to the area and no incompatibility is identified with regard to the parameters of this sub-chapter.

As already mentioned in subchapter 1.3.1 of this report, the nearest settlement from the nearest A/E is the settlement of Kalotychos, located at a distance of 0.63km north of A/E 23, while the closest is the settlement "Gidotopos", next to Kalotychos to the west, located at a distance of 0.8km east of A/E 15.

The area is also home to settlements:

- Tsalapeteinos to the southwest of W/T 1 at a distance of 1.28 km,
- A wasteland to the north-west of W/T 5 at a distance of 2,15 km,
- Echinos to the west of W/T1 at a distance of 13.56km.

Regarding Bulgaria the nearest settlement is that of "Kushla", which is 0.78 km north of W/T 8.

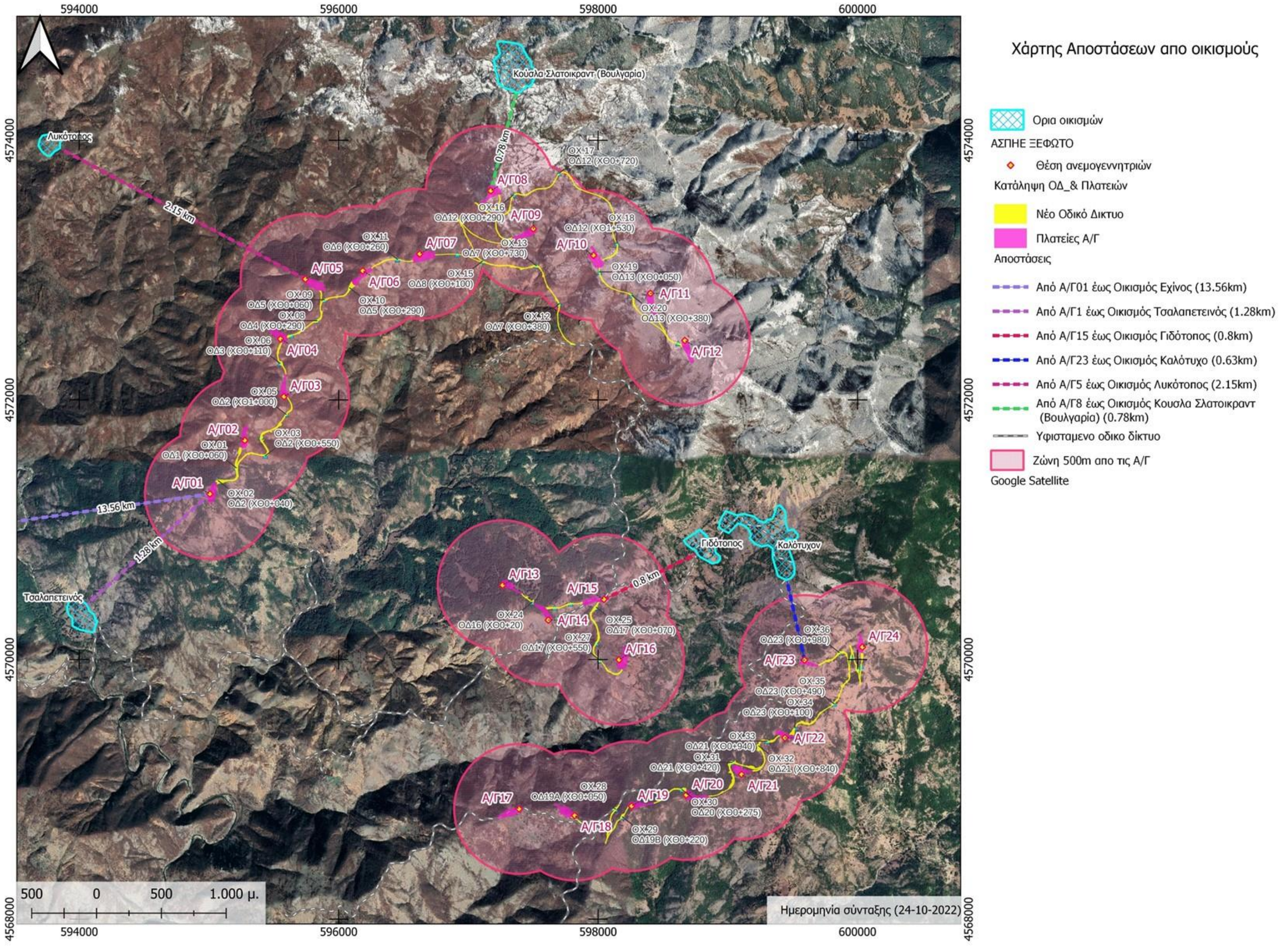
In summary, the distances from the nearest settlement and further afield are as follows:

Table 18: Distances to the nearest settlements from the S/Gs.

Settlement	Distance
Good luck	0,63 km from W/T 23
Kusla (Bulgaria)	0,78km from W/T 8
Genotype	0,8km from W/T 15
Ruffed Grouse	1,28km from W/T 1
Wolfscape	2,15km from W/T 5
Echinus	13,56km from W/T 1

Below is a relevant map (dependent according to ΕΓΣΑ 87) showing: a) a 500 m centrifugal zone from each W/T and b) the above mentioned distances in relation to the nearest W/T of the project under study.

Map 30: Distances to nearest settlements.



5.1.2 Boundaries of areas of the national system of protected areas of Law No. 3937/2011 (A' 60).

The project under study is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Kompsatou Valley", code GR009.

However, it should be noted that within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SPA) called "Rodopi - Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

The project under study is located outside the boundaries of any other protected areas of Law 3937/2011 (A/60).

According to Article 10 of Law 4014/2011, in the case of projects and activities taking place in protected areas of the Natura network, environmental permitting is carried out on the basis of the relevant provisions of specific presidential decrees and ministerial decisions on protection. In the absence of relevant provisions, as in the present area, the preparation and submission to the environmental permitting authority of a Special Ecological Assessment Study (SEA) as part of the EIA is required.

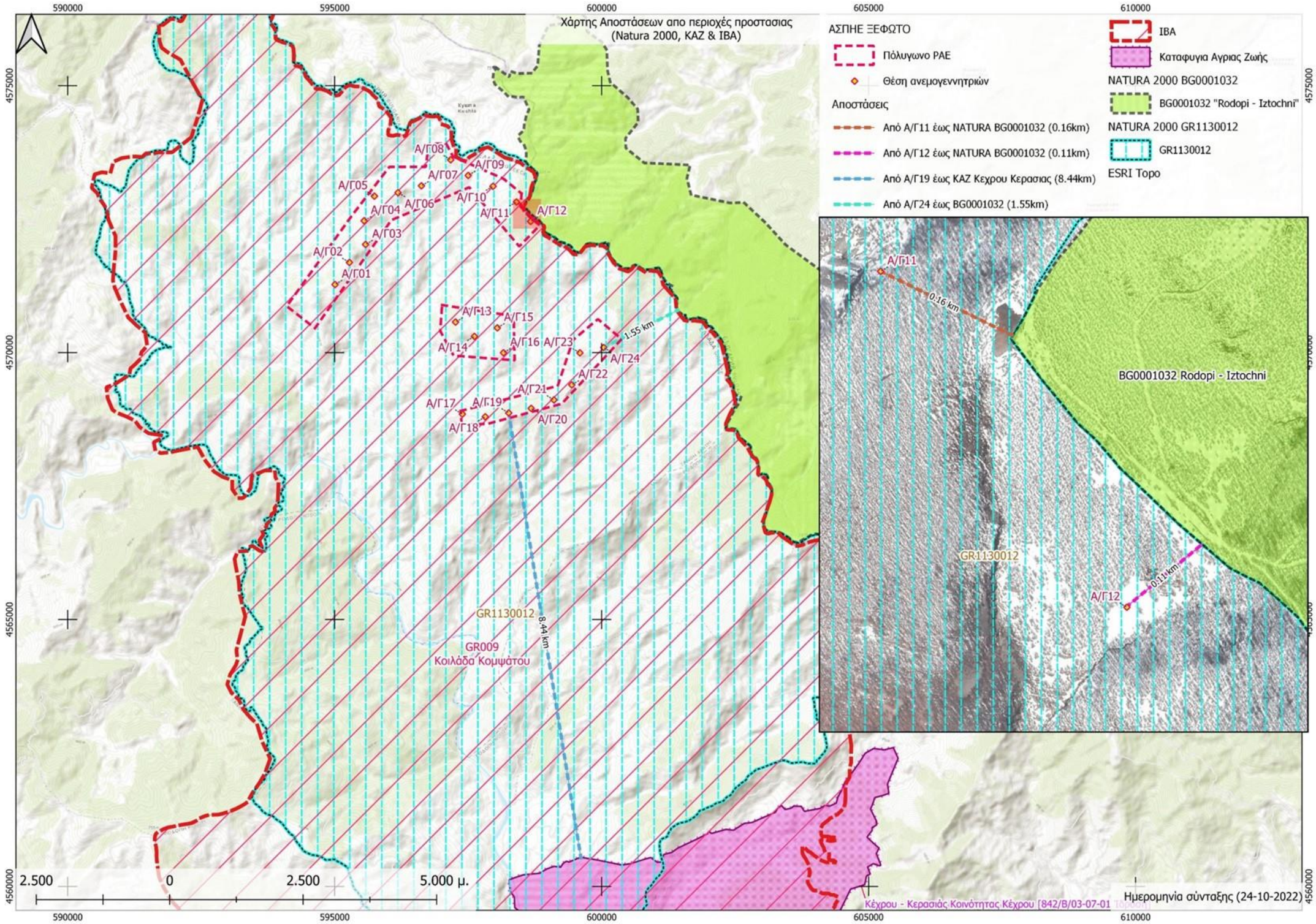
Table 19Natura 2000 protected areas and distance to the nearest W/T of the ESDP

Natura 2000 site (Name)	Code	Category	Distance to nearest point
"VALLEY OF THE BEARD"	GR1130012	Special Protection Areas (SPAs) for avifauna	WITHIN the whole project
"Komsatos River"	GR1130007	Special Conservation Zones (SACs - SCI)	W/T 19 at 8,44 km (south)
"Rodopi - Iztochni"	BG0001032	Special Conservation Zones (SACs - SCI)	W/T 12 at 0,11 km W/T 11 at 0,16 km

Regarding the "*Poas - Dihalas*" CIZ (code K808) which is the closest to the intervention area, it is located at a distance of 8.44 km south of W/T 19.

A dependent map (ΕΓΣΑ 87) is provided showing the above.

Map 31: Protected areas.



At this point it is worth mentioning that at the time of writing this EIA (October 2022) the Special Environmental Study (SEA) "*SEA 1b: Natura 2000 sites of the Regional Units of Rhodope (part), Xanthi, Kavala, Thassos and Drama*" has been put out for consultation and will last until 4 November 2022. This will be followed by the preparation of Management Plans for the protected areas with the respective Presidential Decrees.

Special Environmental Studies define an institutional framework for the delimitation and institutionalisation of classified protection zones, setting clear conditions and rules for land use and economic activity in protected areas.

The Special Environmental Assessments, with a view to protecting the ecosystems and the species they host, will indicate whether and which anthropogenic activities are allowed in the individual zones of each area.

The Management Plans will specify the criteria and conditions for permissible anthropogenic activities in the individual study areas. They shall include action plans in which they are specified:

- The necessary measures.
- The projects and programmes.
- The phases, the costs, the sources.
- The funding bodies.
- The execution schedule.
- The implementing bodies.

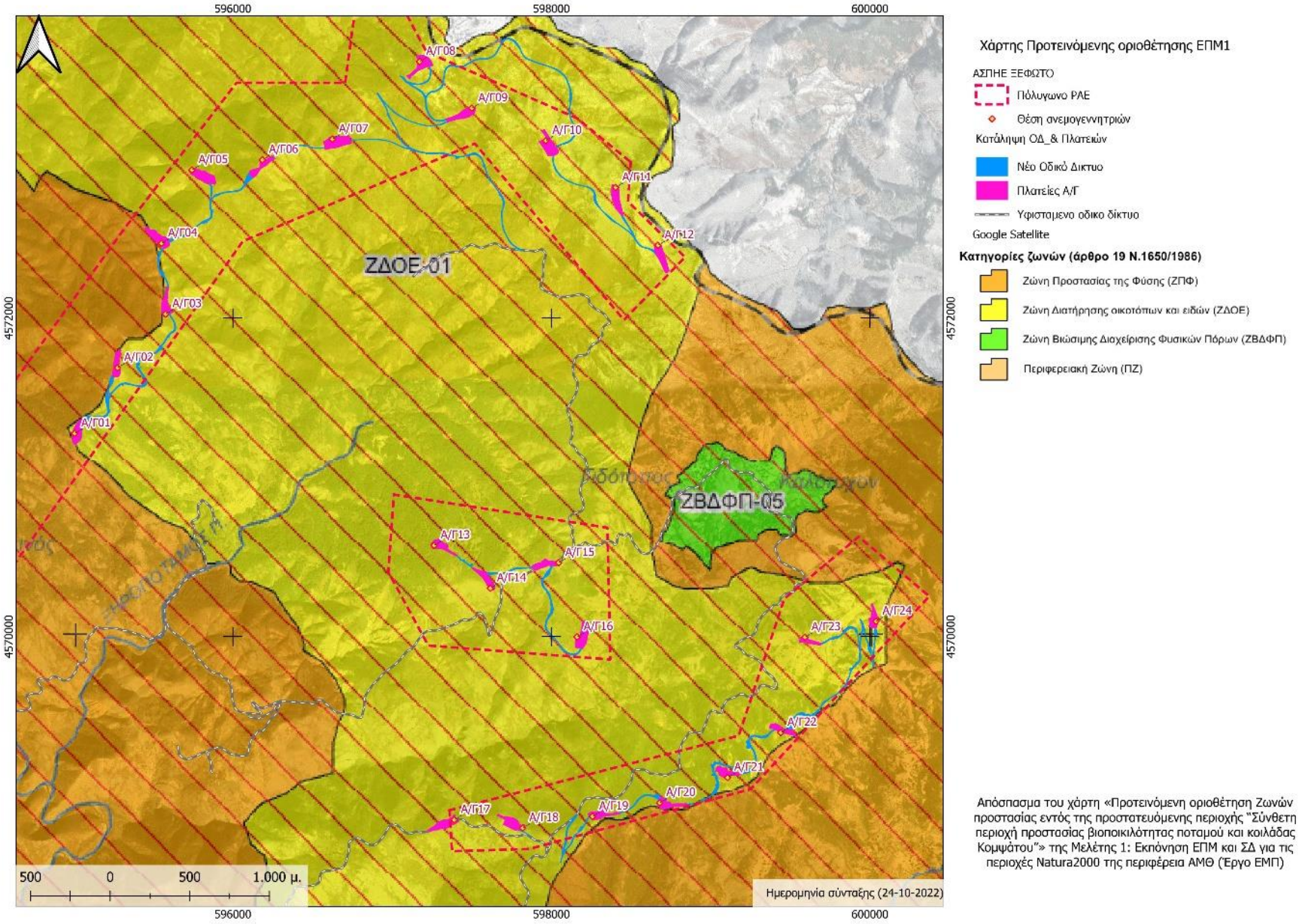
In this regard, in the final draft of the Special Environmental Study entitled "Study 1: Preparation of EIA and SEA for the Natura 2000 sites of the Region of Eastern Macedonia and Thrace" (Chapter 4) and in particular in the "Complex Biodiversity Conservation Area of the River and Valley of Komsatou (ELBA11312)" the following categories of zones are proposed:

1. Nature Protection Zone (ZPF)
2. Habitat and Species Conservation Zone (HACCP)
3. Sustainable Natural Resource Management Zone (SRMZ)
4. Regional zone (PZ-01).

Specific permitted special land uses are proposed for each zone. The project in question is located entirely within ZZOE - 01 where, among other various special land uses, among other special land uses, the code "34" is conditionally allowed (as specified in Chapter 4.3.4 of the MA) and the code "34": "Renewable Energy Installations - Operation of legally existing and new RES is allowed after specific commitments".

A map is attached.

Map 32Proposed delimitation of the proposed delimitation of the SPA for the Natura 2000 site "KOMPSATOS SOCIETY" - ELBA11312.



Απόσπασμα του χάρτη «Προτεινόμενη οριοθέτηση Ζωνών προστασίας εντός της προστατευόμενης περιοχής "Σύνθετη περιοχή προστασίας βιοποικιλότητας ποταμού και κοιλάδας Κομψάτου"» της Μελέτης 1: Εκπόνηση ΕΠΜ και ΣΔ για τις περιοχές Natura2000 της περιφέρεια ΑΜΘ (Έργο ΕΜΠ)

However, to date, no specific presidential decrees and ministerial protection decisions have been issued for this SPA and no incompatibility criteria have been identified.

Based on what is mentioned for the content of the MEOA in Law 4014/2011 for the environmental licensing of projects and activities and in the specifications for the MEOA (YA A.P. οικ. 170225, Government Gazette 135/B/27.01.2014), the accompanying MEOA presents, analyses and evaluates the data on avifauna from the existing literature data and from the data collected during the field survey (ornithological records, from 11/2021 to 10/2022, with the field recordings spanning 56 field days).

During the above field days, all the field work was carried out, which involved recording of avifauna (diurnal and nocturnal), other fauna and flora - habitat types. The above field days also include hours spent observing behavior and finding possible raptor nesting sites and critical habitats by the study team researchers.

5.1.3 Forests, woodlands and reforested areas.

The area where it is proposed to install the proposed RES-E is mostly located within forested areas. The total area of occupation falling within forest land in general is 276,827.9sq.m., while 81,677.1sq.m. is located on other types of land (including the existing road surfaces to be used for the roads and platforms of the project).

The wider study area belongs to the forest complex of Satra, which is under the supervision and management of the Forestry Department of Xanthi.

It is noted that for the study area a relevant Forest Map has been posted in the Greek Cadastre according to the document of the Forestry Department of Xanthi (IDA: Ω2ZXOP1Y-3ΘΤ).

The character of the land on the Posted Forest Map is: ID[2] , ID[3] , AA[4] as depicted on the maps below.

Below is a table of the areas of occupation of forest land.

[2] ID: Forests and wooded areas in the old & recent A/Fs and in the autopsies*.

[3] AD: Other types/coverage of land in the older AFs & forests and woodlands in the recent AFs. Forests and woodlands in recent AF & autopsies*.

[4] AA: Different form/coverage of land in the earlier downloads. Other form/coverage areas in the recent AUVs & autopsies*.

Table 20: Occupied area per character of land according to the document of the Forestry Department of Xanthi (IDA: Ω2ZHOP1Y-3ΘΤ).

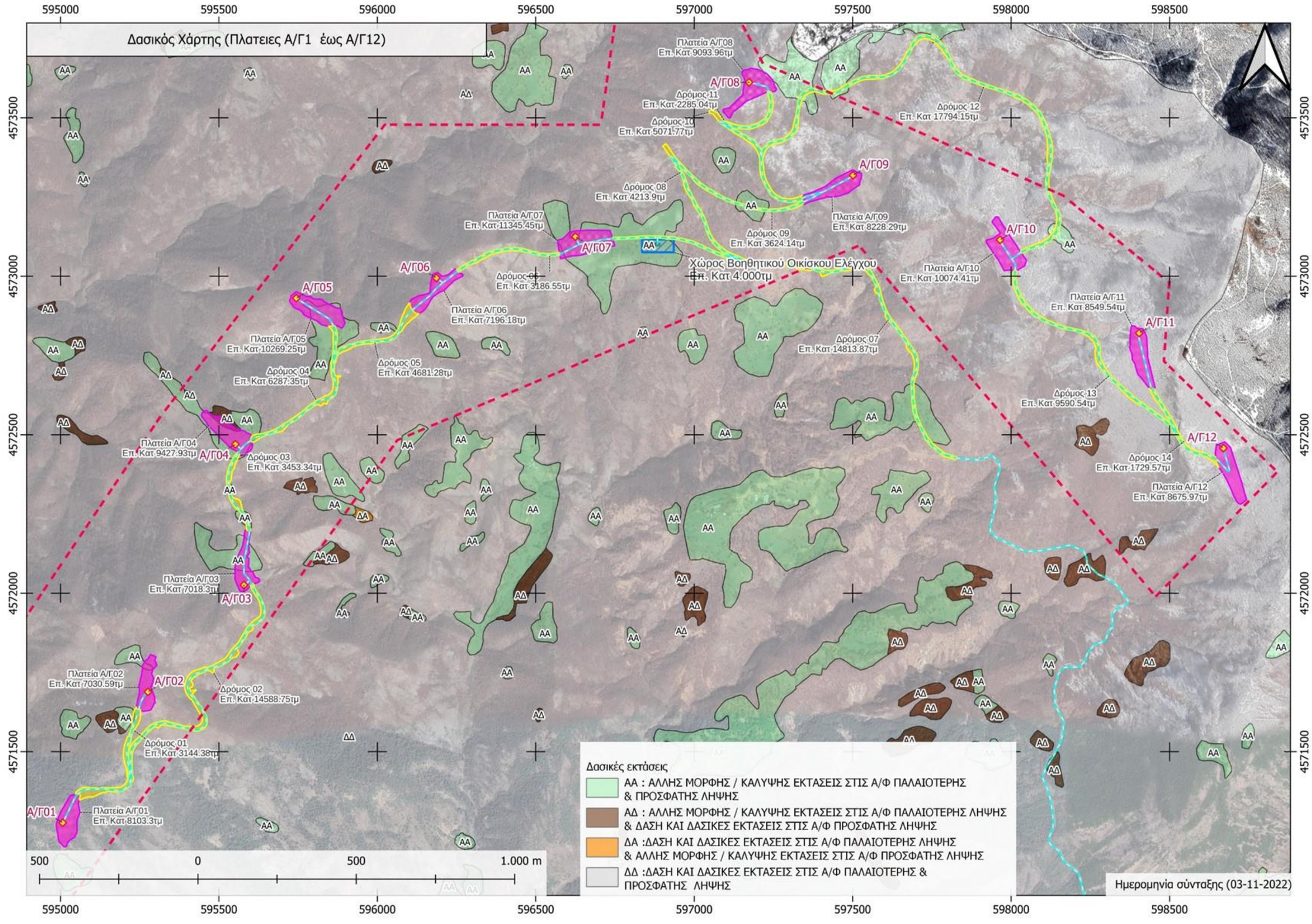
a/a	Project	Total occupied area in m^2*			
		PP	AD	AA	Total
1	Road network*	139.922	53	18.887	158.859
2	W/T platforms (a construction site will be created in the Platform of W/T 7)*	134.659	1.366	55.618	191.643
3	Control Cubicle Areas*	828,9		7.171,1	8.000
Outfits:		275.409,9	1.419	81.676,1	358.502

*In the calculated areas of occupation per character of land area it should be noted that portions of the deck surfaces of existing roads used for access roads and platforms of the W/T are also included.

The relevant Forest Area Maps are listed in the Map Annex and extracts of these maps are given below.

It should be noted that the maps were based on the "Management Study of the Public Forest Complex of Thermes - Satra" prepared by the Forestry Department of Xanthi.

Map 33 Forest Map (Platforms W/T1 to W/T12).



Map 34 Forest Map (Platforms W/T13 to W/T24).

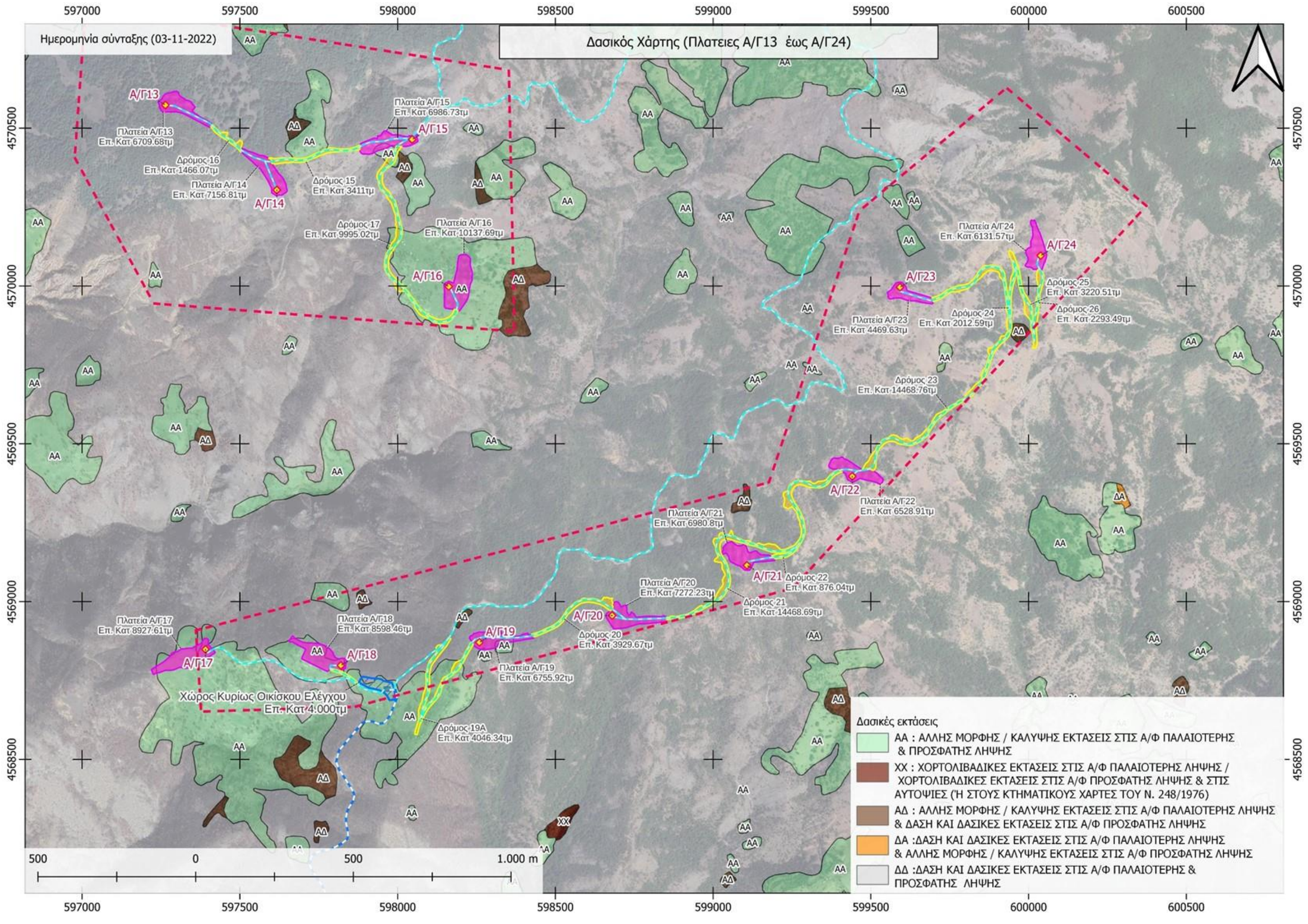


Table 21: Individual areas of occupation per character of land area according to the document of the Forestry Department of Xanthi (IDA: Ω2ZXHOR1Y-3ΘΤ).

	Coverage in acres			Total	Percentage of coverage %		
	AA	AD	PP		AA	AD	PP
Road 01	0,19		2,96	3,15	6,01%		94,04%
Road 02			14,59	14,59			100%
Road 03	1,09		2,37	3,46	31,45%		68,55%
Road 04	1,22		5,08	6,29	19,32%		80,68%
Road 05	0,01		4,68	4,69	0,19%		99,81%
Road 06			3,19	3,19			100%
Road 07	2,73		12,09	14,82	18,42%		81,58%
Road 08			4,22	4,22			100%
Road 09	0,73		2,9	3,63	20,02%		79,98%
Road 10			5,08	5,08			100%
Road 11			2,29	2,29			100%
Road 12	2,29		15,53	17,82	12,84%		87,16%
Road 13			9,6	9,6			100%
Road 14			1,73	1,73			100%
Road 15	0,46		2,96	3,42	13,44%		86,56%
Road 16			1,47	1,47			100%
Road 17	4,79	0,01	5,21	10	47,92%	0,01%	52,06%
Road 18	0,63		0,06	0,68	92,10%		7,90%
Road 19A	2,29		1,76	4,05	56,53%		43,47%
Road 19B	2,49		0,65	3,14	79,30%		20,70%
Road 20			3,93	3,93			100%
Road 21			14,84	14,84			100%
Road 22			0,88	0,88			100%
Road 23		0,06	14,42	14,47		0,35%	99,65%
Road 24			2,02	2,02			100%
Road 25			3,23	3,23			100%
Road 26			2,3	2,3			100%
Total OD:	18,89	0,07	139,93	158,87	11,89%	0,03%	88,08%
Platform W/T01			8,11	8,11			100%
Platform W/T02	0,51		6,53	7,04	7,20%		92,80%
Platform W/T03	3,14		3,89	7,02	44,65%		55,35%
Platform W/T04	7,79	1,37	0,28	9,43	82,54%	14,49%	2,97%
Platform W/T05	6,45		3,83	10,27	62,78%		37,22%
Platform W/T06			7,2	7,2			100%
Platform W/T07	10,29		1,07	11,35	90,66%		9,34%
Platform W/T08	0,29		8,81	9,1	3,16%		96,84%
Platform W/T09			8,23	8,23			100%

	Coverage in acres			Total	Percentage of coverage %		
	AA	AD	PP		AA	AD	PP
Platform W/T10			10,08	10,08			100%
Platform W/T11			8,55	8,55			100%
Platform W/T12			8,68	8,68			100%
Platform W/T13			6,71	6,71			100%
Platform W/T14			7,16	7,16			100%
Platform W/T15	0,77		6,22	6,99	11,02%		88,98%
Platform W/T16	10,12			10,12	100%		
Platform W/T17	8,06		0,88	8,93	90,25%		9,75%
Platform W/T18	7,42		1,19	8,6	86,20%		13,80%
Platform W/T19	0,83		5,94	6,76	12,22%		87,78%
Platform W/T20			7,28	7,28			100%
Platform W/T21			6,99	6,99			100%
Platform W/T22			6,53	6,53			100%
Platform W/T23			4,47	4,47			100%
Platform W/T24			6,14	6,14			100%
Set of Platforms:	55,62	1,37	134,66	191,65	29,02%	0,71%	70,27%
Mainly O.E.	3,26		0,74	4,00	81,59%		18,41%
Auxiliary O.E.	3,91		0,09	4,00	97,69%		2,31%
Total Control Bodies	7,17		0,83	8,00	89,64%		10,36%
Total Total:	81,68	1,43	275,42	358,52	22,78%	0,40%	76,82%

Below is a table with the character of the area of the platforms of the W/T according to the document of the Forestry Department of Xanthi (IDA: Ω2ΖΧΟΡ1Υ-3ΘΤ). However, especially for the coverage a relevant forest map is provided in subchapter 8.5.3 of this study.

Table 22: Character of the area of the platforms of the W/T.

Platforms	Coverage according to the Forest Map	Range character
Platform W/T 1	The largest part of the Platform is grassland while some parts are covered by oak trees.	PP
Platform W/T 2		ID and part of it in AA.
Platform W/T 3		ID and part of it in AA.
Platform W/T 4	Bare grassland.	In parts in AA, AD and DR areas.
Platform W/T 5	Most of the Platform is bare grassland and part of it is covered by oak trees.	ID and part of it in AA.
Platform W/T 6		PP
Platform W/T 7	Bare grassland.	AA and a part of it in ID.
Platform W/T 8	Most of the Platform is covered by oak trees and part of it by bare grassland.	ID and part of it in AA.
Platforms N/A 9	Most of the Platform is bare grassland and part of it is covered by oak trees.	PP

Platforms	Coverage according to the Forest Map	Range character
Platforms W/T 10	Forest oak.	PP
Platforms W/T 11	The largest part of each Platform is covered by oaks and a part by bare grassland.	PP
Platforms N/A 12		
Platforms W/T 13	Most of the Platform is bare grassland and part of it is covered by oak trees.	PP
Platforms W/T 14	Most of the Platform is covered by oak trees and a small part of it by bare grassland.	
Platform W/T 15	Bare grassland.	ID and part of it in AA.
Platform W/T 16	The largest part of the Platform is a field and a small part is grassland.	AA
Platform W/T 17	Bare grassland.	AA and a part of it in ID.
Platform W/T 18	Most of the Platform is bare grassland and a small part of it is covered by oak trees.	AA and a part of it in ID.
Platform W/T 19	Total oaks (forested and partially forested area)	ID and part of it in AA.
Platform W/T 20		PP
Platform W/T 21	Mostly oak trees with a small section of bare grassland.	PP
Platform W/T 22	Most of the Platform is covered by oak trees and a small part of it by bare grassland.	PP
Platform W/T 23	Bare grassland.	PP
Platform W/T 24		PP
Central Control Cottage area	Bare grassland.	AA and a part of it in ID.
Auxiliary Control Cradle Area	Bare grassland.	AA and a small part of it in ID.

The internal road network of the ASPHE is mostly located in a forest area (FR) and passes between areas characterized by oak forest rotations (forested and partially forested oak areas) and bare grassland areas. A part of the OD 17 branch and up to its termination at the Platform of A/D 16 passes through a field.

As shown above, the majority of the areas where interventions are foreseen are forest areas and specifically classified as oak forest, thus increasing the intensity of the impacts in terms of loss of flora.

It should be noted that the installation of the M.T. line aims to maximise the use of the existing road network in order to reduce the occupation of any other uses.

It is emphasized that prior to the issuance of the Information Character Act, the project proponent will ensure the filing and issuance of Characterization Acts in order to precisely define the proposed intervention areas subject to the provisions of the Forest Law.

For the type of land in question, no type of incompatibility with the installation and operation of a CEMS arises. Moreover, the cooperation with the Competent Forestry Directorate will determine any management requirements for the forest environment in which the project will be installed.

In any case, the competent Forestry Service will give its opinion on this matter, in accordance with the applicable legislation.

It is again noted that the single Forest Land Map is provided in full size in the respective Annex of this study.

5.1.4 Social infrastructure facilities, utilities, etc.

Regarding the social infrastructure, utilities, etc. as defined in Decree 59/2018, in the area under study and within a radius of at least 2 km. from the boundaries of the intervention area (W/T locations) no such facilities are found in both Greek and Bulgarian territory.

The area under study is connected by road to the capital of the Municipality of Mykes (Sminthis) through the existing forest roads and the Provincial Road Xanthi - Echinos - Potamochori in a westerly direction towards Echinos and from there through the provincial road Xanthi - Echinos from where in a south-westerly direction Sminthis is approached and then in a southerly direction the capital of the Municipality of Mykes is approached.E. Xanthi - Xanthi.

Xanthi has two interchanges with the Egnatia Odos, to the east and west of the city. At the same time, the railway line between Orestiada - Alexandroupolis - Thessaloniki passes through Xanthi. In the Bulgarian territory and within a radius of at least 2 km there is a wide forest road network, while the road connection of the nearest settlements, Kousla and Gorski Izvor to the north of W/T 8, is via a dirt road. Other infrastructure relevant to this chapter can be found in the town of Zlatograd, northeast of the location of A/R 8, at a distance of more than 9 km.

The wider area is served by the existing electricity distribution network of DEDDIE. There is no overhead or underground high-voltage line running through the area of the ASPHE and beyond and there is no other existing voltage boosting station and corresponding HT transmission network in the existing grid of the DPAE. Similar infrastructure exists in the Bulgarian territory.

There is a good telecommunications network in the area through the existing mobile phone networks.

Relevant information on the technical infrastructure of the area is also provided in subsection 8.8 of this document.

No incompatibility with the existing infrastructure of this subchapter is identified from the installation and operation of the project.

5.1.5 Sites of archaeological interest

There are no declared archaeological sites or designated cultural monuments and historical sites in the area where the proposed installation of this ASPEE is proposed, so there is no issue of incompatibility. According to the Permanent List of Declared Archaeological Sites and Monuments of the Ministry of Culture the nearest archaeological site is:

- The Papiko Mountain as defined in the H.A. with no. ΥΠΠΟ/ΑΡΧ/Β1/Φ37/15352/389 π.ε. (Government Gazette 364/B/2-6-1986) "*Characterization of the Papikio Mountain, part of the Rhodope.*" και ΥΠΠΟ/ΑΡΧ/Β1/Φ37/15352389π.ε. (Government Gazette 284/Β΄/9-6-1987) '*Characterisation of the Papikios mountain, part of the Rhodope region*'. at a distance of 2,34 km south-east of the location of W/T 21.

In the wider area and at greater distances from the proposed ESDP, the following sites are also identified:

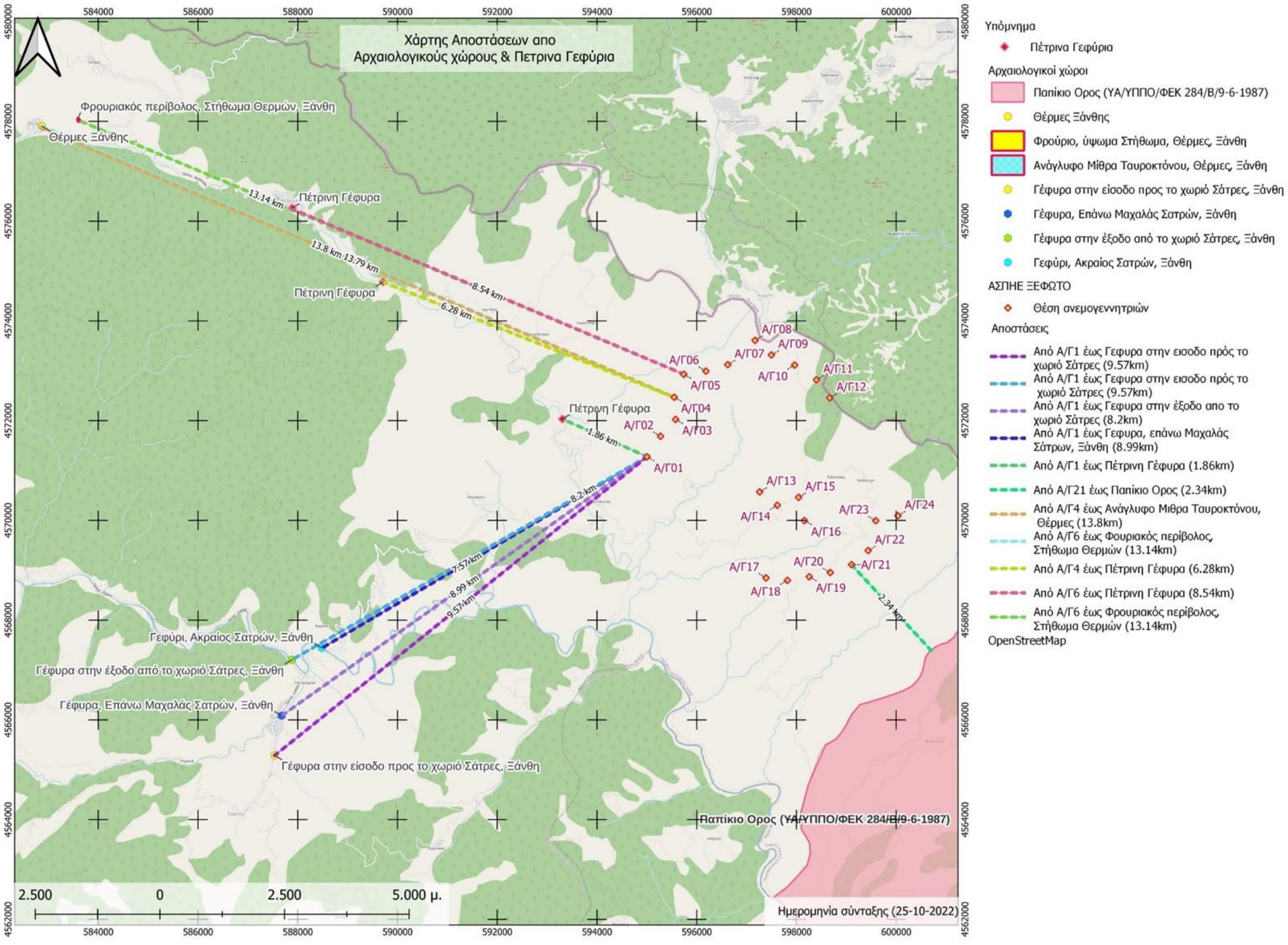
Table 23: Areas of archaeological interest and their distances from the ASPHE

Name	Declaration Decision	Nearest W/T and distance
Bridge, Akraios Satron, Xanthi (Newer Monument)	SUBPATH/GDAMT/ DPANSM/106494 79863/1306 FEK: 90/A.A.P./2015-05-18	W/T1 at 7,57 km
Bridge at the exit from the village of Satres (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 8,2 km
Stone Bridge of Medusa (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T6 at 8,54 km
Bridge, upper Machalas of Satron, Xanthi (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 8,99 km
Bridge at the entrance to the village of Satres (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 9,57 km
Fortress enclosure, Thermon's Pound (archaeological site)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T6 at 13,14 km
Thermes of Xanthi (archaeological site)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T4 at 13,19 km
Relief of Mithra Tauroktonou, Thermes (ancient monument)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T4 at 13,8 km

There are also the stone bridges of Tsalapeteinos and Xiropotamos that have not been classified as archaeological sites, but in any case they are located at a great distance from the location of the proposed ASPHE and specifically at a distance of 1.86km west of W/T 1 (bridge of Tsalapeteinos) and 6.28km west of W/T 4 (bridge of Xiropotamos).

It should also be noted that no archaeological sites have been identified within the Bulgarian territory and within a radius of at least 2 km from each of the proposed ASPEC's W/Ts .

Map 35: Nearest archaeological sites



5.2 Existing zoning and planning regulations in the project area.

5.2.1 Provisions and guidelines of the General, Specific and Regional Spatial Planning and Sustainable Development Framework.

The project does not contradict the provisions and guidelines of the General, the Special and the Regional Framework for Spatial Planning and Sustainable Development of the ASS. In particular:

GFHSA

The General Framework for Spatial Planning and Sustainable Development (GSPSPD) was approved by KYA 6876/4871/2008 (Government Gazette 128A/03.07.2008) and concerns the whole country. The GFSAP aims to formulate a spatial development pattern, within the framework of the principles of sustainability, which will be the result of a synthetic, balanced consideration of spatial parameters that promote the protection and enhancement of the country's natural and cultural environment and strengthen social and economic cohesion and competitiveness.

The GFSAP was established in 2008 and is the first institutionalized Land Use Plan of the country with guidelines for the whole of Greece.

The projects proposed in this study meet the objectives of the General Framework for Spatial Planning and Sustainable Development. In particular, they promote alternative energy sources that are more environmentally friendly, especially renewable energy sources.

In view of the acute problems caused by climate change at a rapid pace, the following objectives are set out in the GFHSAA:

- constant attention to energy saving,
- *promoting alternative sources of energy that are more environmentally friendly, in particular renewable energy sources,*
- enhancing natural reactive mechanisms (forests, wetlands, etc.),
- adapting the country to the new conditions of climate change and addressing the consequences of climate change (fires, floods and erosion, drought, water logging, desertification and other natural phenomena), by creating appropriate prevention mechanisms, infrastructure and action plans.

The general guidelines given for energy include, inter alia, "*ensuring full coverage of energy needs at all points of the national territory (in conjunction with the continuous effort to save energy in all sectors) and enhancing energy security through the full development of renewable energy sources, promoting the use of alternative fuels and exploiting domestic resources*".

More specifically, as regards energy production infrastructure, the aim is, inter alia, to increase the rate of penetration of renewable energy sources in total energy production, in accordance with the specific guidelines of the relevant Specific Framework.

The project under study does not contradict the provisions and guidelines of the GHSPA

OPHSAA - RES

The purpose of the Special Framework for Spatial Planning and Sustainable Development for Renewable Energy Sources (SPSPRES) is to formulate policies for the siting of RES electricity generation projects, by category of activity and by category of area. According to the Special Framework, which was approved by the KYA 49828/2008 (Government Gazette 2464/B/03.12.2008).

The objective of the RES-EAP is to harmonise the country with both Directive 2001/77/EC (on the promotion of electricity produced from RES in the internal electricity market) and the Kyoto Protocol. The national target for Greece was to increase the share of RES in gross electricity consumption to 29% by 2020, a target which, as stated in subsection 2.1.1, is not achieved by 2020. 4.1.1. of this report, the target was exceeded by 1.7%.

According to the EIAAP for RES, the area where this RES is proposed to be installed is located within a Windfall Suitability Area (WSA).

With regard to the exclusion areas and as detailed in the Compatibility Check Specific Document accompanying this EIA, the proposed location of the proposed installation of the proposed ASPHE and its accompanying works:

- does not fall within any of the categories of exclusion and incompatibility zones (SEAPA: Article 6(1)),
- the minimum distances from adjacent land uses, activities and technical infrastructure networks are met (Article 6(5) and Annex II of the EAFRD),
- The total capacity of the wind farms under development (with production license and AEPO) is lower than the carrying capacity of the primary LGA, therefore there is no issue of over-concentration of wind installations in the primary LGA.
- The distances from residential activities are exceeded and therefore there is no problem with the siting of the APSIE under consideration.

In particular for the GIS under consideration:

- Within a distance of at least 5 km, from the boundary of the ESDP, no World Heritage-listed monuments are identified, therefore the landscape integration rules do not need to be applied.
- The nearest absolute protection zone boundary (A) of other archaeological sites is located at a distance of more than 10 km from the boundaries of the AAPIE (archaeological site "Fortress enclosure, Thermo's Settlement" at a distance of 13.14km from W/T6), therefore the rules of integration into the landscape are not required to be applied.
- Within a distance of at least 5 km from the boundaries of the ESDP, there are no cores of National Parks, natural monuments or aesthetic forests, therefore the landscape integration rules do not need to be applied.
- No traditional settlements are identified within a distance of at least 5 km from the boundaries of the ESDP, therefore no landscape integration rules are required. There are

also no settlements with a population >2000 or settlements with a population < 2,000 inhabitants that are classified as dynamic, touristic or remarkable in the sense of article 2 of the decree 24.4/3.5.1985.

- The settlement network of the wider area consists of small mountain settlements. Within the study area are the settlements of Tsalapeteinos (1,28 km from W/T01), Gidotopos (0,8 km from W/T15) and Kalotycho (0,63 km from W/T23); therefore the landscape integration rules for the settlements of Kalotycho, Gidotopos and Tsalapeteinos need to be applied.
- The nearest boundary of an established or developed tourist area, medium or large tourist accommodation, special tourist infrastructure or tourist ports is located at a distance of more than 5 km from the boundaries of the ESDP, therefore the landscape integration rules do not need to be applied.

In addition, the EIAAP gives as a direction (conditional) the "*utilization/use of existing roads to serve the wind farms with the necessary improvements and extensions*" while "*it is advisable that the electricity transmission line up to the grid of* AMDIE *follows, as far as possible, the existing access roads, in order to limit to a minimum the land clearing or the general degradation of the environment*".

Similarly, the EIAA allows the siting of wind installations within forests, woodlands and reforested areas, in accordance with Articles 45 and 58 of Law No. 998/1979 and Article 13 of Law No. 1734/1987 as applicable, but special care should be taken to limit the damage to forest vegetation.

RFCSP for Eastern Macedonia-Thrace

The directions of spatial planning in the area are determined by the Regional Spatial Planning and Sustainable Development Framework for Eastern Macedonia - Thrace (YA No.ΥΠΕΝ/ΔΧΟΡΣ./68605/1092 (Government Gazette 248/A.A.A.P./25.10.2018), which for the RES sector states the following:

1. Among the objectives of the MFF are... "*Addressing the challenges of climate change and mitigating the environmental impact of the energy and transport sectors by prioritising the development of renewable energy and the redesign of the transport system in the context of regional planning.*" (Article 1, Chapter A)
2. Spatial integration of Eastern Macedonia - Thrace into the wider spatial context. A. Strengthening the Region's position in the international arena: "*The utilization of energy in all sectors. The numerous and diversified energy resources, whether conventional or renewable, as well as the region's remarkable energy infrastructure, provide opportunities for strengthening its position in the national arena. In this direction, the Region is increasing its energy coverage in RES and is exploring the development of research to capitalise on experience on RES to generate expertise.*" (Article 2.A, Chapter B).
3. "*Spatial units for the development of energy from RES: The first (and most important in terms of size and potential) spatial unit coincides with the Wind Priority Area (PAP) 1 of the Special Framework in the eastern part of the mountainous area of Rhodope and in the mountainous*

areas of Evros....The development of wind farms in the two spatial units of renewable energy sources is systematically and preferentially promoted. The specification of relevant conditions and restrictions for the installation of wind farms is promoted for the best possible organisation of the activity and the optimal management of synergistic effects on the natural environment (and in particular on the avifauna)" (Article 6.9, Chapter C).

4. "*Key manufacturing development activities - Energy resources: With regard to wind energy, the location of wind farms is promoted as a priority within the spatial units of renewable energy development*" (Article 7.3, Chapter C).

In addition, for the spatial integration of the Region of A.M -Th. in the wider spatial frameworks (National - European) is promoted "*The utilization of energy in all sectors. The numerous and diversified energy resources, either conventional or renewable, as well as the remarkable energy infrastructure of the Region, provide opportunities for strengthening its position in the national space. In this direction, the Region is increasing its energy coverage in RES and is exploring the development of research to capitalise on the experience on RES to generate expertise.*"

The general guidelines in the field of RES demonstrate the legislator's intention for significant penetration in areas of the Region where the wind potential allows it and where there is no conflict with existing or proposed land uses.

Moreover, for the Municipality of Mykis, the general objective of the MSPSP for the entire region is the preservation of the mountain population, the promotion of its unique identity and the utilization of its productive potential in the direction of eco-development. Special spatial plans (SPPs) may be drawn up for the spatial organisation and development of individual areas. The coordination of the various regulations and actions concerns:

- Land use regulations and landscape protection studies along the vertical axis Xanthi - Echinou - Greek-Bulgarian border.
- Urban planning regulations in residential areas and especially in settlements of more than 2000 inhabitants. These include in particular the necessary settlement demarcations.
- Studies to identify and highlight traditional morphological patterns.
- Livestock management plans.
- Selection of mountain settlements as local centres of eco-development and creation of accommodation with a preference for the use of existing valuable buildings.
- Projects to improve accessibility and connectivity of local eco-development centres and natural and cultural resources.
- Projects to improve the infrastructure and services of ecotourism and spa tourism.
- Networking on the proposed route of the "tobacco route". Strengthening of the traditional type of cultivation, protection of the rural landscape, in conjunction with the certification of oriental tobacco ('basmas').

- Projects related to the improvement of social and urban infrastructure and services of the Sminth - Echinos - Centaurus triangle.

The Mykis district is included in the spatial units for the development of livestock farming where extensive livestock farming is strengthened, the promotion of vertical production, the integrated management of pastures, the management of environmental pressures from waste from installations and the definition of areas for the targeted development of livestock farming through the creation or modernisation of processing facilities.

In summary, the principles of organization of the spatial pattern of the PAMTH are concretized in space, according to the following:

- By creating a balanced and diversified network of poles of inter-regional importance.
- By organizing the development of the hinterland of the Region through the creation of functional development units, in order to balance out the inequalities -a strategy that is particularly implemented through:
    - Targeted development of the mountain area,
    - Strengthening, improving and consolidating urban centres at all levels,
    - The development of an integrated cluster of productive activities that will enhance the sustainability of the development units,
    - Enhancing the accessibility of residential centres, with appropriate case-by-case connections that make maximum use of existing transport infrastructure.
- With integrated coastal zone management.
- By setting up a network for the promotion and protection of natural and cultural resources.
- With the sustainable use of the RES potential of PAMTH.
- By exploiting and targeting the development of transport infrastructure and cross-border interconnections.
- By strengthening cross-border cooperation.

The above general objectives are specified on the ground with various guidelines either in general or by sector, as shown in the following maps

Map 36 Regional Spatial Planning Framework of the Upper Thrace Region (Government Gazette 248/AAP/2018) Map P.1 Spatial Development Model

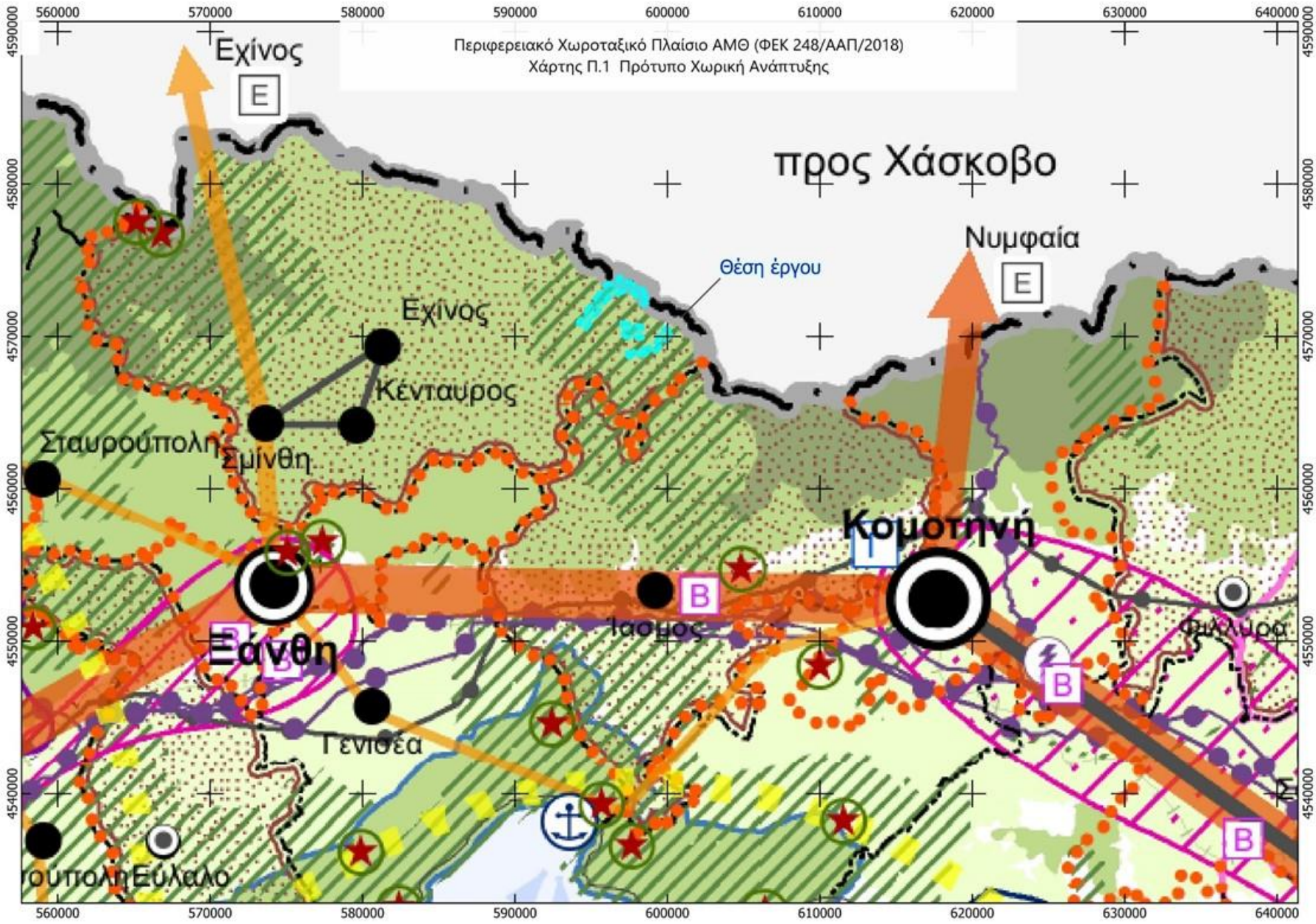
Map 37 Regional Spatial Planning Framework of AMTH (Government Gazette 248/AAP/2018) Map P.2.a Spatial Organization of the Region

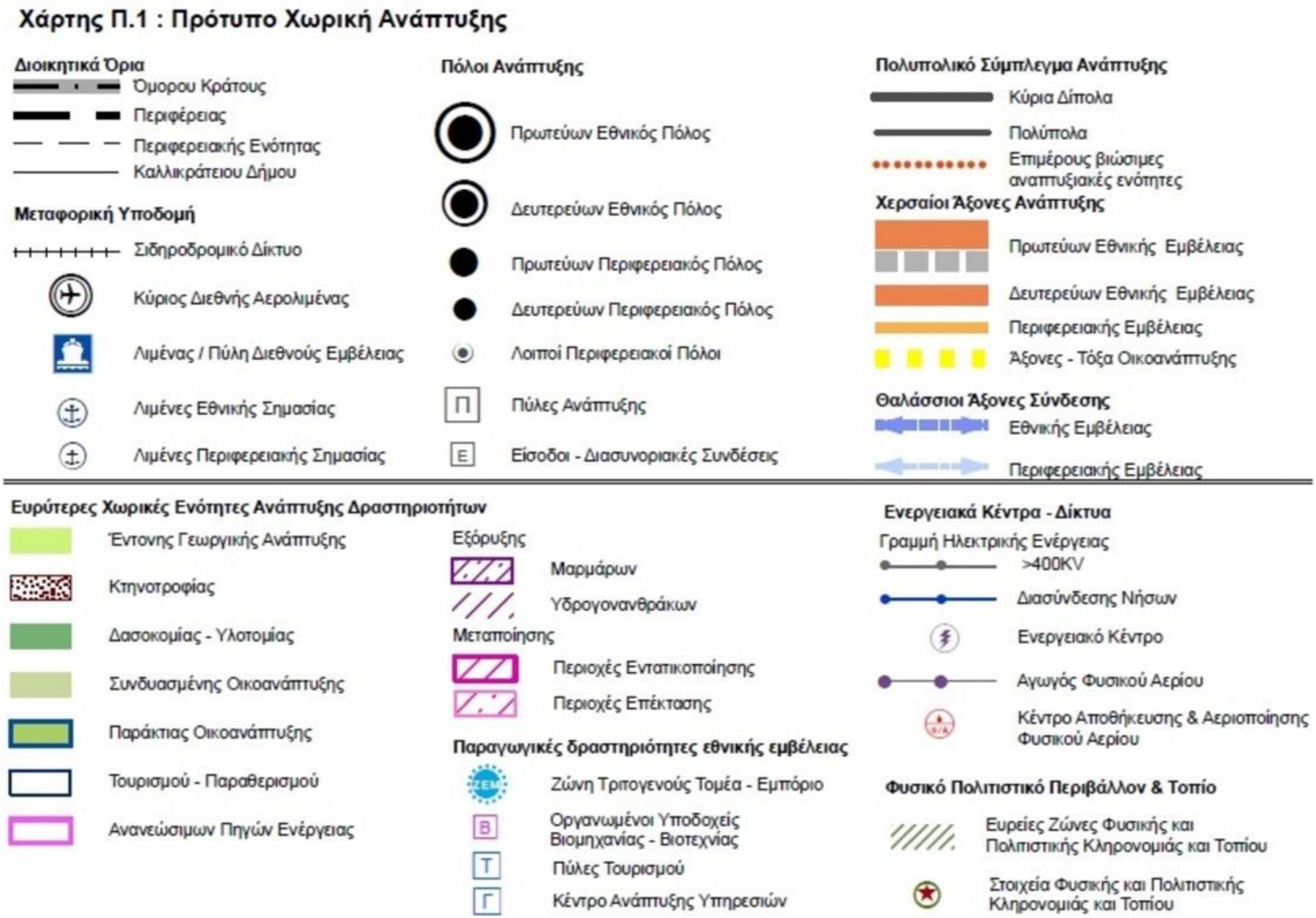
Map 38 Regional Spatial Planning Framework for the region (Government Gazette 248/AAP/2018) Map P.2.b Settlement Network - Administrative and Social Equipment - Transport

Map 39 Regional Spatial Planning Framework of the Upper Thracian Region (Government Gazette 248/AAP/2018) Map P.2.c Technical Infrastructure Networks and Units

Map 40 Regional Spatial Planning Framework of the Upper Peloponnese (Government Gazette 248/AAP/2018) Map P.2.d Environment, Cultural Heritage and Landscape

Map 36 Regional Spatial Planning Framework of the Upper Thrace Region (Government Gazette 248/AAP/2018) Map P.1 Spatial Development Model




Χάρτης Π.1 : Πρότυπο Χωρική Ανάπτυξης
Διοικητικά Όρια
Όμορου Κράτους
Περιφέρειας
Περιφερειακής Ενότητας
Καλλικράτειου Δήμου
Μεταφορική Υποδομή
Σιδηροδρομικό Δίκτυο
Κύριος Διεθνής Αερολιμένας
Λιμένας / Πύλη Διεθνούς Εμβέλειας
Λιμένες Εθνικής Σημασίας
Λιμένες Περιφερειακής Σημασίας
Πόλοι Ανάπτυξης
Πρωτεύων Εθνικός Πόλος
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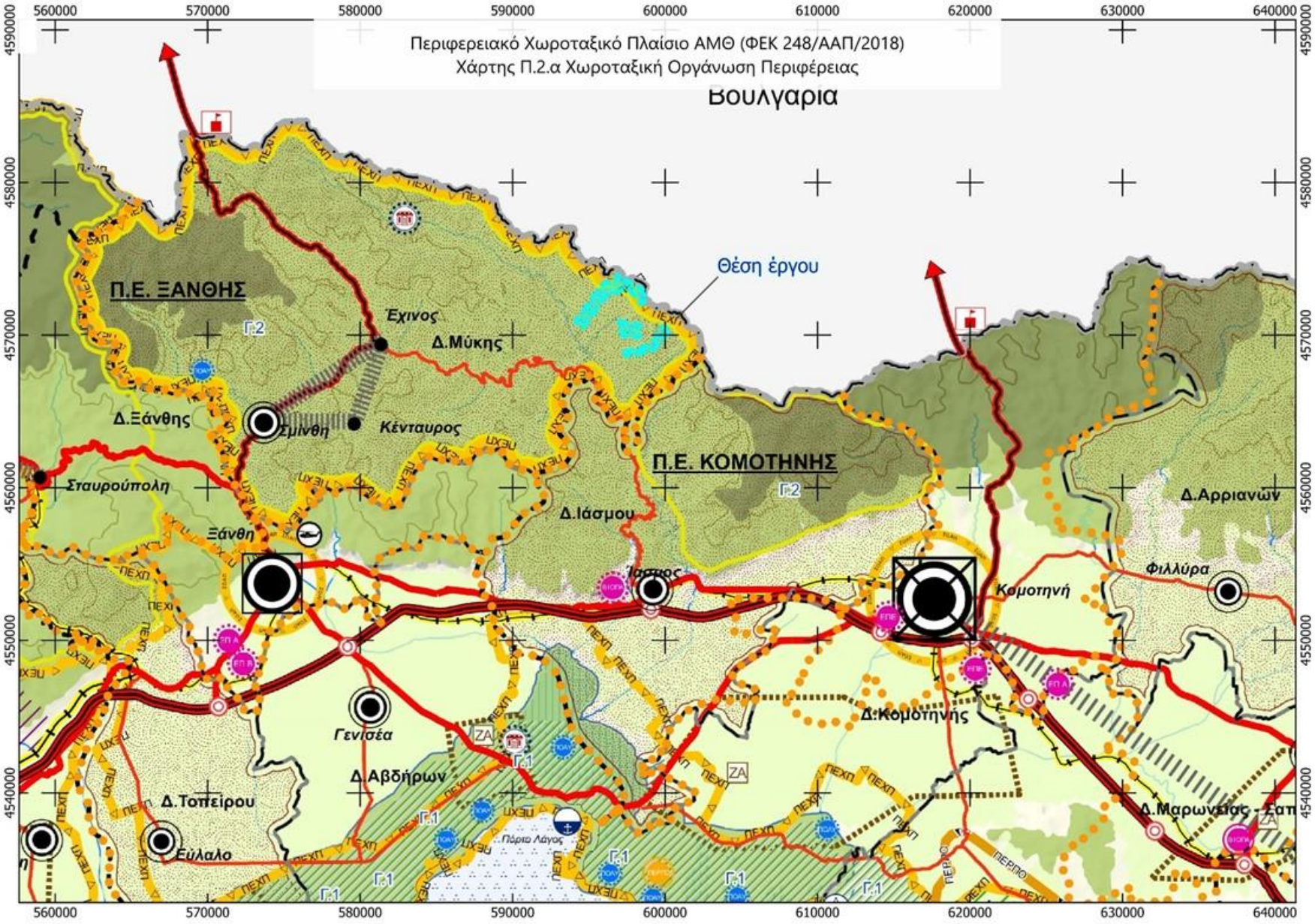
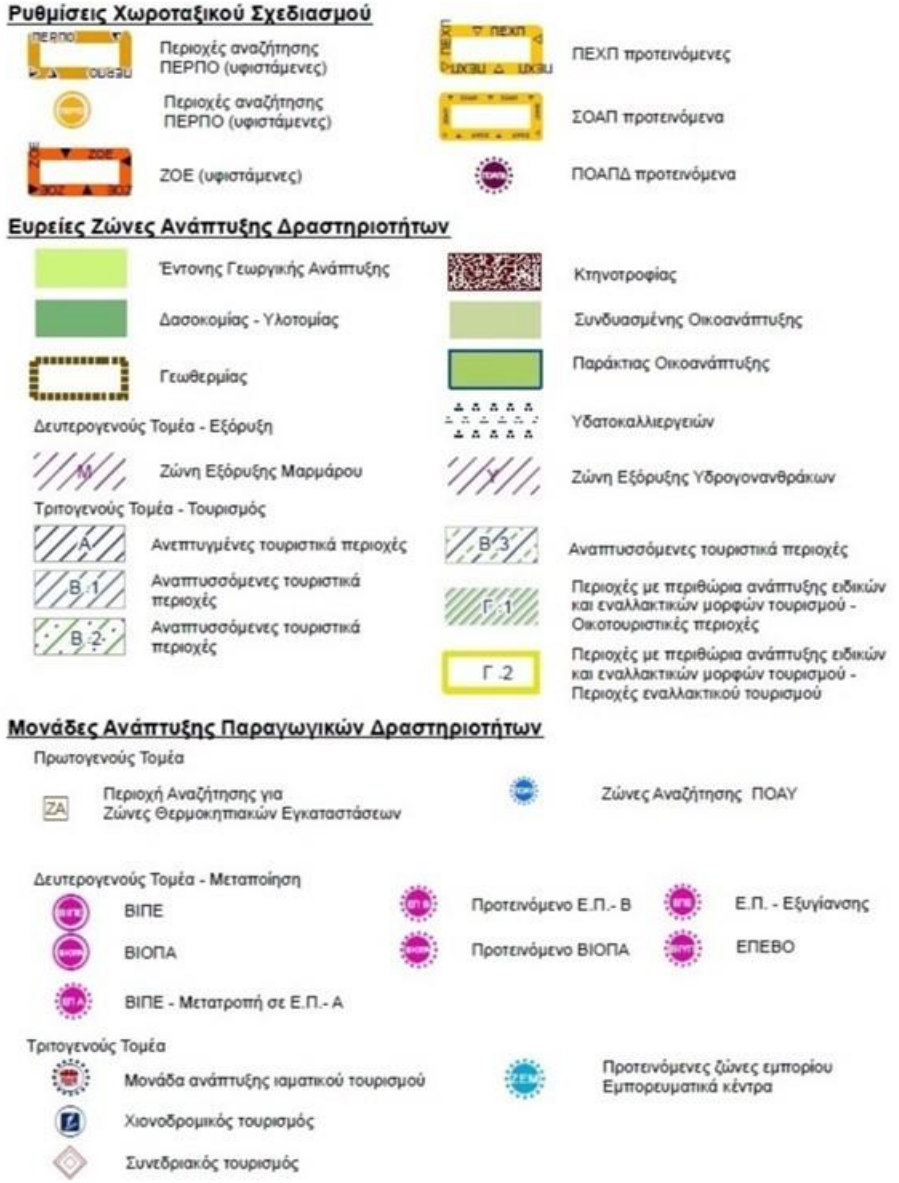
Πρωτεύων Περιφερειακός Πόλος
Δευτερεύων Περιφερειακός Πόλος
Λοιποί Περιφερειακοί Πόλοι
Π
Πύλες Ανάπτυξης
Ε
Είσοδοι - Διασυνοριακές Συνδέσεις
Πολυπολικό Σύμπλεγμα Ανάπτυξης
Κύρια Δίπολα
Πολύπολα
Επιμέρους βιώσιμες αναπτυξιακές ενότητες
Χερσαίοι Άξονες Ανάπτυξης
Πρωτεύων Εθνικής Εμβέλειας
Δευτερεύων Εθνικής Εμβέλειας
Περιφερειακής Εμβέλειας
Άξονες - Τόξα Οικοανάπτυξης
Θαλάσσιοι Άξονες Σύνδεσης
Εθνικής Εμβέλειας
Περιφερειακής Εμβέλειας
Ευρύτερες Χωρικές Ενότητες Ανάπτυξης Δραστηριοτήτων
Έντονης Γεωργικής Ανάπτυξης
Κτηνοτροφίας
Δασοκομίας - Υλοτομίας
Συνδυασμένης Οικοανάπτυξης
Παράκτιας Οικοανάπτυξης
Τουρισμού - Παραθερισμού
Ανανεώσιμων Πηγών Ενέργειας
Εξόρυξης
Μαρμάρων
Υδρογονανθράκων
Μεταποίησης
Περιοχές Εντατικοποίησης
Περιοχές Επέκτασης
Παραγωγικές δραστηριότητες εθνικής εμβέλειας
ΖΕΜ
Ζώνη Τριτογενούς Τομέα - Εμπόριο
Β
Οργανωμένοι Υποδοχείς Βιομηχανίας - Βιοτεχνίας
Τ
Πύλες Τουρισμού
Γ
Κέντρο Ανάπτυξης Υπηρεσιών
Ενεργειακά Κέντρα - Δίκτυα
Γραμμή Ηλεκτρικής Ενέργειας
>400KV
Διασύνδεσης Νήσων
Ενεργειακό Κέντρο
Αγωγός Φυσικού Αερίου
Κέντρο Αποθήκευσης & Αεριοποίησης Φυσικού Αερίου
Φυσικό Πολιτιστικό Περιβάλλον & Τοπίο
Ευρείες Ζώνες Φυσικής και Πολιτιστικής Κληρονομιάς και Τοπίου
Στοιχεία Φυσικής και Πολιτιστικής Κληρονομιάς και Τοπίου

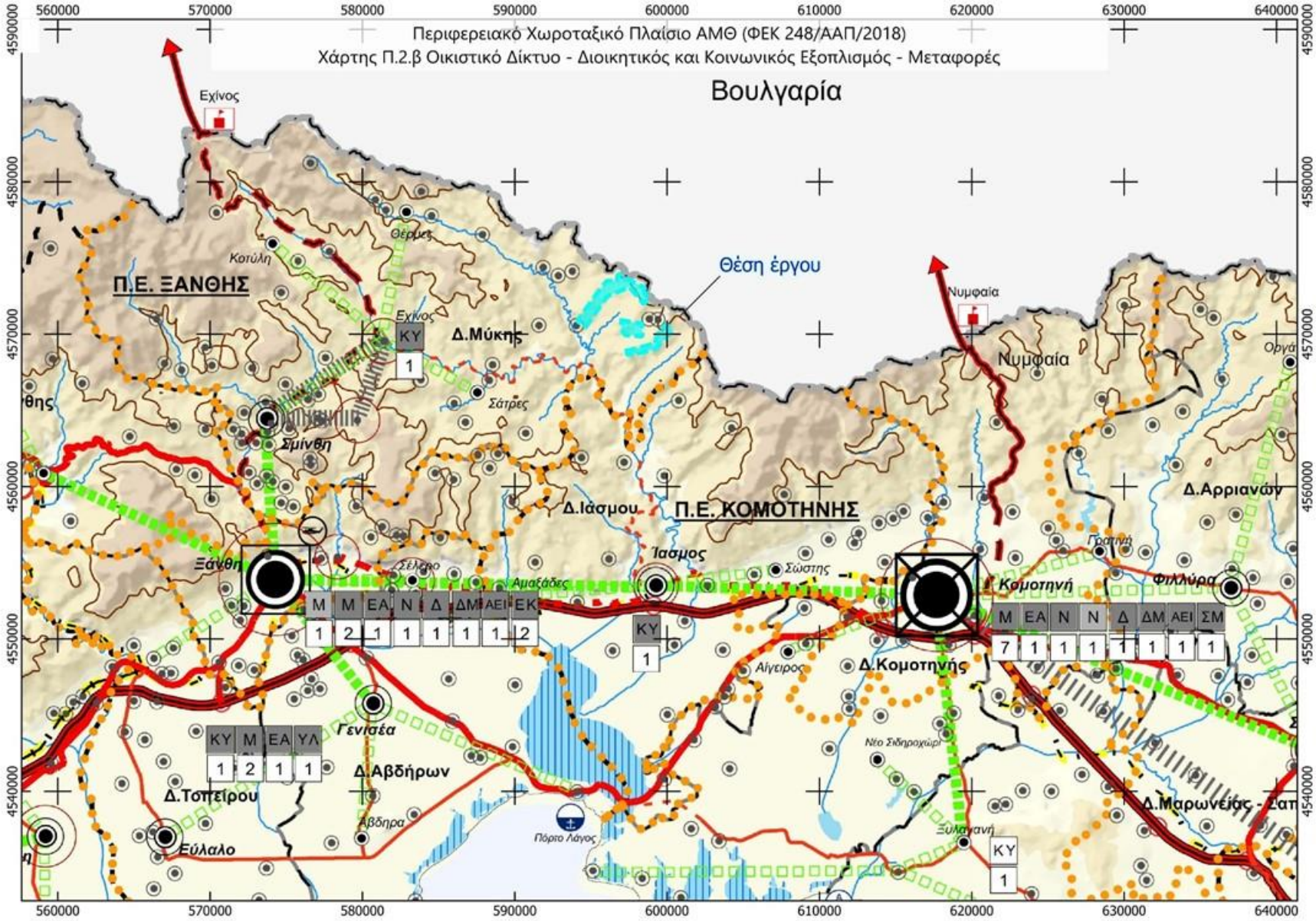
Map 37 Regional Spatial Planning Framework of AMTH (Government Gazette 248/AAP/2018) Map P.2.a Spatial Organization of the Region




Χάρτης Π.2α | Χωροταξική Οργάνωση Περιφέρειας
ΥΠΟΜΝΗΜΑ
Φυσικογεωγραφικά Στοιχεία
Υψομετρικές Ζώνες
0-400 μ.
400-800 μ.
άνω των 800 μ.
600
Κύριοι Ποταμοί
Κύριες Λίμνες
Μεταβατικά Ύδατα
Διοικητικά Όρια
Όριο Όμορου Κράτους
Όριο Περιφέρειας
Όριο Περιφερειακής Ενότητας
Όριο Καλλικράτειου Δήμου
Έδρες Διοικητικών Ενοτήτων
Έδρα Περιφέρειας
Έδρα Περιφερειακής Ενότητας
Έδρες Καλλικράτειων Δήμων
Οικιστικό Δίκτυο
Πρωτεύων Εθνικός Πόλος
Δευτερεύων Εθνικός Πόλος
Πρωτεύων Περιφερειακός Πόλος
Δευτερεύων Περιφερειακός Πόλος
Λοιποί Περιφερειακοί Πόλοι
Δίκτυα Οικισμών - Πολύπολα
Κύρια Δίπολα
Πολύπολα
Βιώσιμες Αναπτυξιακές Ενότητες
Μεταφορική Υποδομή
Οδικό Δίκτυο
Κύριο Διευρωπαϊκό Δίκτυο
Εκτεταμένο Διευρωπαϊκό Δίκτυο
Πρωτεύον Ενδοπεριφερειακής Σημασίας
Δευτερεύον Ενδοπεριφερειακής Σημασίας
Ανισόπεδοι Κόμβοι Εγνατίας Οδού
Σιδηροδρομικό Δίκτυο
Πρωτεύον Ηλεκτροκίνητο
Δευτερεύον Ηλεκτροκίνητο
Μεθοριακοί Σταθμοί
Λιμένες
Κύρια Διεθνής Θαλάσσια Πύλη
Μεικτός Λιμένας
Επιβατικός Λιμένας
Ιχθυόσκαλα
Τουριστικό Αγκυροβόλιο
Μαρίνα
Λιμάνι Κρουαζιέρας
Αερολιμένες
Κύριος Διεθνής Αερολιμένας
Ελικοδρόμια

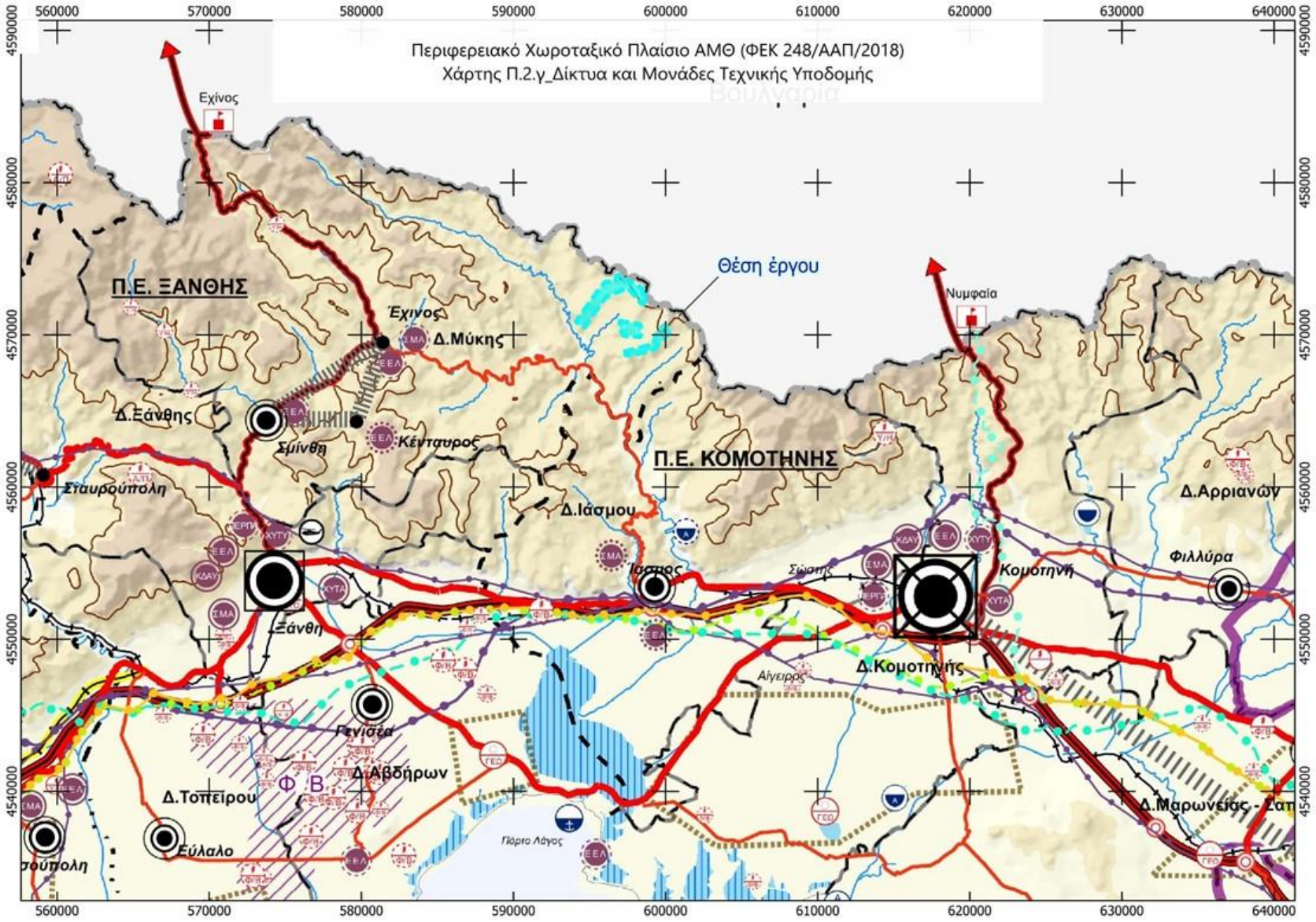

Ρυθμίσεις Χωροταξικού Σχεδιασμού
Περιοχές αναζήτησης ΠΕΡΠΟ (υφιστάμενες)
Περιοχές αναζήτησης ΠΕΡΠΟ (υφιστάμενες)
ΖΟΕ (υφιστάμενες)
ΠΕΧΠ προτεινόμενες
ΣΟΑΠ προτεινόμενα
ΠΟΑΠΔ προτεινόμενα
Ευρείες Ζώνες Ανάπτυξης Δραστηριοτήτων
Έντονης Γεωργικής Ανάπτυξης
Δασοκομίας - Υλοτομίας
Γεωθερμίας
Κτηνοτροφίας
Συνδυασμένης Οικοανάπτυξης
Παράκτιας Οικοανάπτυξης
Υδατοκαλλιεργειών
Δευτερογενούς Τομέα - Εξόρυξη
Ζώνη Εξόρυξης Μαρμάρου
Ζώνη Εξόρυξης Υδρογονανθράκων
Τριτογενούς Τομέα - Τουρισμός
Ανεπτυγμένες τουριστικά περιοχές
Αναπτυσσόμενες τουριστικά περιοχές
Αναπτυσσόμενες τουριστικά περιοχές
Αναπτυσσόμενες τουριστικά περιοχές
Περιοχές με περιθώρια ανάπτυξης ειδικών και εναλλακτικών μορφών τουρισμού - Οικοτουριστικές περιοχές
Περιοχές με περιθώρια ανάπτυξης ειδικών και εναλλακτικών μορφών τουρισμού - Περιοχές εναλλακτικού τουρισμού
Μονάδες Ανάπτυξης Παραγωγικών Δραστηριοτήτων
Πρωτογενούς Τομέα
Περιοχή Αναζήτησης για Ζώνες Θερμοκηπιακών Εγκαταστάσεων
Ζώνες Αναζήτησης ΠΟΑΥ
Δευτερογενούς Τομέα - Μεταποίηση
ΒΙΠΕ
ΒΙΟΠΑ
ΒΙΠΕ - Μετατροπή σε Ε.Π.- Α
Προτεινόμενο Ε.Π.- Β
Προτεινόμενο ΒΙΟΠΑ
Ε.Π. - Εξυγίανσης
ΕΠΕΒΟ
Τριτογενούς Τομέα
Μονάδα ανάπτυξης ιαματικού τουρισμού
Χιονοδρομικός τουρισμός
Συνεδριακός τουρισμός
Προτεινόμενες ζώνες εμπορίου Εμπορευματικά κέντρα

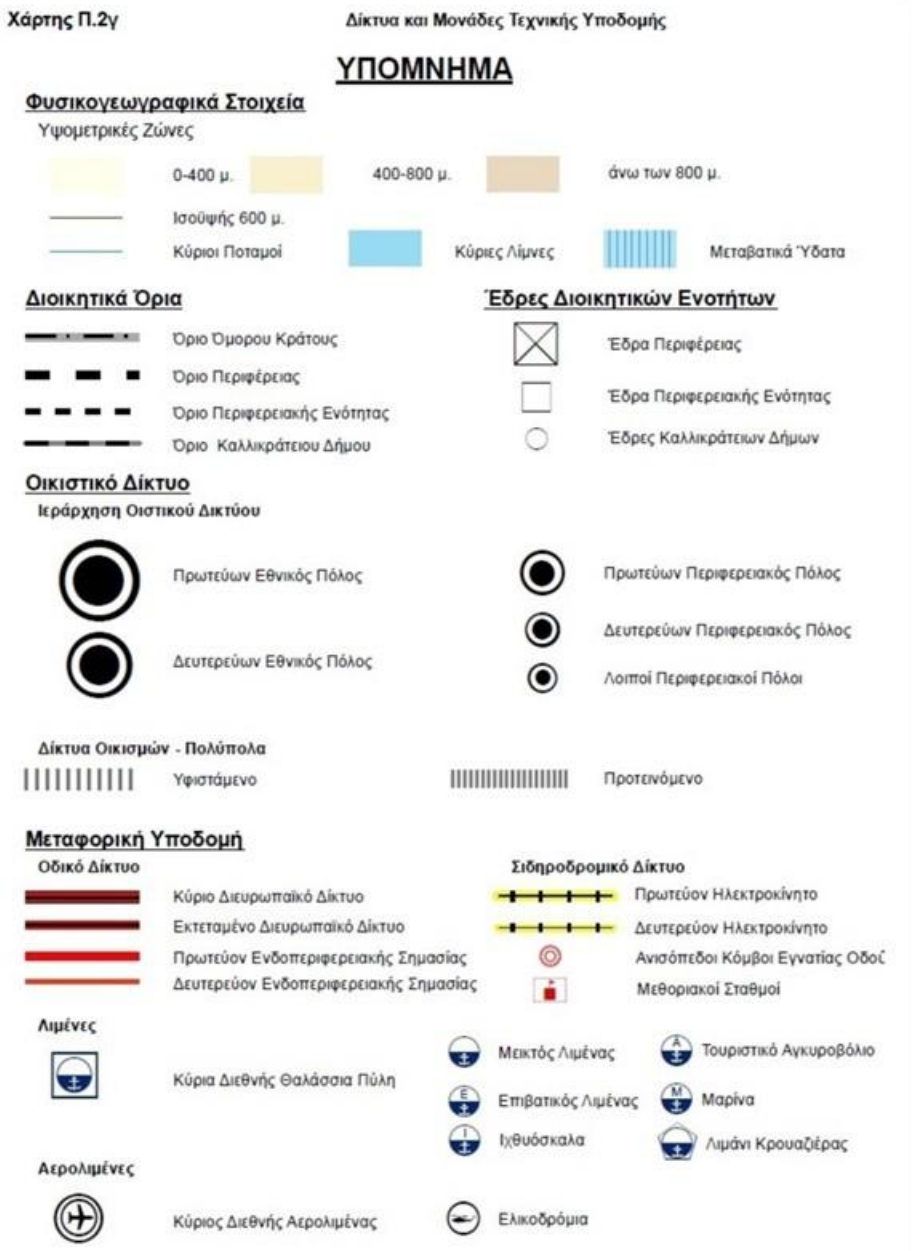
Map 38 Regional Spatial Planning Framework for the region (Government Gazette 248/ΑΑΠ/2018) Map P.2.b Settlement Network - Administrative and Social Equipment - Transport

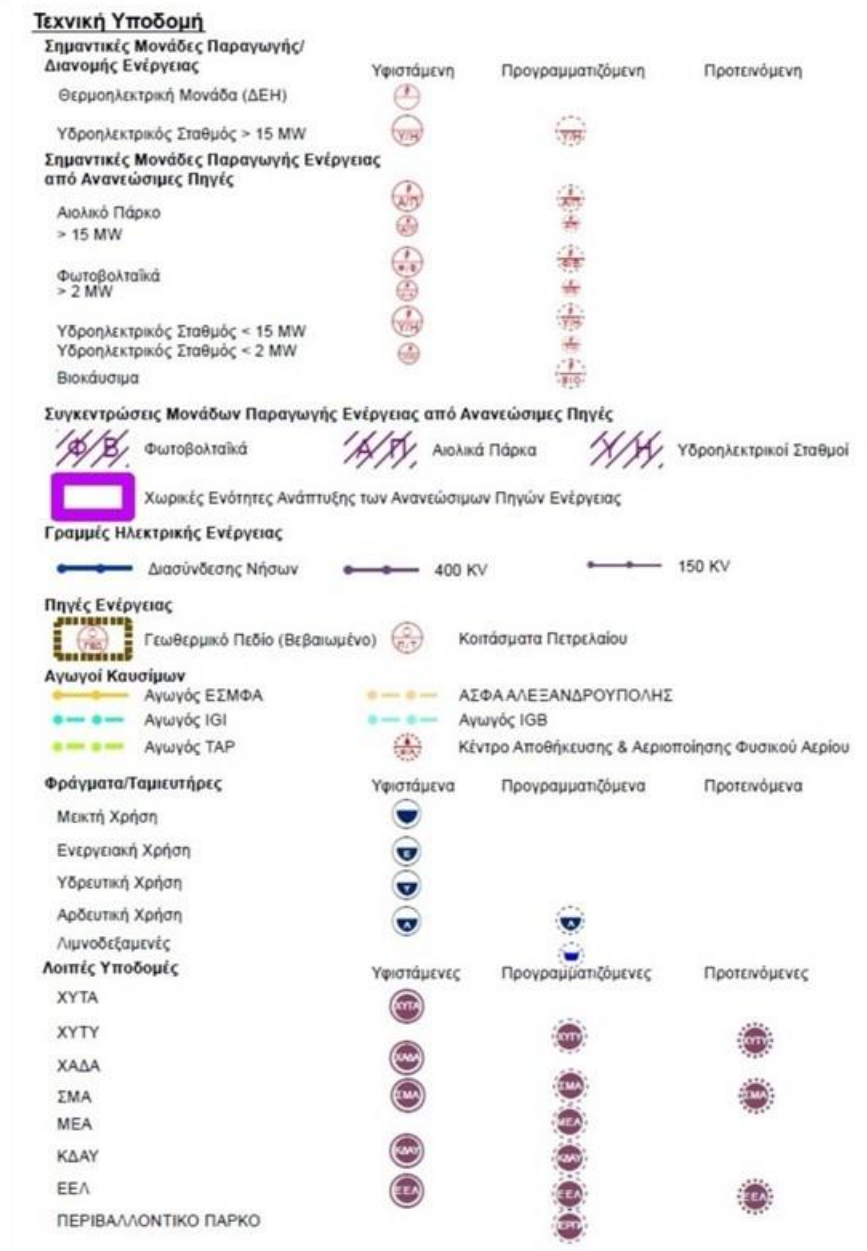



Χάρτης Π.2β
Οικιστικό Δίκτυο - Διοικητικός και Κοινωνικός Εξοπλισμός - Μεταφορές
ΥΠΟΜΝΗΜΑ
Φυσικογεωγραφικά Στοιχεία
Υψομετρικές Ζώνες
0-400 μ.
400-800 μ.
άνω των 800 μ.
Ισοϋψής 600 μ.
Κύριοι Ποταμοί
Κύριες Λίμνες
Μεταβατικά Ύδατα
Διοικητικά Όρια
Όριο Όμορου Κράτους
Όριο Περιφέρειας
Όριο Περιφερειακής Ενότητας
Όριο Καλλικράτειου Δήμου
Έδρες Διοικητικών Ενοτήτων
Έδρα Περιφέρειας
Έδρα Περιφερειακής Ενότητας
Έδρες Καλλικράτειων Δήμων
Οικιστικό Δίκτυο
Ιεράρχηση Οικιστικού Δικτύου
2ο Επίπεδο
Πρωτεύοντες Εθνικοί Πόλοι
3ο Επίπεδο
Δευτερεύοντες Εθνικοί Πόλοι
5ο Επίπεδο - Λοιπά Κέντρα Π.Ε.
Αστικά κέντρα με πληθυσμό >10.000 κατ
6ο Επίπεδο
Έδρες Καλλικράτειων Δήμων
7ο Επίπεδο
Έδρες Καποδιστριακών Δήμων
8ο Επίπεδο
Λοιποί Οικισμοί
Ιεράρχηση Οικισμών με Βάση τον Πληθυσμό (ΕΛΣΤΑΤ, Απογραφή Πληθυσμού 2011)
άνω των 50.000
40.000 - 50.000
10.000 - 20.000
5.000 - 10.000
2.000 - 5.000
< 2.000
Δίκτυα Οικισμών - Πολύπολα
Υφιστάμενο
Προτεινόμενο
Βιώσιμες Αναπτυξιακές Ενότητες
(Οι Γενικές συμπίπτουν με τα ορια των Π.Ε.)
Επιμέρους
Λειτουργικές Εξαρτήσεις
Μεταξύ κέντρων Αναπτυξιακών Ενοτήτων
Μεταξύ οικισμών
Διοικητικός και Κοινωνικός Εξοπλισμός
Προγραμματιζόμενο
Προτεινόμενο
Δ Δικαστήρια
ΔΜ Μονάδες Διοίκησης
Λ Λιμεναρχείο
ΥΛ Υπολιμεναρχείο
ΑΕΙ ΑΕΙ
ΤΕΙ ΤΕΙ
Θ Θεραπευτήρια
ΕΑ Εφορία Αρχαιοτήτων
Μ Μουσείο
ΣΜ Σημαντική Μονάδα Πολιτισμού
Ν Νοσοκομείο
ΚΥ Κέντρο Υγείας
ΤΣ Τεχνική Σχολή
ΕΚ Ερευνητικό Κέντρο
Μεταφορική Υποδομή
Οδικό Δίκτυο
Υφιστάμενο
Προγραμματιζόμενο
Προτεινόμενο
Κύριο Διευρωπαϊκό Δίκτυο
Εκτεταμένο Διευρωπαϊκό Δίκτυο
Πρωτεύον Ενδοπεριφερειακής Σημασίας
Δευτερεύον Ενδοπεριφερειακής Σημασίας
Ανισόπεδοι Κόμβοι Εγνατίας Οδού
Μεθοριακοί Σταθμοί
Σιδηροδρομικό Δίκτυο
Υφιστάμενο
Προγραμματιζόμενο
Προτεινόμενο
Πρωτεύον Ηλεκτροκίνητο
Δευτερεύον Ηλεκτροκίνητο
Λιμένες
Υφιστάμενοι
Προγραμματιζόμενοι
Προτεινόμενοι
Κύρια Διεθνής Θαλάσσια Πύλη
Λιμάνι Κρουαζιέρας
Μεικτός Λιμένας
Επιβατικός Λιμένας
Τουριστικό Αγκυροβόλιο - Αλιευτικό Καταφύγιο
Μαρίνα
Αερολιμένες
Κύριος Διεθνής Αερολιμένας
Ελικοδρόμια
Υφιστάμενο
Προγραμματιζόμενο

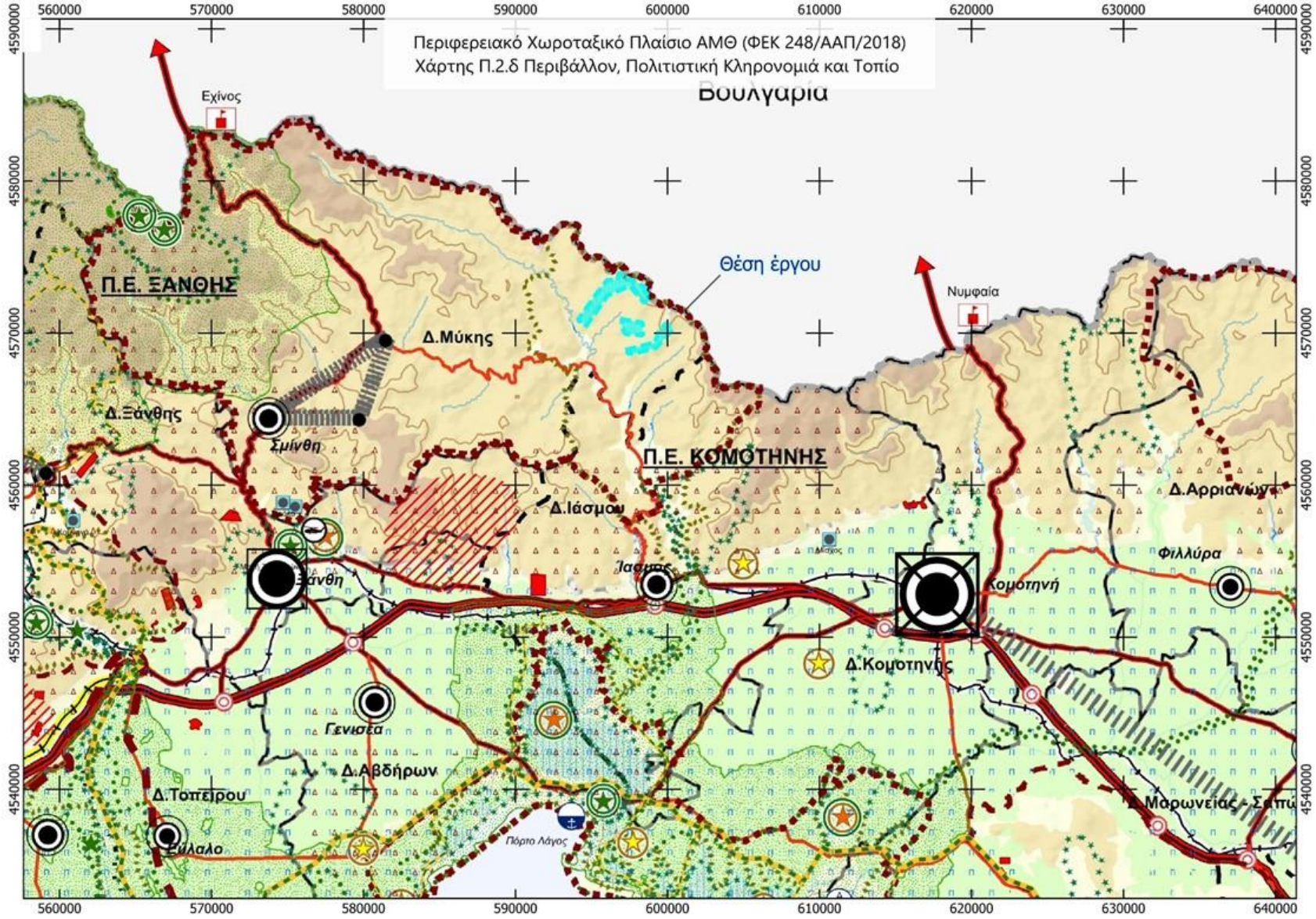
Map 39 Regional Spatial Planning Framework of the Upper Thracian Region (Government Gazette 248/AAP/2018) Map P.2.c Technical Infrastructure Networks and Units

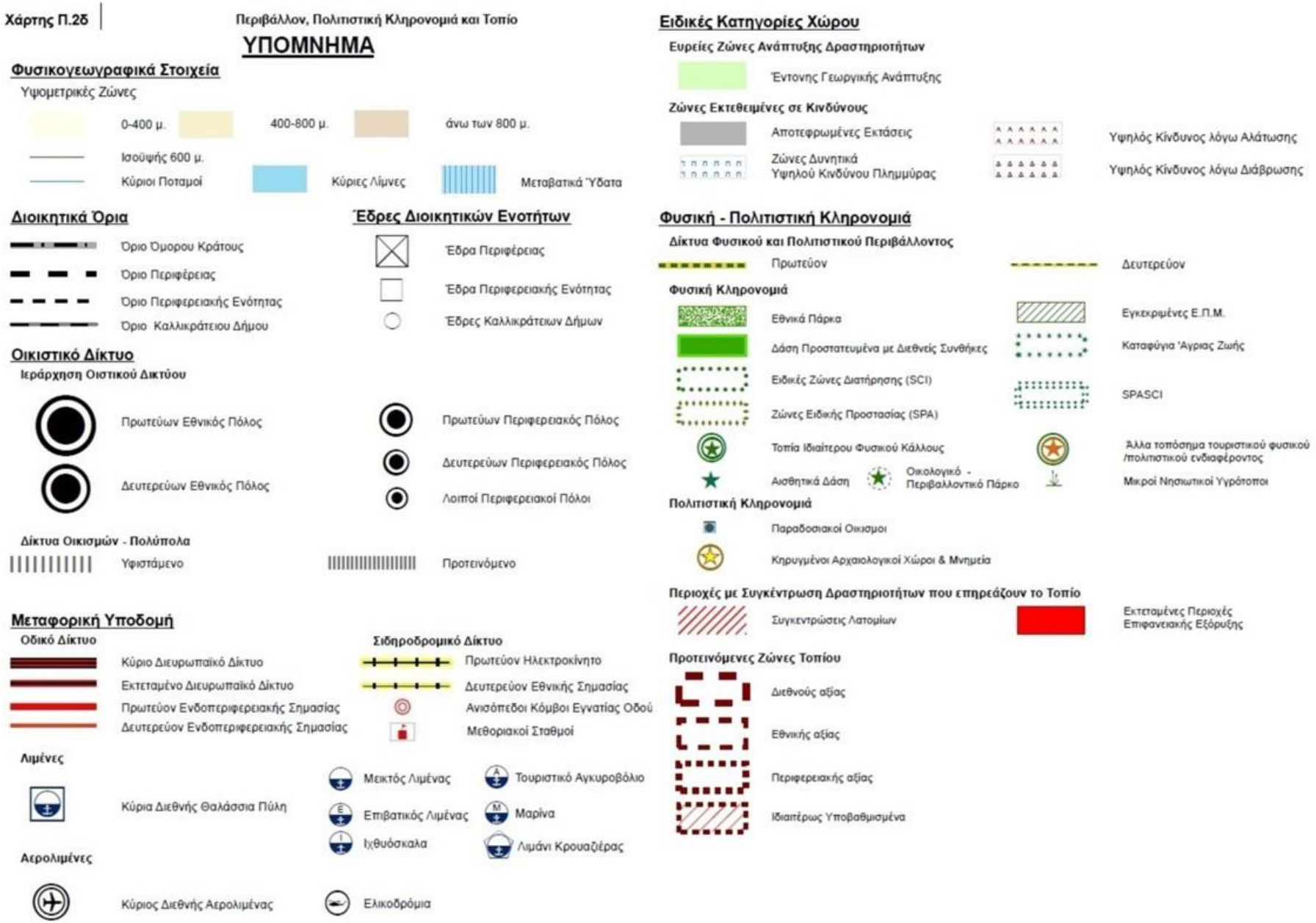



Χάρτης Π.2γ
Δίκτυα και Μονάδες Τεχνικής Υποδομής
ΥΠΟΜΝΗΜΑ
Φυσικογεωγραφικά Στοιχεία
Υψομετρικές Ζώνες
0-400 μ.
400-800 μ.
άνω των 800 μ.
Ισοϋψής 600 μ.
Κύριοι Ποταμοί
Κύριες Λίμνες
Μεταβατικά Ύδατα
Διοικητικά Όρια
Όριο Όμορου Κράτους
Όριο Περιφέρειας
Όριο Περιφερειακής Ενότητας
Όριο Καλλικράτειου Δήμου
Έδρες Διοικητικών Ενοτήτων
Έδρα Περιφέρειας
Έδρα Περιφερειακής Ενότητας
Έδρες Καλλικράτειων Δήμων
Οικιστικό Δίκτυο
Ιεράρχηση Οικιστικού Δικτύου
Πρωτεύων Εθνικός Πόλος
Δευτερεύων Εθνικός Πόλος
Πρωτεύων Περιφερειακός Πόλος
Δευτερεύων Περιφερειακός Πόλος
Λοιποί Περιφερειακοί Πόλοι
Δίκτυα Οικισμών - Πολύπολα
Υφιστάμενο
Προτεινόμενο
Μεταφορική Υποδομή
Οδικό Δίκτυο
Κύριο Διευρωπαϊκό Δίκτυο
Εκτεταμένο Διευρωπαϊκό Δίκτυο
Πρωτεύον Ενδοπεριφερειακής Σημασίας
Δευτερεύον Ενδοπεριφερειακής Σημασίας
Σιδηροδρομικό Δίκτυο
Πρωτεύον Ηλεκτροκίνητο
Δευτερεύον Ηλεκτροκίνητο
Ανισόπεδοι Κόμβοι Εγνατίας Οδού
Μεθοριακοί Σταθμοί
Λιμένες
Κύρια Διεθνής Θαλάσσια Πύλη
Μεικτός Λιμένας
Επιβατικός Λιμένας
Ιχθυόσκαλα
Τουριστικό Αγκυροβόλιο
Μαρίνα
Λιμάνι Κρουαζιέρας
Αερολιμένες
Κύριος Διεθνής Αερολιμένας
Ελικοδρόμια


Τεχνική Υποδομή
Σημαντικές Μονάδες Παραγωγής/ Διανομής Ενέργειας
Υφιστάμενη
Προγραμματιζόμενη
Προτεινόμενη
Θερμοηλεκτρική Μονάδα (ΔΕΗ)
Υδροηλεκτρικός Σταθμός > 15 MW
Σημαντικές Μονάδες Παραγωγής Ενέργειας από Ανανεώσιμες Πηγές
Αιολικό Πάρκο > 15 MW
Φωτοβολταϊκά > 2 MW
Υδροηλεκτρικός Σταθμός < 15 MW
Υδροηλεκτρικός Σταθμός < 2 MW
Βιοκάυσιμα
Συγκεντρώσεις Μονάδων Παραγωγής Ενέργειας από Ανανεώσιμες Πηγές
Φωτοβολταϊκά
Αιολικά Πάρκα
Υδροηλεκτρικοί Σταθμοί
Χωρικές Ενότητες Ανάπτυξης των Ανανεώσιμων Πηγών Ενέργειας
Γραμμές Ηλεκτρικής Ενέργειας
Διασύνδεσης Νήσων
400 KV
150 KV
Πηγές Ενέργειας
Γεωθερμικό Πεδίο (Βεβαιωμένο)
Κοιτάσματα Πετρελαίου
Αγωγοί Καυσίμων
Αγωγός ΕΣΜΦΑ
Αγωγός IGI
Αγωγός TAP
ΑΣΦΑ ΑΛΕΞΑΝΔΡΟΥΠΟΛΗΣ
Αγωγός IGB
Κέντρο Αποθήκευσης & Αεριοποίησης Φυσικού Αερίου
Φράγματα/Ταμιευτήρες
Υφιστάμενα
Προγραμματιζόμενα
Προτεινόμενα
Μεικτή Χρήση
Ενεργειακή Χρήση
Υδρευτική Χρήση
Αρδευτική Χρήση
Λιμνοδεξαμενές
Λοιπές Υποδομές
Υφιστάμενες
Προγραμματιζόμενες
Προτεινόμενες
ΧΥΤΑ
ΧΥΤΥ
ΧΑΔΑ
ΣΜΑ
ΜΕΑ
ΚΔΑΥ
ΕΕΛ
ΠΕΡΙΒΑΛΛΟΝΤΙΚΟ ΠΑΡΚΟ

Map 40 Regional Spatial Planning Framework of the Upper Peloponnese (Government Gazette 248/AAP/2018) Map P.2.d Environment, Cultural Heritage and Landscape




Χάρτης Π.2δ
Περιβάλλον, Πολιτιστική Κληρονομιά και Τοπίο
ΥΠΟΜΝΗΜΑ
Φυσικογεωγραφικά Στοιχεία
Υψομετρικές Ζώνες
0-400 μ.
400-800 μ.
άνω των 800 μ.
Ισοϋψής 600 μ.
Κύριοι Ποταμοί
Κύριες Λίμνες
Μεταβατικά Ύδατα
Διοικητικά Όρια
Όριο Όμορου Κράτους
Όριο Περιφέρειας
Όριο Περιφερειακής Ενότητας
Όριο Καλλικράτειου Δήμου
Έδρες Διοικητικών Ενοτήτων
Έδρα Περιφέρειας
Έδρα Περιφερειακής Ενότητας
Έδρες Καλλικράτειων Δήμων
Οικιστικό Δίκτυο
Ιεράρχηση Οικιστικού Δικτύου
Πρωτεύων Εθνικός Πόλος
Δευτερεύων Εθνικός Πόλος
Πρωτεύων Περιφερειακός Πόλος
Δευτερεύων Περιφερειακός Πόλος
Λοιποί Περιφερειακοί Πόλοι
Δίκτυα Οικισμών - Πολύπολα
Υφιστάμενο
Προτεινόμενο
Μεταφορική Υποδομή
Οδικό Δίκτυο
Κύριο Διευρωπαϊκό Δίκτυο
Εκτεταμένο Διευρωπαϊκό Δίκτυο
Πρωτεύον Ενδοπεριφερειακής Σημασίας
Δευτερεύον Ενδοπεριφερειακής Σημασίας
Σιδηροδρομικό Δίκτυο
Πρωτεύον Ηλεκτροκίνητο
Δευτερεύον Εθνικής Σημασίας
Ανισόπεδοι Κόμβοι Εγνατίας Οδού
Μεθοριακοί Σταθμοί
Λιμένες
Κύρια Διεθνής Θαλάσσια Πύλη
Μεικτός Λιμένας
Επιβατικός Λιμένας
Ιχθυόσκαλα
Τουριστικό Αγκυροβόλιο
Μαρίνα
Λιμάνι Κρουαζιέρας
Αερολιμένες
Κύριος Διεθνής Αερολιμένας
Ελικοδρόμια
Ειδικές Κατηγορίες Χώρου
Ευρείες Ζώνες Ανάπτυξης Δραστηριοτήτων
Έντονης Γεωργικής Ανάπτυξης
Ζώνες Εκτεθειμένες σε Κινδύνους
Αποτεφρωμένες Εκτάσεις
Ζώνες Δυνητικά Υψηλού Κινδύνου Πλημμύρας
Υψηλός Κίνδυνος λόγω Αλάτωσης
Υψηλός Κίνδυνος λόγω Διάβρωσης
Φυσική - Πολιτιστική Κληρονομιά
Δίκτυα Φυσικού και Πολιτιστικού Περιβάλλοντος
Πρωτεύον
Δευτερεύον
Φυσική Κληρονομιά
Εθνικά Πάρκα
Δάση Προστατευμένα με Διεθνείς Συνθήκες
Ειδικές Ζώνες Διατήρησης (SCI)
Ζώνες Ειδικής Προστασίας (SPA)
Τοπία Ιδιαίτερου Φυσικού Κάλλους
Αισθητικά Δάση
Οικολογικό - Περιβαλλοντικό Πάρκο
Εγκεκριμένες Ε.Π.Μ.
Καταφύγια Άγριας Ζωής
SPASCI
Άλλα τοπόσημα τουριστικού φυσικού /πολιτιστικού ενδιαφέροντος
Μικροί Νησιωτικοί Υγρότοποι
Πολιτιστική Κληρονομιά
Παραδοσιακοί Οικισμοί
Κηρυγμένοι Αρχαιολογικοί Χώροι & Μνημεία
Περιοχές με Συγκέντρωση Δραστηριοτήτων που επηρεάζουν το Τοπίο
Συγκεντρώσεις Λατομίων
Εκτεταμένες Περιοχές Επιφανειακής Εξόρυξης
Προτεινόμενες Ζώνες Τοπίου
Διεθνούς αξίας
Εθνικής αξίας
Περιφερειακής αξίας
Ιδιαιτέρως Υποβαθμισμένα

5.2.2 Institutional status, in accordance with approved plans.

There are no approved plans (regulatory, general urban planning, town planning, zoning, zoning, settlement boundaries or other land use and building plans) in the development area of the entire project.

5.2.3 Specific management plans (NAPs, WFDs, water management plans, etc.).

5.2.3.1 *National Waste Management Plan ESDS & National Waste Management Plan Regional Waste Management Plan of AMTH*

The new *Waste* Management Plan was approved by the Act 39 (31-8-2020) of the Council of Ministers (Government Gazette 185/A/29-09-2020) "*Approval of the National Waste Management Plan (NWMP)*".

The main objective of the EAP is to develop and define the strategy, policies, objectives, targets, guidelines and appropriate measures aimed at protecting the environment and human health. In order to achieve this objective, emphasis is placed on preventing and reducing waste production, limiting the use of natural resources by improving their efficiency, with the ultimate aim of moving towards a circular and sustainable economy.

To ensure long-term competitiveness, promote sustainable economic growth and create new jobs, this plan is combined with the National Energy and Climate Plan (NECP) in the context of the transition to a climate-neutral Europe by 2050.

On the other hand, the Regional Waste Management Plan of Eastern Macedonia and Thrace (Waste Management Plan of East Macedonia and Thrace) has been updated based on the decision 218/2016 of the Regional Council of East Macedonia and Thrace and was ratified by KYA 61076/5267 (Government Gazette 4123/B/21-12-2016). It is the specification in the area of Eastern Macedonia and Thrace of the general guidelines included in the National Solid Waste Management Plan (NSWMP) and described in Annex II of Article 17 of the KYA 50910/2727 (Government Gazette 1909 B/22.12.2005) "Measures and Conditions for Solid Waste Management. National and Regional Management Plan'.

More specifically, for the Municipality of Myki, the construction of the SMA was proposed in the PESDA but its operation was considered unprofitable and its construction is not considered appropriate from the existing design. However, it is proposed to operate a small green point on the boundary of the municipality.

The Xanthi landfill, which serves the entire P.E. Xanthi and the Xanthi Landfill: It will serve the PE of Xanthi and in cases where required other regional units. The Xanthi landfill will receive the residual mixed waste from the Xanthi waste treatment plant and the residues of the Xanthi waste treatment plant.

The nature of the activity does not generate significant quantities of waste. The project is not in conflict with the new NAP and the current WFD, provided that the waste streams

are managed in a lawful manner during both the construction and operation phases of the WFD.

5.2.3.2 *Water Management Plan of the Thrace Water Department*

The project does not contradict with the River Basin Management Plan (RBMP) of the Thrace Water Department (approved by No. 1006/FEK 2290/B/13-9-2013 Decision of the National Water Commission, and the 1st Revision of the SWMP by Decision no. 900 (FEK 4680/B/29-12-2017).

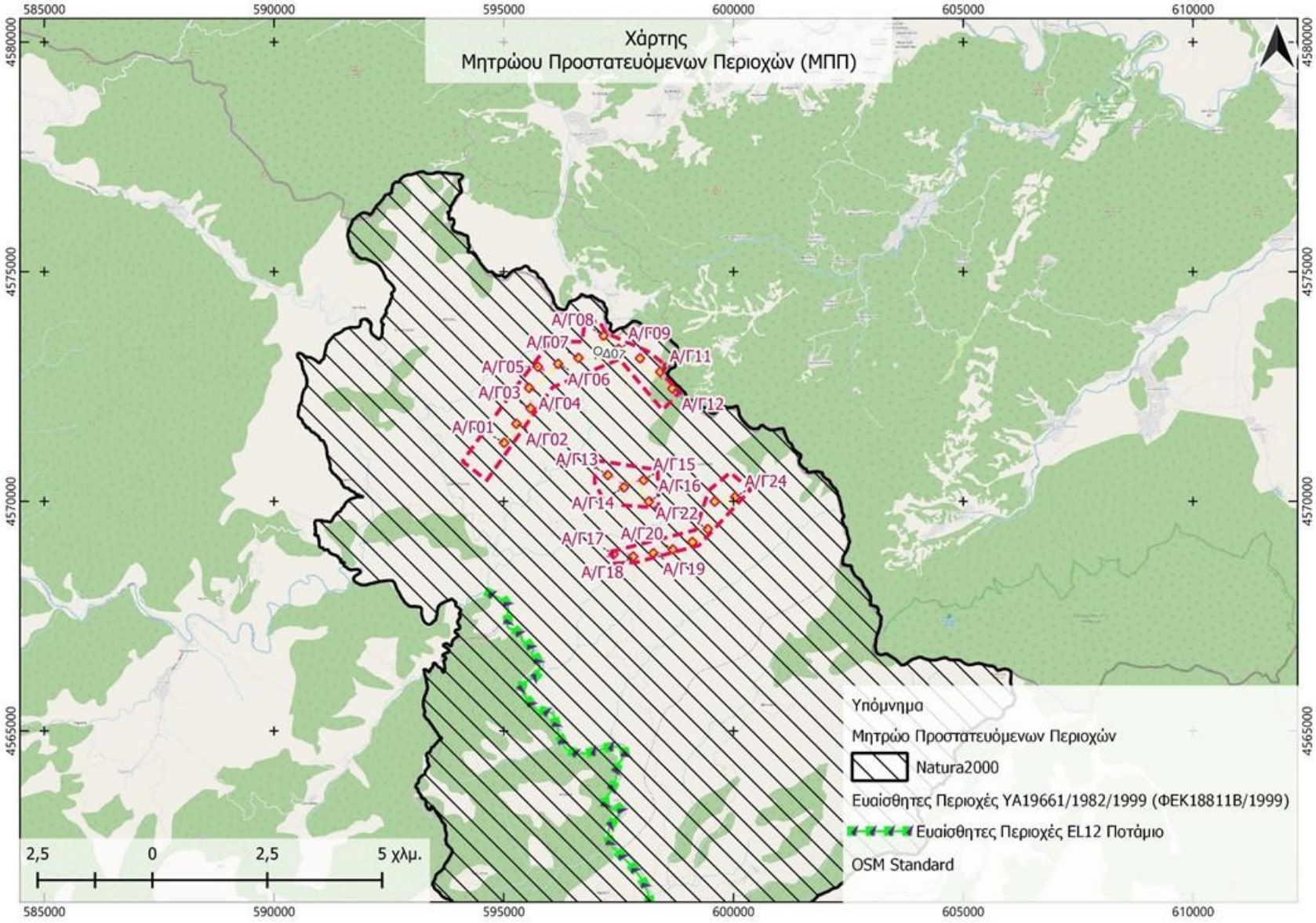
The project site is fully included in the Register of Protected Areas (RPA) of the RMP due to its location within the boundaries of the Special Protection Area (SPA) of the Natura 2000 Network called "KOMPSATOU SOCIADA" and code GR1130012.

However, the implementation of the project under study will in no way affect the environmental objectives set out in the SWMP for surface water and groundwater.

Subchapter 8.13 of this report provides a detailed description of the surface and groundwater in the area.

A map is attached.

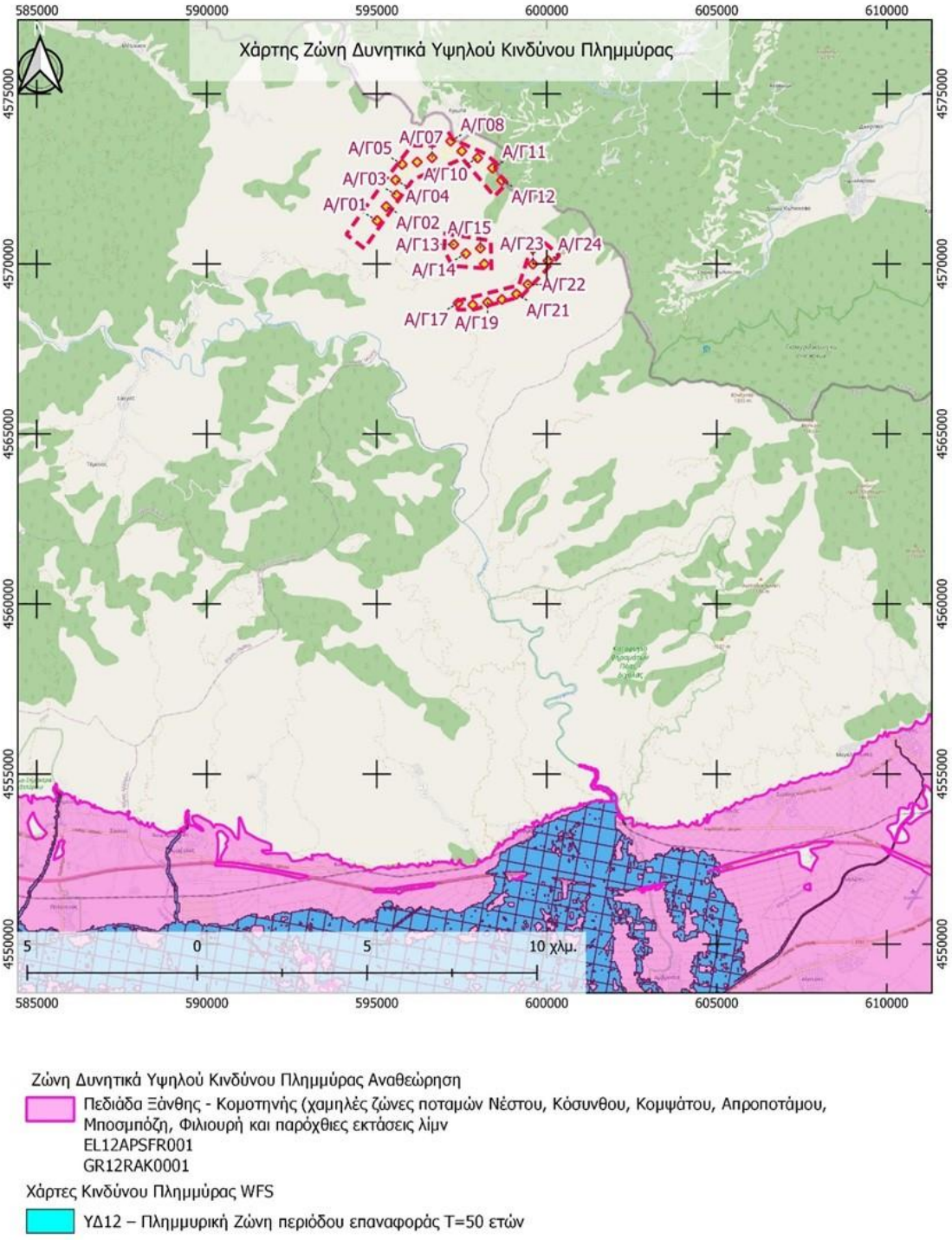
Map 41 Positioning of the ESDP in relation to the PPA



5.2.3.3 *Flood Risk Management Plan (FRMP)*

The project does not contradict the *Approved Flood Risk Management Plan of the Thrace Water Department (EL 12) Government Gazette 2688/B/06-07-2018*. The installation area of the entire project is located outside the Potentially High Flood Risk Zone (HPZ). The HPZ is referred to in subchapter 8.13 of this document. A map is provided below.

Map 42 Siting of ESCOs in relation to the WFD .



5.2.4 Organised activity receptors

The wider project area does not fall within business parks, organised receptors of manufacturing and business activities, quarry zones, integrated tourism development areas, organised aquaculture development areas, etc.

6 DETAILED DESCRIPTION OF THE ACTIVITY

6.1 Detailed description of main, ancillary and supporting/associated facilities and works

The proposed project concerns the installation and operation of a Wind Power Plant (WPP) with a total installed and maximum output capacity of 148.8 MW, with an estimated annual energy production of 441,440 MWh. The Wind Power Plant is proposed to be installed at the locations "Xefoto, Samarano, Iskima & Mesovouni", which falls within the administrative boundaries of the Municipal Unit of Satra, Municipality of Mykes, Regional Unit of Xanthi, belonging to the Region of AN. MACEDONIA & The purpose of the proposed facility is to operate as an independent power generation unit interconnected with the Greek Electricity Transmission System.

The aim of the project is to exploit the wind potential of the area. The installation of the project in three polygons and at an altitude of ~440 to 765m on the ridges of Xefoto, Samarano, Iskioma & Mesovoun".

The location of the wind turbines was based on the following criteria:

- Wind potential of the area and main wind energy direction
- Technical specifications of wind turbines and the possibility of installing them at the specific points.
- Environmental criteria and minimum possible impact.
- Compatibility with the IFRS.

The wind turbines to be used come from the most reliable international wind turbine manufacturers (criteria: technology, experience and number of installed wind turbines, maintenance system, etc.). The wind turbines will be certified by the CEPA and relevant international certification bodies for the climatic conditions of the project site. In addition, the project includes the control building (control house), internal roads, access roads, and connection to the System.

The wind turbines that will be installed will be of type SG6.2-170 of SIEMENS GAMESA RENEWABLE ENERGY S.A., with a power output of 6.2 MW each, an impeller diameter of 170 m and a hub height of 135 m. For the foundation of the wind turbines, a circular foundation with a diameter of approximately 20 m and a depth of approximately 3.7 m will be constructed. They will be shaped to adapt to the topographical configuration of each site and will be spaced by widening the roadway on both sides. The platforms will be used to temporarily deposit the equipment of each wind turbine, assemble it and finally erect it in sections.

The total length of the road construction is 14.884,00 m, the whole of which concerns the opening of new roads.

The wind turbines will be electrically interconnected through autonomous 0.69kV/33kV step-up transformers with an underground medium voltage line that will be constructed along the roads that will be used for accessibility to the installation sites of the wind turbines. In addition to the underground network, the underground network will be used for the M.T. cables, the H.T. cables, the telecommunication cables and the earthing network. The transformers are

planned to be placed inside the fuselages of the gensets and according to the technical solutions of the final studies and the instructions and regulations of the AMDIE for the uninterrupted and safer maintenance and operation of the gensets. Depending on their location, the wind turbines of the Gensets will be connected either to the MT panel of the Main Control Tower, or to the Auxiliary Control Tower and then to the Main Control Tower (Internal MT Network). Within the buildings, a Medium Voltage (MV) Pavilion will be constructed and the necessary electrical equipment of the A/P will be connected to it, a remote control and security system will be installed, and it will serve and provide satisfactory working conditions for the staff by providing the necessary facilities such as offices, kitchen, sanitary area and equipment storage.

According to the proposed solution, for the interconnection of the wind farm with the interconnected system, approximately 39.25 km of underground medium voltage line will be required, connecting the wind turbines to the two control houses. The central control house will be connected to the existing "Iasmos" TSO via the external medium voltage network, which has a length of 26.65 km, of which only 129.24 m is overhead (crossing part of the river Komsato) and the rest is underground. The existing "Iasmos" substation will be upgraded from 33 kV to 150 kV.

The main objective of the project promoter, apart from the implementation of technically sound solutions, is to minimise the environmental impact. The selection of the optimum access road and cable routing was based on environmental criteria, while at the same time trying to meet the technical requirements for safe operation and easy construction and maintenance of both the road works and the transmission line. The following environmental parameters were thus sought to be met:

- The construction of the shortest possible length of road works.
- The construction of the shortest possible length of transmission lines.
- Undergrounding of the electricity transmission network.
- The route of the line should be served by the roads (existing and new) in order to facilitate both the construction of the line and its maintenance, thus minimising the need for substantial technical interventions and the opening of new access roads.
- Crossing areas where there are no significant anthropogenic activities.
- Crossing areas outside of institutionally protected areas and away from historical and archaeological monuments.

For the safe and smooth operation of the station, the following main and accompanying works are required:

A/N	TECHNICAL PROJECT	SUB-ACT
1	Wind turbines 24x SG6.2-170 (6.2 MW)	Landscaping of W/T platforms
		Placement of foundations W/T
		Transportation & Erection of W/T

A/N	TECHNICAL PROJECT	SUB-ACT
2	Interconnection of ASPHE	Underground road MT for the internal interconnection of the W/T, length 26.198,90 m
		MT route for the interconnection of the Project with the existing substation "Iasmos", with a length of 29.652,16m, of which 29.522,92 m underground and 129,24 m overhead.
3	Roads	Opening of new roads 14.884,00 m
		Hydraulic engineering works along the road
4	Other Facilities	Two (2) Control Houses. Main Control Building with an area of 280 m^2 Auxiliary Control Scaffolding 120 m in area^2
5	Restorations	Horticultural Restoration
		Reforestation

6.2 Detailed description of the project, with reference to all the main technical and geometrical elements.

6.2.1 Type - Project size

The 148.8 MW "XEFOTO" wind farm will consist of a total of 24 wind turbines with a nominal capacity of 6.2 MW each, manufactured by SIEMENS GAMESA RENEWABLE ENERGY S.A.

Each genset of the Park will be connected to the Medium Voltage (MV) network of W/F through a 5150 kVA, 0.69 / 33 kV Transformer (M/S).

For the connection of the ASPEE to the Transmission System, the construction of a 33 kV Medium Voltage (MV) network and its connection to the existing substation "IASMOS" is foreseen.

6.2.2 Detailed description of Wind Turbines

The main project considered in this RIA is the electricity generation from a wind power plant. Wind turbines are the power generation units of wind farms. Wind turbines convert the kinetic energy of the wind into mechanical energy and then the mechanical energy is converted into electrical energy through a generator.

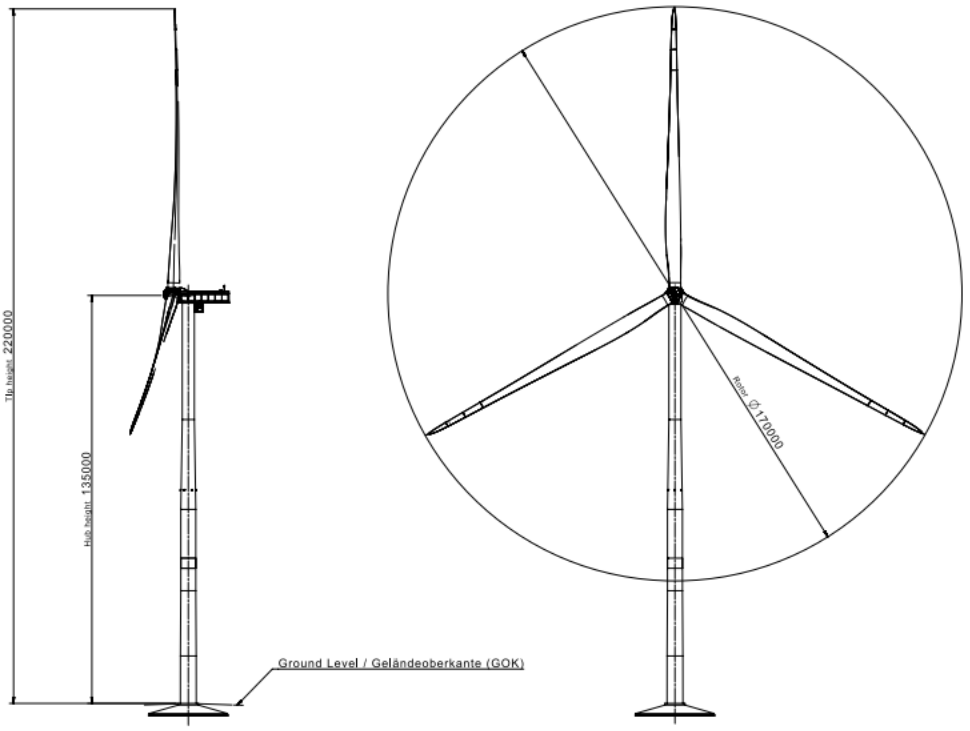
The "XEFOTO" RES-EPP will consist of a total of 24 SG6.2-170 type SG6.2-170 of the company SIEMENS GAMESA RENEWABLE ENERGY (SGRE), with a nominal capacity of 6.2 MW, with a hub height of 135 m. The total installed and maximum delivered capacity of the RES-EPP will be 148.8 MW.

Image from 2: SG type wind turbine (source: Siemens Gamesa Renewable Energy)

Each SG6.2-170 is a three-bladed, horizontal-axis aircraft. The wings are 83.5 m long and are made of carbon fibre and glass fibre reinforced with special resins. The rotor diameter is 170 m, its sweep area is 22,698 m^2 . Each SG6.2-170 G/SG is equipped with a three-phase asynchronous induction generator of wound cage, variable speed, 6-pole. The rated power of the generator is 6200 kW. The generator is connected to the mains via a power converter located on the spindle (nacelle) of the machine and allows it to operate at variable speeds.

The Siemens Gamesa SG6.2-170 has an active yaw system whose operation is based on information obtained from anemometers on the windlass of the vessel. The M/S, which raises the voltage from 690V (generator output) to 33kV (transmission voltage up to the Y/S), is located at the height of the nacelle in a special isolated room. The M/S is resin type hermetic and suitable for indoor installation.

Scenery 1.: Schematic of SG6.2-170 -135 m wind turbine (source: Siemens Gamesa Renewable Energy)



At high wind speeds the control system, as well as the variable pitch blade system keep the power output at its nominal value, regardless of the temperature and air density. At lower wind speeds, the variable pitch blade pitch system and the control system maximise the power output by selecting the optimum combination of rotor speed and blade pitch which leads to the maximum efficiency.

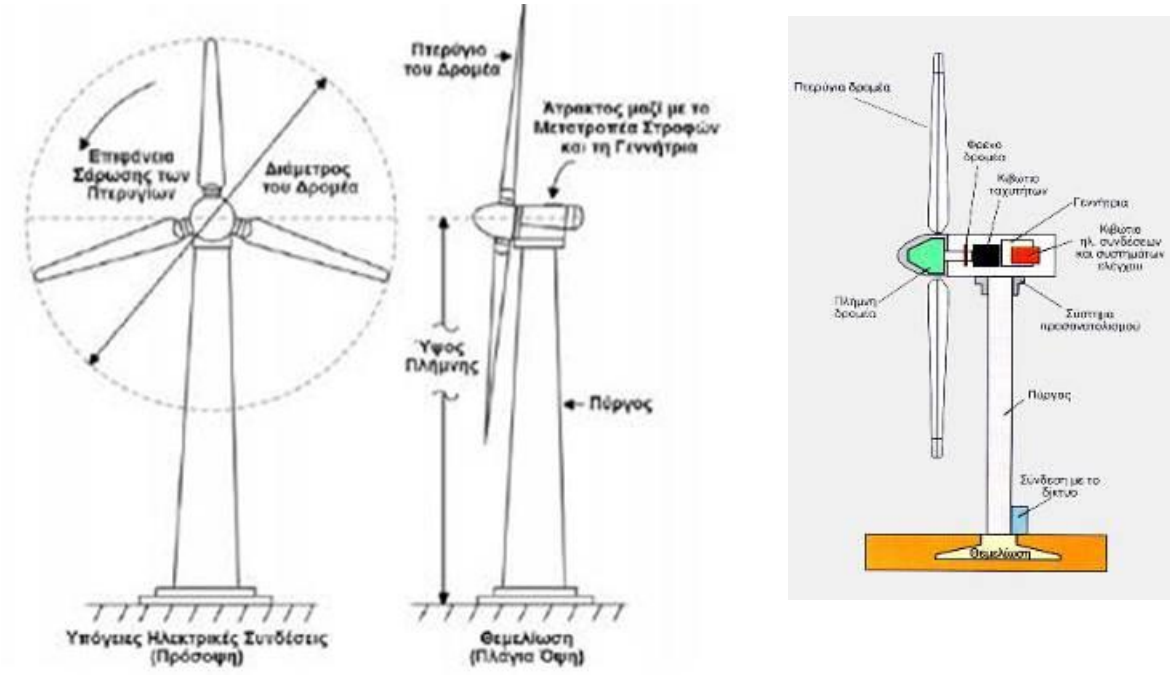
The main shaft transmits power to the generator through a gearbox. The main shaft transmits power to the generator through a gearbox. The generator shall be dual-fed, asynchronous, three (3) pole, PWM frequency converter, and air cooled. The excitation is either from the AMP network or from the power converter. The control of all functions of the A/V is done through a microprocessor based controller. The compensation of reactive power as well as the control of the power factor is done using power electronics. Thus, the power factor (coefficient of power) is maintained at the levels specified by the grid operator and can be adjusted in a sufficient range according to the requirements of the system operator. The control units of the W/Ts are connected via a fibre optic network that leads to a centralised optical-to-digital conversion panel (grid station) at the control house. The signals are transferred and processed on a PC using appropriate software (PPC) operating in Windows environment with RS232 serial communication. Thus, from the control house, the A/P can be fully remote controlled.

Although there is no general method for classifying the subsystems of wind turbines, a typical horizontal axis wind turbine consists of the following parts:

- the rotor or impeller, consisting of two or three blades of glass fibre reinforced polyester. The blades are attached to a hub either fixed or with the possibility of rotation about their longitudinal axis.
- the fuselage it includes:
- the transmission system, consisting of the main shaft, its bearings and the speed multiplier box, which adapts the rotational speed of the rotor to the synchronous speed of the generator.
- the electrical generator, synchronous or induction, which is connected to the output of the multiplier through a rubber or hydraulic coupling and converts mechanical energy into electrical energy and is usually located on the tower and inside the nacelle of the wind turbine. There is also the braking system which is a common disc brake mounted on the main shaft or on the generator shaft.
- the pre-wind system, which constantly forces the rotor's axis of rotation to be parallel to the wind direction.
- the tower, which supports all the above electromechanical installation.
- the electronic panel and the control panel, which are located at the base of the tower. The control system monitors, coordinates and controls all operations of the wind turbine, ensuring its smooth operation.

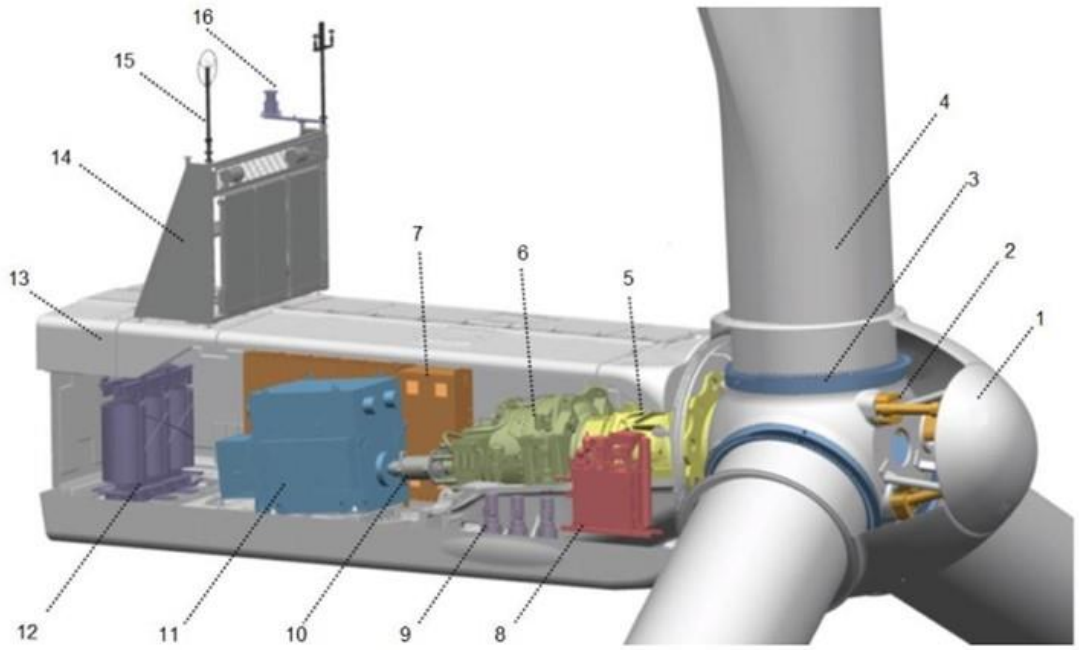
The SIEMENS GAMESA RENEWABLE ENERGY SG6.2-170 generator operates at a nominal voltage of 690 V. For the connection of each genset to the Medium Voltage (MV) grid of the wind farm there is a 0.69/33 kV transformer, which is installed inside the genset. The windings of the M/T are connected in a triangle on the Medium Voltage side and in a star on the Low Voltage side.

Image from 3: Parts of the wind turbine.



Source: K.A.P.E.

Image from 4: Interior of the SG fuselage



1	Rotor cover	9	Yaw system
2	Pitch system	10	High speed shaft
3	Blade bearings	11	Generator
4	Blades	12	Transformer
5	Low speed shaft	13	Nacelle cover
6	Gearbox	14	Cooling system
7	Electrical cabinets	15	Wind sensors
8	Hydraulic group	16	Beacon system

The table below shows the main characteristics of the selected wind turbine.

Table 24: Characteristics of wind turbine type SG6.2-170

BASIC TECHNICAL CHARACTERISTICS OF THE W/T SG6.2-170	
DROMEAS	
Press	SG6.2-170
Impeller diameter	170m
Hub height	135m
Scanning surface	22.698 m^2
Power setting	Tilt, torque and speed adjustment
Speed cut-in speed	3 m/s
Speed cut-out speed	25 m/s
Restart speed	22 m/s
PAGE	
Manufacturer	Siemens Gamesa Renewable Energy
Blade length	83,5 m
Blade material	Glass fibre reinforced epoxy resin
Number of blades	3

BASIC TECHNICAL CHARACTERISTICS OF THE W/T SG6.2-170	
Lightning protection	Included
PYRGOS	
Press	Tubular
Material	Steel
Height	135 m
Departments	6
Weight	468,031
ELECTRIC GENERATOR	
Rated power of the W/T	6.2 MW
Type of generator	Asynchronous Dual Power Supply
PRE-TORQUE SYSTEM (YAW)	
Press	Active
Yaw Control (Yaw Control)	Active based on the wind indicator signal
Function	Electric Grass Motor
Brake	Active Friction Braking

(source: Siemens Gamesa Renewable Energy)

The towers are metallic, tubular in shape, with full internal electrical and lighting infrastructure and with internal access to the fuselage. Within the tower there are mezzanines for the safe access of personnel and the conduct of operations while. In strictly predetermined positions there are the bases of the panels as well as the cable glands of the W/T. The towers are grounded by connecting them to the grounding grid of the base, as described in the next paragraph. The tower height is 135 m and the rotor diameter is 170 m.

For access to the installation sites of the gensets, road sections will be required, the formation of platforms suitable for the foundation of the gensets, the opening of channels for the routing of the medium-voltage cables of the gensets' interconnection with each other and with the two planned control houses and with the existing 33/150kV "IASMOS" substation. The above required accompanying road and electrical interconnection works are described in detail, in terms of their technical characteristics, in the following paragraphs.

6.2.3 Central station supervision system and communication of the A/P with the load sharing system of ADMIE

A special system for the central supervision of the operation of the entire station, of the SCADA (Supervisory Control and Data Acquisition) type, has been provided to enable the necessary measurements to be taken and all the manipulations of the plant to be carried out. The SCADA system (Remote Control - Supervisory and Data Acquisition System) continuously collects information for the smooth operation of the plant and the avoidance of dangerous

situations. It is also planned to supply and install an electronic monitoring system for the wind turbines.

Each wind turbine will be equipped with a microprocessor that provides communication between the turbines & the Control System. The cables will be laid along the interconnection paths underground, thus connecting the wind turbines to the central computer. The Control System will be installed inside the house. The database to be maintained will contain data pertaining to the performance, operation & history of each wind turbine.

Additional possible controls achieved for maintenance purposes are the following:

- control of cosφ.
- power limitation for the whole wind farm or for each wind turbine separately.
- adjustment of the power step for starting or stopping operations of the wind farm or each wind turbine separately.
- start or stop of operation of wind farms or each wind turbine separately.

The central computer facilitates the operation and maintenance of the wind turbines. Data such as wind speed and direction, output power, rotor rotation speed, total energy production and operating hours during different time periods (days, months & years) etc. are collected and can be presented in tabular or graphical form.

In case of an error, the control system automatically informs the terminal and the maintenance staff.

6.2.4 Other technical data

Lightning rods will be installed, appropriately placed on the wind turbines, in order to reduce the possibility of lightning strikes.

Also to ensure the safety of flights, the wind turbines will be marked with flashing lights according to the instructions of the competent Civil Aviation Authority.

6.2.5 Luminous signage W/T

In selected wind turbines (as indicated by the competent CAA department), it is foreseen to place on their fuselage and in the middle of the pylon, appropriate aviation light markings, according to the requirements of the Civil Aviation Authority (CAA). This is done in order to be able to delineate the AREA and identify the AREA during the night and to protect all flights that may take place in the area above the AREA.

6.3 Detailed description of accompanying projects

The civil engineering infrastructure works required for the implementation of the wind farm are presented in detail in the following paragraphs and are briefly as follows:

- The twenty-four (24) platforms, i.e. the wind turbine construction sites, ranging from 3,793 to 10,992 m^2 approximately.

- The foundations of the four wind turbines, which will be circular in cross-section, 20.0 m in diameter and approximately 3.7 m deep.
- Opening of new forest roads with a total length of 14.884,00 m
- Construction of the necessary stormwater drainage works, i.e. thirty-nine (39) pipelines.
- Drilling of cable channels with a total length of approximately 26,198.90 m, which will run along the internal roads of the wind farm (existing roads and new openings) for the installation of the 33kV medium voltage cables for the interconnection of the wind turbines with the two control buildings. At the same time, the fibre optic cables will be installed in the same channels.
- Cable ducts, total length 29.522,92 m along the roads and existing roads for the installation of 33kV medium voltage cables for the interconnection of the W/F with the existing substation "Iasmos".
- Aerial access for a length of approximately 129.24 m of the outer M.T. line.
- Installation of two control cabinets, a main one of approximately 280 m^2 and an auxiliary one of approximately 120 m^2 .

6.3.1 Medium voltage network

For the connection of the ASPEE to the Transmission System, the construction of a 33 kV Medium Voltage (MV) network and its connection to the existing 150/33kV "Iasmos" substation located approximately 16.2 km south of the project is foreseen.

The route of the 33kV MT line, from the considered ASPEE to the location of the existing substation "IASMOS" is shown on the maps in the Annex.

The maps below show the entire electrical interconnection network.

6.3.1.1 Connection of the W/Ts to each other and to the central panel in the control house

The electrical interconnection between the gensets will be carried out through autonomous 0.69/33 kV step-up substations (STs) on a 33 kV underground M.T. line, which will be constructed within the genset complex along the internal roadway in order to transfer the generated energy to the two planned control houses. Specifically, depending on their location, the wind turbines of the ASPHE will be connected either to the MT substation of the Main Control House, or to the Auxiliary Control House and then to the Main Control House (Internal MT Grid). From the Main Control House, the circuits will leave and connect to the "IASMOS" substation (External MT Grid).

Specifically, the Internal MT Interconnection Network will be underground, within a channel of appropriate dimensions, as presented below, and will connect the wind turbines -by branches- to the MT control tower of the Control Cubicles, as follows:

Branch 1: It will connect in sequence the W/Ts 1 - 2 - 3 - 4 with the Auxiliary Control Tower and will have a length of approximately 3,959.37 m.

Branch 2: It will connect in series the G/L 7 - 6 - 5 with the Auxiliary Control Tower and will have a length of approximately 1,489.44 m.

Branch 3: It will connect in series W/T 8 - 9 with the Auxiliary Control Tower and will be approximately 2,258.73 m long.

Branch 4: It will connect in sequence the W/T 12 - 11 - 10 with the Auxiliary Control Tower and will have a length of approximately 5.162,98 m.

Branch 5: It will connect the Auxiliary Control Cradle to the Main Control Cradle and will be approximately 9,854.39 m long.

Branch 6: It will connect in turn the G/As 13 - 14 - 15 - 16 with the Main Control Cradle and will have a length of approximately 7,852.49 m.

Branch 7: It will connect in series W/T 17 - 18 to the Main Control Cradle and will be approximately 875.01 m long.

Branch 8: It will connect in series the G/L 19 - 20 - 21 with the Main Control Cradle and will have a length of approximately 2,599.06 m.

Branch 9: It will connect in series the G/L 22 - 23 - 24 with the Main Control Cradle and will have a length of approximately 5,201.53 m.

The total length of the MT Internal Network cables will be approximately 39.253 m. The circuits will be installed within channels which will be located alongside the internal roadway and will be of type XLPE AL 3x1x800mm^2 or XLPE AL 3x1x600mm^2 , arranged in a triangular formation. The exact cross-section will be determined after the Final Connection Offer is received.

The M/S are planned to be placed inside the pylons of the W/T depending on the technical solutions of the final studies and the suggestions and regulations of the A.D.M.E.E. for their uninterrupted and safer maintenance and operation.

The underground 33 kV M.T. line (internal network) will be placed in a trench of approximately 1.20 m depth and 0.60 m width.

6.3.1.2 Connection of the W/F with the existing "Iasmos" lifting substation

As mentioned above, all the energy produced will be concentrated in the control house of the W/F and from there it will be transferred to the existing 33/150 kV "IASMOS" substation, via a 33 kV line. The line will be underground along its entire length except for a short section of only 129.24 m in length to cross the river Komsatou. The entire development of the underground 33 kV M.T. line is through existing public roads and will have a total length of 29,652.16 m. The circuits will be laid alongside the road in channels and the cables will be of XLPE 3x1x1000mm² AI type laid in a trefoil formation. Their exact cross section and number of circuits will be determined after the Final Connection Offer is received. The 33 kV underground M.T. line will be installed within a trench of approximately 1.20 m depth and 1.00 m width.

6.3.1.3 Underground cable laying channels

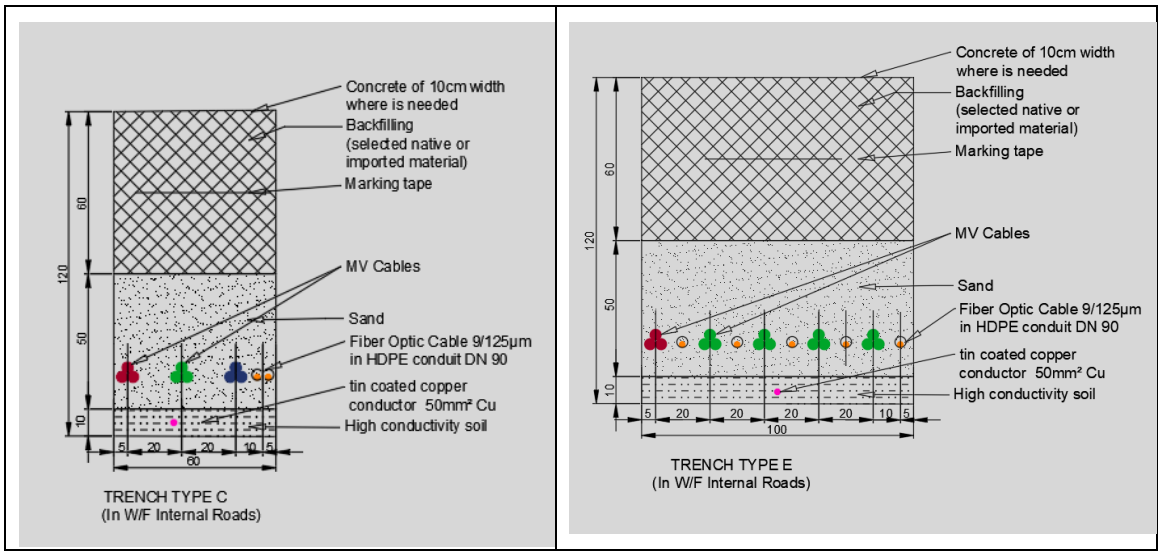
The M.T. cables will be installed in trenches of appropriate width and depth within the existing and new roads that will be constructed for the installation of the wind turbines.

Depending on the area of the park, between one and five circuits will be located within the trenches, so the trenches will be 1.20 m deep and 0.60 m wide for the Inner Grid and 1.20 m deep and 1.0 m wide for the Outer Grid. The total length of the trenches for the Internal Network will be approximately 26 198,90 m, and for the External Network approximately 29 522,92 m.

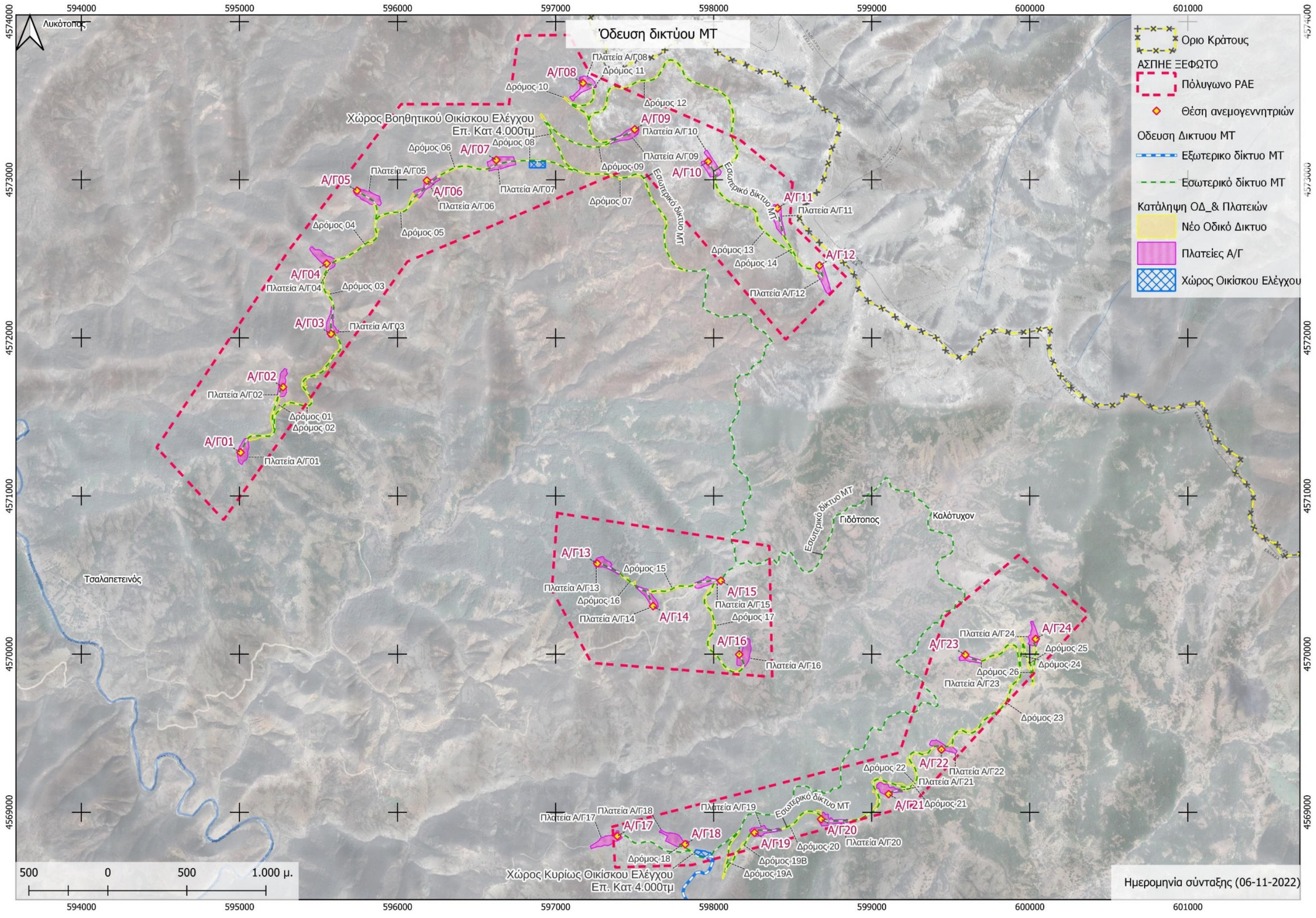
In addition, in each channel, in addition to the respective MT cables, an optical cable will be routed inside an HDPE pipe Φ40 as well as a multi-strand tinned grounding conductor of appropriate cross-section which will be installed along the entire length of the trench.

Within the channel, high-conductivity soil, approximately 10 cm thick, will first be poured and the grounding conductor will be placed in it. On top of this layer, the cable circuits and the optical fibre will be placed in the same plane. These will be overlaid with a layer of fine sand 50 cm thick, filling 60 cm of the depth of the channel. At this depth, all the above materials will be protected by concrete cable marking and protection plates, on which the PPC/MT markings will be placed. The further coating will include 20 cm thick 3A gravel, a warning marking tape and finally either another 40 cm of 3A gravel. Below is an indicative sketch of five circuits placed in a channel alongside an A/P road and corresponding photographs of the construction of such a channel.

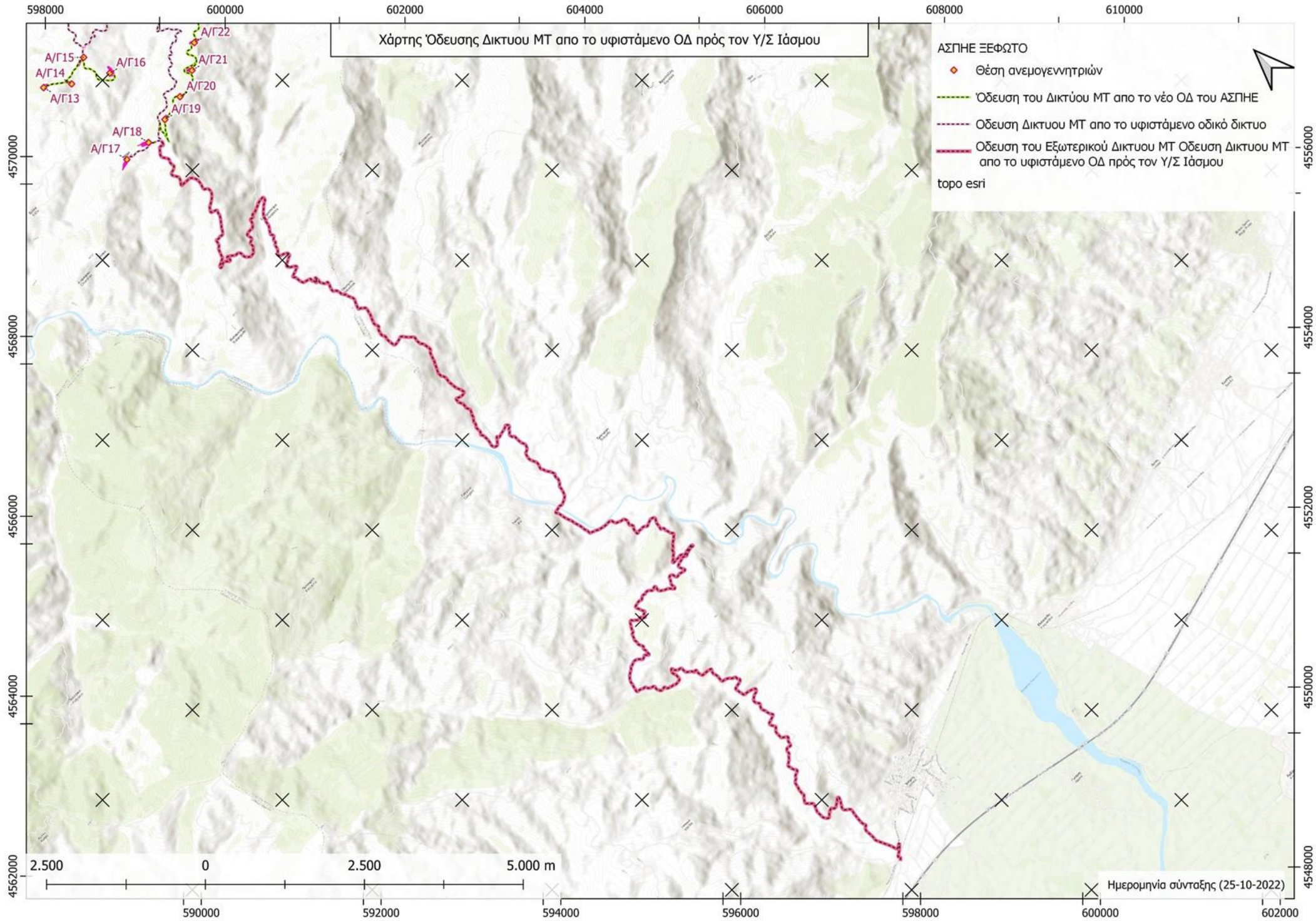
Image from 5: Indicative section of an underground channel crossing of the MT line with three and five circuits



Map 43: Route of internal M.T. cable network



Map 44: Route of the external network of M.T. cables



6.3.2 Landscaping of platforms W/T

At the installation sites of the wind turbines it is foreseen the formation of platforms in order to allow the parking of both the transport vehicle and the crane vehicle as well as the installation of auxiliary equipment for the erection of the wind turbines (e.g. containers) during the construction phase.

The plazas will be designed to adapt to the topographical configuration of each location and will be constructed either by widening when placed at the end of the streets or by widening the roadway on both sides when placed in the path of the streets. The platforms have an average occupied area of 8,000m^2 each with an average deck area of 5,800m^2 .

A crane of appropriate lifting capacity (500 t) will be used for the correct and safe execution of the erection works of the W/T. The assembly of the W/T shall be carried out on a landscaped area of the platforms as provided for in the road design. This area shall be at least as long as the height of the tower of the Genset, plus 19 m, and 3 m to 6 m wide, in accordance with Siemens Gamesa's technical specifications.

During the design of the platforms, emphasis was placed on the morphology of the soil, so that in combination with the required bearing height of the foundation of the W/T, but also the deposition and assembly of its elements, a shape was given that minimizes excavations. In the platforms, a pavement sub-base of 10 cm thick PSP O150 and a pavement base of 10 cm thick PSP O155 are foreseen.

In the "XEFOTO" wind farm, a total of twenty-four (24) platforms will be constructed for the installation of the wind turbines, the areas of which are presented in the following table.

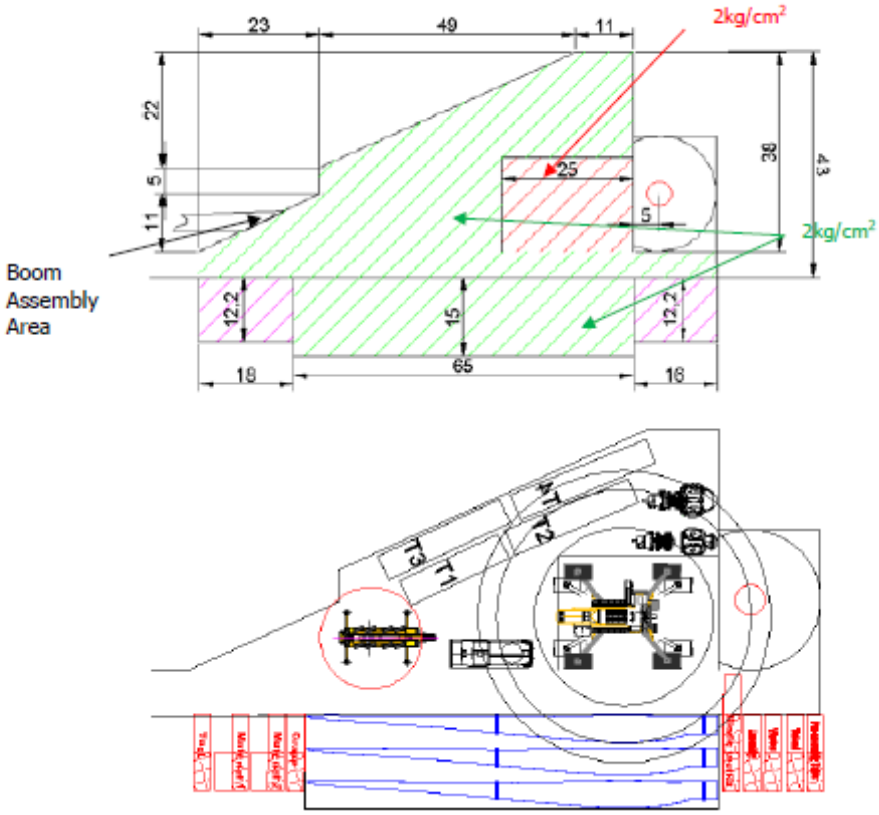
Table 25: Area of use and area of intervention of the wind turbine construction platforms

PLATFORM	SURFACE OF USE (m)^2	IMPACT AREA (m)^2
W/T 1	5.046,93	8.103,29
W/T 2	5.440,74	7.030,59
W/T 3	4.823,36	7.018,29
W/T 4	5.426,65	9.427,93
W/T 5	8.360,84	10.269,24
W/T 6	4.517,10	7.196,18
W/T 7	10.991,61	11.345,45
W/T 8	6.346,73	9.093,96
W/T 9	6.044,66	8.228,29
W/T 10	8.501,56	10.074,40
W/T 11	6.331,32	8.549,54

PLATFORM	SURFACE OF USE (m)^2	IMPACT AREA (m)^2
W/T 12	6.779,45	8.675,96
W/T 13	4.300,31	6.709,67
W/T 14	4.902,09	7.156,81
W/T 15	4.709,53	6.986,73
W/T 16	6.523,80	10.137,68
W/T 17	6.438,14	8.927,60
W/T 18	6.592,76	8.598,45
W/T 19	5.106,34	6.755,91
W/T 20	5.022,51	7.272,22
W/T 21	4.873,95	6.980,79
W/T 22	4.125,76	6.528,91
W/T 23	3.792,76	4.469,62
W/T 24	4.687,67	6.131,56
TOTAL	139.686,57	191.669,08

Image from 6: Typical shape and dimensions of the assembly Platform of SG 6.2-170.

End-of-road platform dimensions. Total Storage. Assembly in 1 Phase



Middle platform dimensions. Total Storage. Assembly in 1 Phase

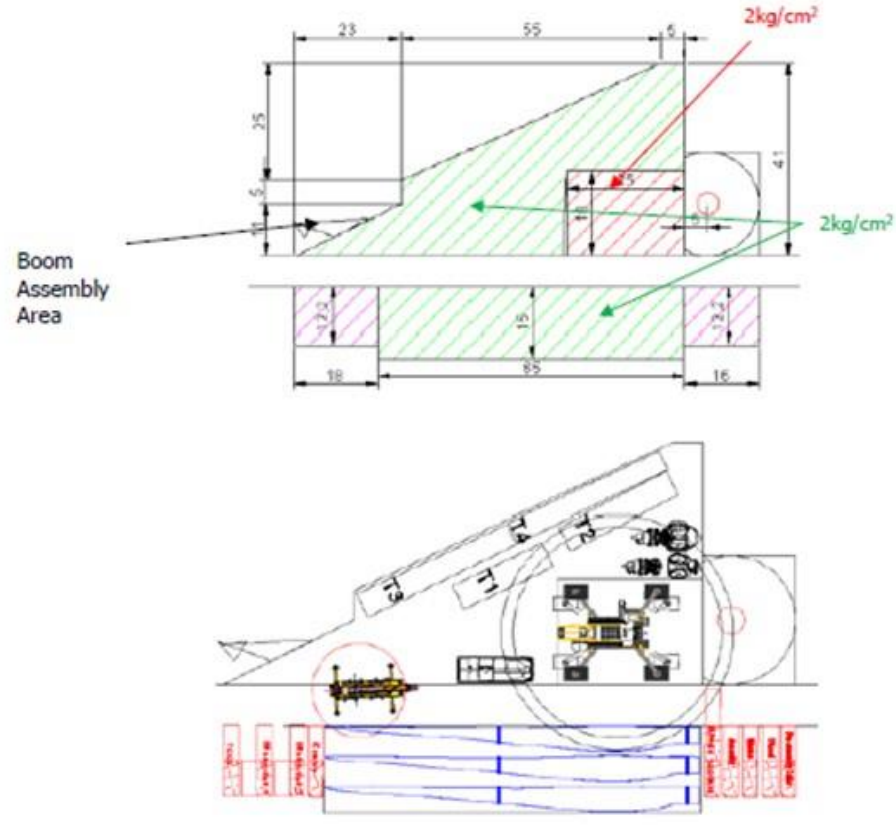


Image from 7: Crane for the erection of the wind turbines

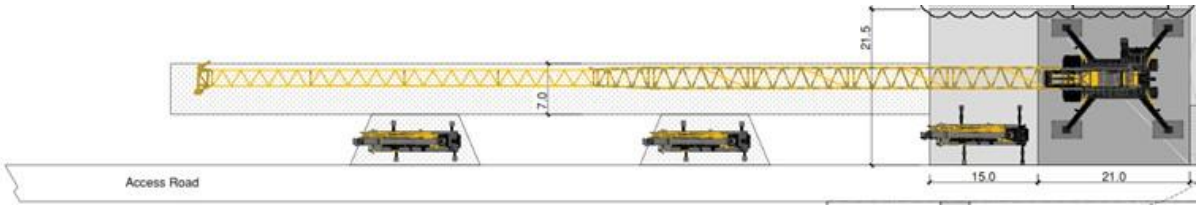


Image from 8: Assembly process of the AG

In the design of the platforms it was considered that:

- ✓ The part of the street in front of the Platform will also be used during construction.
- ✓ The heavy and small volume parts of the W/T (Nacelle, Hob) will be stored in the Platform.

- ✓ The erection cranes will be those specified in the relevant correspondence with the Company.
- ✓ There will be synchronisation during erection between erectors and conveyors.
- ✓ Due to the large construction loads, the use of a large crane (500 t) is required, which requires a specially designed assembly - disassembly lane, which has been provided in each Platform.
- ✓ It is envisaged that transport vehicles will have the ability to stop or return within the Platform area, where appropriate.

The design of the plazas provides for the minimum space required for the temporary storage of all materials, tools, machinery and components as well as the operational deployment and circulation of cranes and auxiliary vehicles.

6.3.3 Construction of foundations for W/T

For the placement of the 24 foundations tangential to the construction Platform, excavations of 20 m diameter and a depth of approximately 3.70 m will be carried out.The total excavations per SG6.2-170 type W/T is estimated at 1,162.39 m^3 and for the 24 W/T the total is approximately 27,897.36 m^3 .

Centred on the installation points of the wind turbines, the foundation will be constructed, which will be circular, with a diameter of approximately 19.8 m, as precisely defined by the structural study and the plans of the equipment foundation. Reinforced concrete will be used for the construction of the foundations, for the production of which a plant will be installed on site.

The construction of the foundation will be based on a structural foundation study which will be submitted to the competent Planning Authority in order to obtain the building permit required for the implementation of the works. The exact technical characteristics of the foundation resulting from the static study will depend on the characteristics of the W/T, the wind data and the seismicity of the area.

The excavation of foundations of civil engineering works is not included in the tables of landfill as it will be used in its entirety for the resurfacing of these.

Image from 9: Foundation of the W/T

6.3.4 ASPHE Control Houses

The Control Houses will be equipped with the required electrical equipment of the substation required for the interconnection needs of the substation with the 150/33 kV "IASMOS" substation. For this purpose, two Control Cubicles will be constructed, one Main and one Auxiliary. The Main Control Tower will be installed near the 18th Substation and will be used for the circuits from the Auxiliary Control Tower as well as the circuits from the 13th to 24th Substation. The Auxiliary Control Cubicle, which will be installed close to AG 7, will receive the circuits from AGs 1 to 12 and will then be connected to the Main Cubicle. These connections will form the Internal Interconnection Network. From the Main Scaffolding the interconnection circuits connecting the A/P to the S/S "Iasmos" will leave the Main Scaffolding and will form the External Interconnection Network.

The area of the Main Control House will be approximately 280 m^2 , while the Auxiliary Control House will be approximately 120 m^2 , and each Control House will be installed within a land area of 4.000,00 m^2 . The walls will be plastered with brickwork and the building will be painted with acrylic-based paints so that it will be in full harmony with the natural environment. A 0,80 m wide pavement will be built around the perimeter of the buildings.

Within the buildings, a Medium Voltage Powerhouse will be constructed and the necessary electrical equipment of the A/P will be connected to it, a remote control and security system will be installed, while it will serve and provide satisfactory working conditions for the staff by ensuring the necessary spaces such as offices, kitchen, sanitary area and equipment storage.

Image from 10: Panoramic View of a Typical Control Tower in a Wind Farm

6.3.5 Construction site premises area

As already mentioned above, the site of the Platform of W/T 7 will be used for the installation of its construction facilities. Within this area the construction machinery and other site facilities will be located. The area not required for the operation of the APSO will be restored after the completion of the construction works of the A/P. The land has a surface area of 10,991.61 m^2 .

6.3.6 Expansion projects of the existing Voltage Booster Substation "IASMOS"

The main solution for the interconnection of the power plant with the Electricity Transmission System is planned to be done through the extension of the 150/33kV "IASMOS" substation. The necessary equipment and extension works of the substation for the connection of the generator to the System will be determined after the issuance of the Final Offer of Connection by ADMIE and will be constructed under the responsibility of the generator. Details of the equipment and works that will be required for the construction of the TSO (civil engineering works, electromechanical equipment, landscaping, etc.) will be presented in the formulation of the Terms of Connection of ADMIE S.A. and in the relevant specification of DNEM. Indicatively, the equipment that may be required for the connection of the A/V to the TSO is as follows:

- Extension of the 150kV yoke of the "Iasmos" substation
- New Zygos on the 150kV at the substation "Iasmo II"
- 150KV intersection of the 150KV yokes for the separation of the yokes of the "Iasmos" and "Iasmos II" substations.
- Two (2) E/C A/Z Gate Power Transformer
- Two (2) 150KV power circuit breakers of ADMIE specifications of the Transformer Power Gate.
- Two (2) 33/150kV transformers (M/S) with a capacity of 90/110 MVA and 60/75 MVA
- Two (2) High voltage cells (HBC) for the M/S

- Five (5) Medium Voltage (MV) cells for the M/S
- Other outdoor equipment 33KV specifications ADMIE.
- Protection, control, energy and telecommunication measurement system.
- Lightning protection system.
- Grounding system.
- Building infrastructure consisting of a building with the use of a Control Centre and a substation warehouse accompanied by the necessary E/M installations. The building will be divided into two compartments, one for ADMIE and one for the Generator.
- Water supply and sewerage system - fire extinguishing system of the building and the surrounding area.
- Normal external lighting system and emergency external lighting system.
- Other necessary civil, electrical and mechanical engineering infrastructure for the construction and operation of the substation.

6.3.7 Access road to the ASPHE

In the context of the technical studies of the ASPHE under consideration and in particular the road study, the access to the polygons of the ASPHE "XEFOTO" has not been considered/studied.

6.3.7.1 Road sections - Interventions

Based on the road construction study prepared for the ASPIE "XEFOTO", the opening of an internal road network with a total length of 14,884.00 m is foreseen.Access is provided starting from an existing agroforestry road network, which passes through the polygons of the licensed wind turbine installation sites of the project to the south and approaching it to the north. New roads are joined and started on parts of the existing network, which will be used to access the wind turbine sites.

According to the roadway study for the construction of the subject ACHE, the deck width is five (5) meters. The drainage ditches will follow the slope of the roadway, will be triangular in cross section, and will be constructed along the entire length of the roadway and where required on an amphibious basis. The trench opening will be 1.20 m wide, and the height will be 0.40 m high.

The slopes of the trenches will be shaped with a gradient of 1:3. The slopes of the embankments shall be formed with a gradient of 3:2.

The slope on the straight sections will be single slope with a 2% slope.

For the stability of the soils, steps will be created on the slopes of the trenches with a height of more than 10 metres.

The bends will be widened for the passage of vehicles transporting the wind turbine sections, in accordance with the order no. 135661 / 4400 / 16-9-2013 on "Roads in areas protected by the provisions of forest legislation".

The above road works are summarised in the following table.

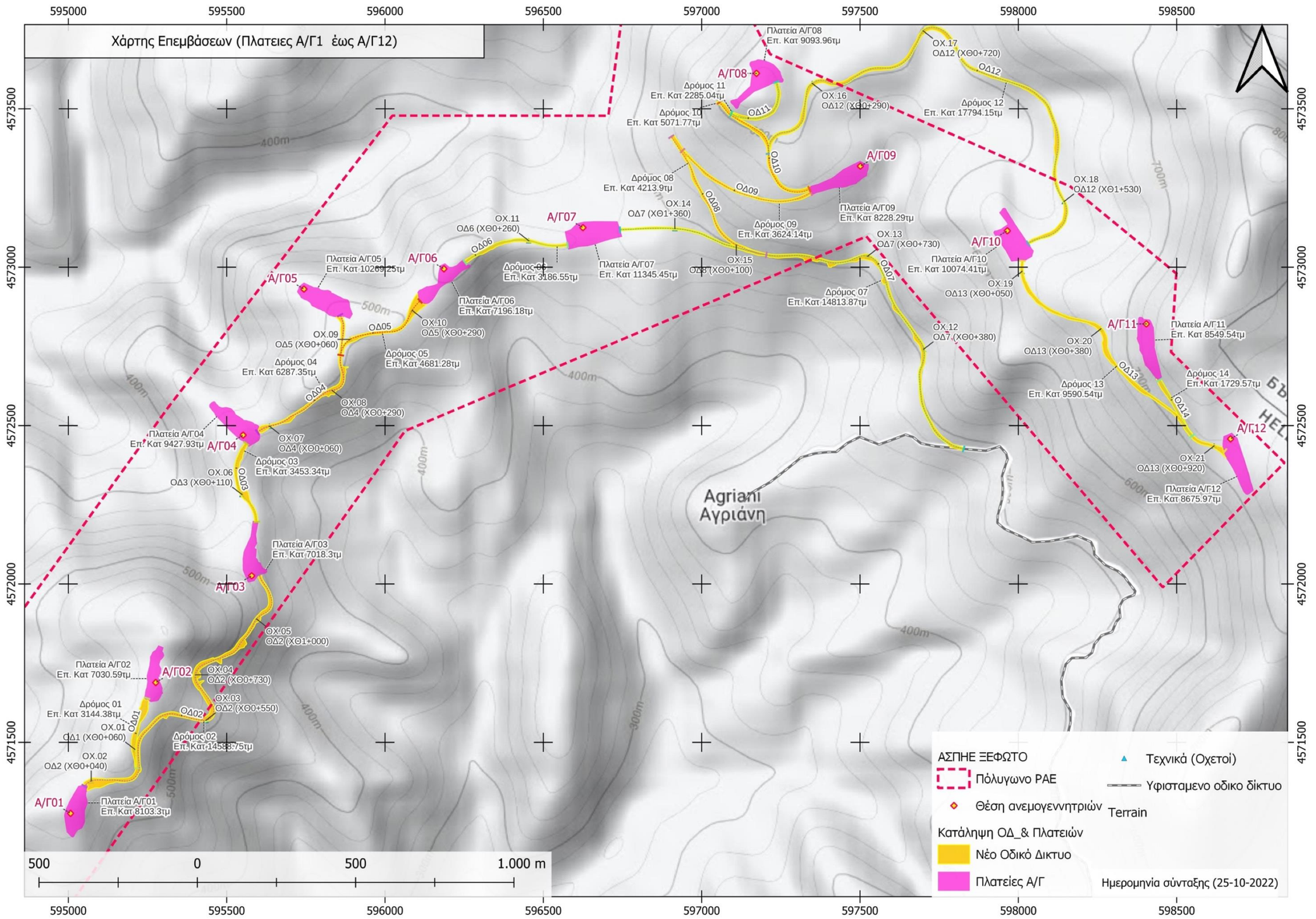
Table 26: Description of road sectors

ROAD	NEW ROAD LENGTH (m)	MAXIMUM LONGITUDINAL GRADIENT (%)	CONSTRUCTION AREA (in m^2)	AREA OF OCCUPANCY (NUMBER of Platform metres)
ROUTE 1	250	10.59	1.232.42	3.144.38
ROUTE 2	1.186	14.00	8.846.69	14.588.74
ROAD 3	295	7.79	1.749.99	3.453.34
ROUTE 4	573	13.92	3.566.57	6.287.35
ROUTE 5	366	12.64	2.138.32	4.681.28
ROAD 6	430	13.33	2.055.14	3.186.54
ROAD 7	1.560	13.16	8.736.78	14.813.87
ROUTE 8	505	13.97	2.728.17	4.213.90
ROUTE 9	483	9.25	2.317.11	3.624.14
ROUTE 10	462	11.11	3.279.42	5.071.77
ROUTE 11	251	10.31	1.590.41	2.285.04
ROUTE 12	1.758	13.39	12.230.61	17.794.15
ROUTE 13	1.007	13.93	5.788.46	9.590.54
ROUTE 14	216	10.48	947.62	1.729.57
ROUTE 15	376	11.40	1.909.00	3.411.00
ROUTE 16	136	0.19	593.86	1.466.07
ROUTE 17	806	12.66	5.613.91	9.995.01
ROUTE 18	99	9.22	484.60	677.31
ROUTE 19A	334	9.71	2.180.60	4.046.33
ROAD 19B	344	11.82	1.860.78	3.135.87
ROUTE 20	333	13.87	2.144.66	3.929.67
ROAD 21	1.080	13.72	7.905.14	14.838.69
ROUTE 22	130	12.68	620.83	876.04
ROUTE 23	1.187	14.00	8.128.78	14.468.76
ROAD 24	220	11.39	1.337.26	2.012.58
ROUTE 25	274	9.65	1.969.50	3.220.50
ROUTE 26	224	9.70	1.367.91	2.293.49

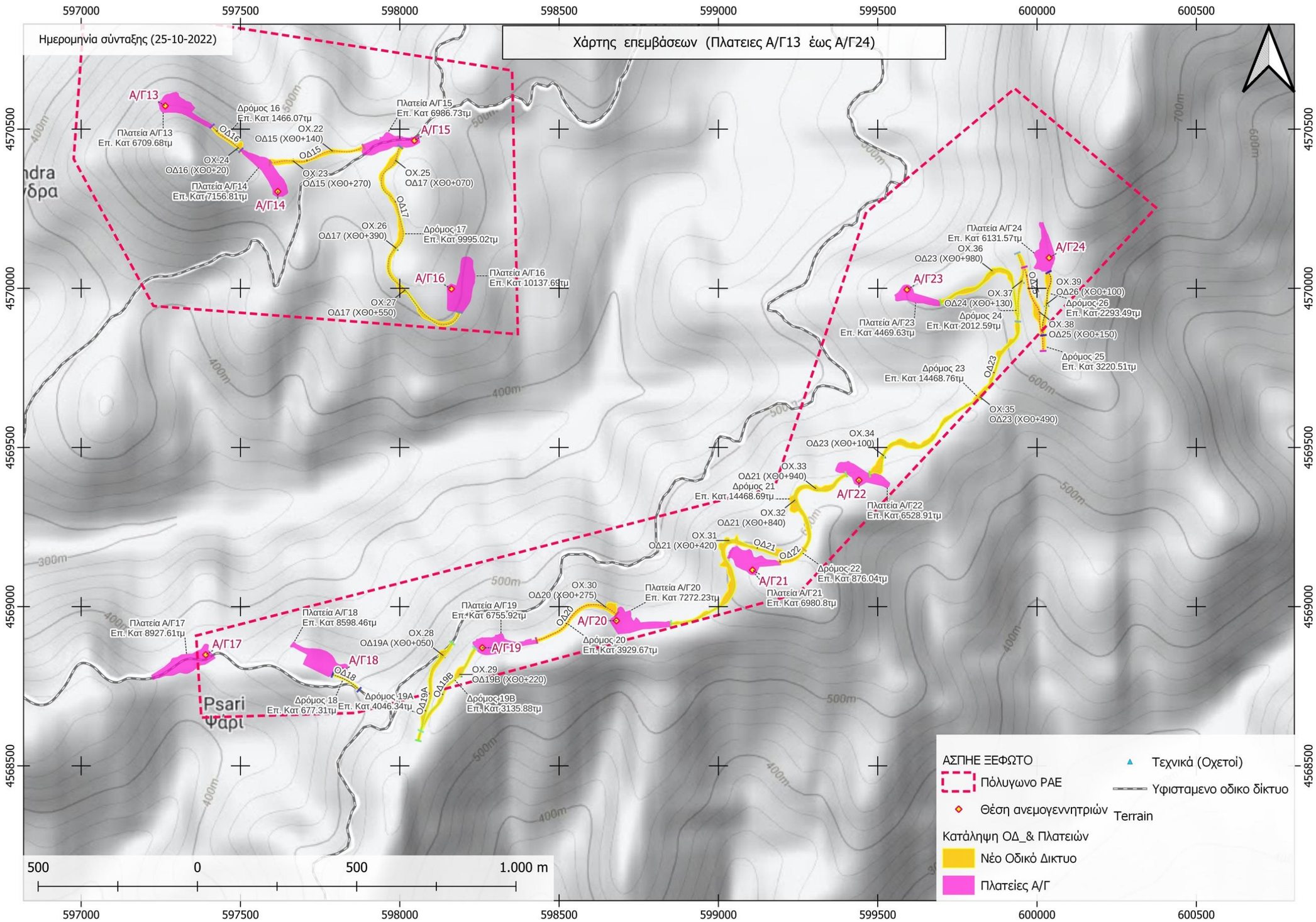
TOTAL	14.884		93.324.53	158.835.94

The road network interventions are shown on the map below.

Map 45 Road network interventions (North polygon of the ASPHE)



Map 46 Road network interventions (central and southern polygon of the UNEPAP)



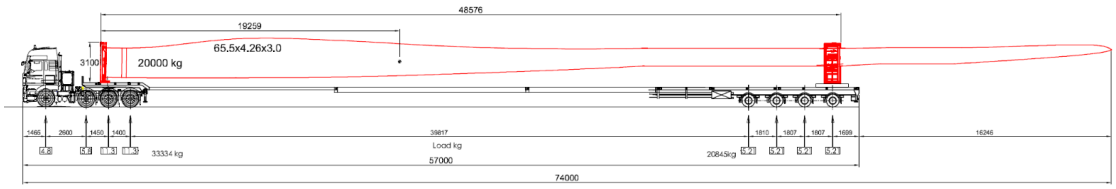
6.3.7.2 Technical data of the road design

1. Study vehicle

The study vehicle is defined as the vehicle of the transport platform of the SG6.2-170 wind turbine blade towers:

- Tractor length 5 m.
- Platform length between the first axle of the first row and the last axle of the last row 50.687 m.
- Length of transport object 83,50 m.
- Total vehicle length 74 m.

Image from 11 Typical design of a transport vehicle.



2. Road specifications & Typical Cross Section

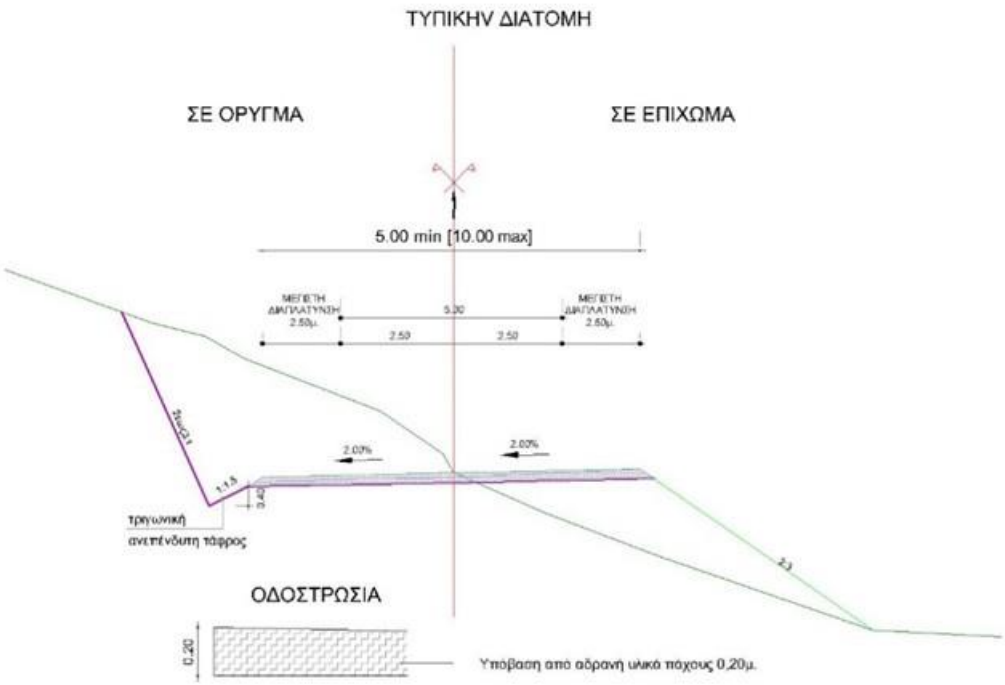
The roads to be widened will follow the specifications of forest roads of the C' category. According to the decision 92833/4679/1-12-1997 the technical specifications of the forest roads of the C' category are:

- Deck width 4-5m.
- Maximum longitudinal slope 12%
- Minimum radius of curvature 20 metres and in manoeuvres 15 metres.
- Trenches of triangular cross-section in earthy and rocky soils with an opening of 1,00m - 1,20m, and a height of 0,40m.
- Trenches of triangular cross-section in rocky soils with an opening of 0,80m and a height of 0,40m.
- Slope gradients for earthy soils 1:1 to 1:3 (b:y)
- Slope gradients for rocky soils 1:5 to 1:10 (b:y)
- Widening in places to facilitate the movement of vehicles.

Also, according to the order No.20103 / 898 / 21-02-2020 "Clarifications on the approval of the wind farm road design" the maximum acceptable longitudinal slope is from 12% to 14%. This order states "....recognizing precisely the specificity of roads for the passage of vehicles

transporting bulky equipment necessary for the execution of works (such as wind turbine interconnection roads), it tolerates a maximum acceptable slope for them of 14%, despite the fact that this exceeds the limit of 12% set by the technical specifications of forest roads.

Scenery 2. Typical road cross-section in trench/fill



6.3.7.3 Technical Projects

The zone of occupation of the road works is not crossed by any significant stream, of periodic or continuous flow, but due to the relief of many small, mainly but also deep streams of periodic flow.

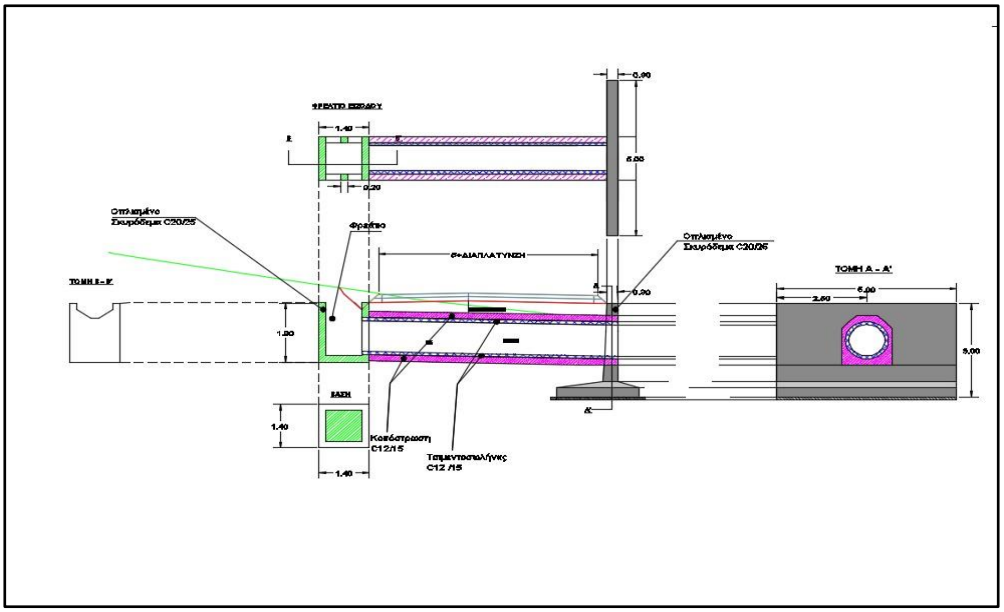
For the drainage of the water of the streams, ditches, the pavement of the streets and platforms that will be collected by the drainage ditches, the construction of 39 tubular drains is foreseen.

The technical drainage works will create a drainage network along the entire length of the roads under study so that rainwater can be quickly channelled off the road deck, thus minimising damage.

For the construction of the culverts, general foundation excavations will be carried out. Then the foundations of the walls and the trunk of the culvert will be excavated, the concrete will be laid, the reinforced concrete pipes will be placed on the concrete, the wing walls will be constructed and finally the culvert will be backfilled with excavated materials and compacted.

The types of culverts proposed by the W/F road study are divided into:

- Tubular culverts with a manhole upstream and a wall downstream.



- Tubular culverts with backfill upstream and downstream

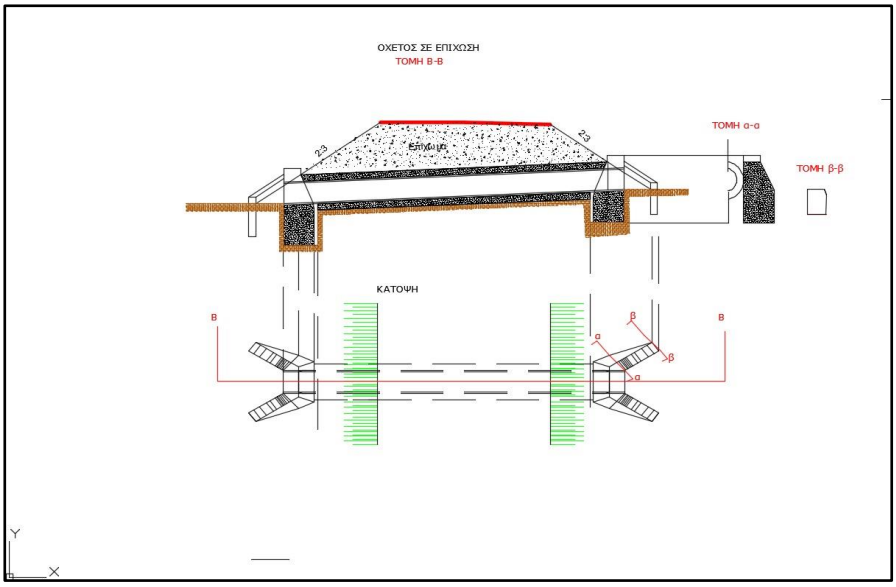


Table 27Technical Works along the road network

ROAD	N.O. TECHNICIAN	H.th.	PRESS
ROUTE 1	O.X.01	0+060	Tubular
ROUTE 2	O.X.02	0+040	Tubular
	O.X.03	0+550	Tubular
	O.X.04	0+730	Tubular
	O.X.05	1+000	Tubular
ROUTE 3	O.X.06	0+110	Tubular
ROUTE 4	O.X.07	0+060	Tubular
	O.X.08	0+290	Tubular

ROAD	N.O. TECHNICIAN	H.th.	PRESS
ROUTE 5	O.X.09	0+060	Tubular
	O.X.10	0+290	Tubular
ROAD 6	O.X.11	0+260	Tubular
ROAD 7	O.X.12	0+380	Tubular
	O.X.13	0+730	Tubular
	O.X.14	1+360	Tubular
ROUTE 8	O.X.15	0+100	Tubular
ROUTE 12	OX.16	0+290	Tubular
	OX.17	0+720	Tubular
	OX.18	1+530	Tubular
ROUTE 13	OX.19	0+050	Tubular
	OX.20	0+380	Tubular
	OX.21	0+920	Tubular
ROUTE 15	OX.22	0+140	Tubular
	OX.23	0+270	Tubular
ROUTE 16	OX.24	0+020	Tubular
ROUTE 17	OX.25	0+070	Tubular
	OX.26	0+390	Tubular
	OX.27	0+550	Tubular
ROUTE 19A	OX.28	0+050	Tubular
ROUTE 19B	OX.29	0+220	Tubular
ROUTE 20	OX.30	0+275	Tubular
ROAD 21	OX.31	0+420	Tubular
	OX.32	0+840	Tubular
	OX.33	0+940	Tubular
ROUTE 23	OX.34	0+100	Tubular
	OX.35	0+490	Tubular
	OX.36	0+980	Tubular
ROAD 24	OX.37	0+130	Tubular
ROUTE 25	OX.38	0+150	Tubular
ROUTE 26	OX.39	0+100	Tubular

The positions of the technicians are shown on the project outline accompanying this document.

6.3.8 Landfills

The calculation of the volumes of the partitions for the streets and platforms was done using the average surface area method, based on the relation :

$$V = \frac{E_1 + E_2}{2} \times L$$

Based on the calculations carried out in the framework of the Road Study for the ASPE "Xefspto", and during the construction of the roads, the construction of the wind turbine platforms of the wind turbines of the wind farm, 658,529.00 m^3 of excavated earth, rocky and semi-buried land and 261,087.00 m^3 of backfill products will be produced.

Therefore the excess excavation is 397.442,00 m^3 .

In addition to the above-mentioned volumes of earthworks, the earthworks generated by the excavation of the foundations of the Gensets and the installation channels for the interconnection networks should also be taken into account.

Regarding the volume of the earthworks resulting from the foundation of the 24 W/T, as it is estimated at approximately 27,897.36 m^3 , as already mentioned above.

For the interconnection networks (PT lines) it should be mentioned that as far as the internal PT network is concerned, it will be underground along its entire length, while for the external PT network only the crossing section of the river Komsatou will be overhead (length 129.24 m) and the rest will also be underground, the route of the PT networks has been presented above in the relevant maps. The whole development is done for the internal M.T. network in ditches alongside existing forest roads and the new openings necessary for the construction of the project with a total length of 26,198.90 m. While the interconnection of the ASPHE with the power transmission network through the existing "Iasmos" transmission system and will be done through existing roads (also in ditches) and a small aerial section, as mentioned above, and has a total length of 29,522.92 m.

The cables will be placed in trenches with dimensions of 1.20 x 0.60 m (w x w) for the internal network and 1.20 x 1.00 m for the external network, which will not be opened by mechanical means. After the installation of the medium voltage cable, the trench will be backfilled and rehabilitation will be carried out along its entire length.

Table 28: Calculation of MT network partitions

	LENGTH	CHANNEL WIDTH (m)	CHANNEL HEIGHT (m)	EXHAUSTS (m^3)	PILES (m^3)	INSULATION (SPACE) (m^3)
INTERNAL NETWORK	26.198,90	0,60	1.20	18.863,21	13.204,25	5.658,96
EXTERNAL NETWORK	29.522,92	1,00	1,20	35.427,50	24.799,25	10.628,25
TOTAL TOTAL	55721.82			54.290,71	38.003,50	16.287,21

These materials will be used for the paving of roads and platforms with 3A material (base 0.20cm - sub-base 0.20cm), after their treatment, as well as the backfilling of the trench of the M.T. network.

Table 29: Aggregated table of road, platform & therefore accompanying works

PROJECTS	Excavations (m)^3	Backfill (m)^3
SURFACE W/T		
Platform W/T1	24.383,00	5.566,00
Platform W/T2	7.659,00	3.603,00
Platform W/T3	37.064,00	2.223,00
Platform W/T4	11.393,00	14.846,00
Platform W/T5	8.217,00	11.446,00
Platform W/T6	16.101,00	14.755,00
Platform W/T7 (*parallel and construction site and control house area*)	10.949,00	1.317,00
Platform W/T8	25.154,00	8.147,00
Platform W/T9	10.810,00	7.787,00
Platform W/T10	4.887,00	5.956,00
Platform W/T11	40.973,00	2.621,00
Platform W/T12	5.264,00	13.214,00
Platform W/T13	31.420,00	3.678,00
Platform W/T14	16.004,00	4.676,00
Platform W/T15	17.736,00	12.883,00
Platform W/T16	8.808,00	25.722,00
Platform W/T17	8.126,00	15.835,00
Platform W/T18	21.189,00	6.300,00
Platform W/T19	33.455,00	1.173,00
Platform W/T20	36.435,00	2.792,00
Platform W/T21	10.115,00	3.966,00
Platform W/T22	14.318,00	7.854,00
Platform W/T23	15.586,00	676,00
Platform W/T24	36.972,00	1.564,00
TOTAL NUMBER OF PLATFORMS A/M	453.018,00	178.600,00

PROJECTS	Excavations (m)^3	Backfill (m)^3
CONTROL SETTLEMENT 1	3.860,00	464,00
CONTROL SETTLEMENT 2	3670,00	5.380,00
H.E.E.[5]	0	0
TOTAL	*0*	*0*
TOTAL OF PLATFORMS+O.E.E.+H.E.E.	*464.218,00*	*189.824,00*
TOTAL ROAD WORKS	205.511,00	82.487,00
MIDDLE GROUND CHANNELS	54.290,71	38.003,50
THEMELIA W/T	27.897,36	
TOTAL	751.917,07	310.314,50
PLANT LAND FOR ROADSIDE RESTORATION		0.00
ROADWAY		37.329,82
VOLUME FOR PLATFORM PAVING		55.874,62
TOTAL		93.204,44
SURPLUS EARTHMOVING EQUIPMENT FOR DISPOSAL	348.398,13	

The final surplus of earthworks to be disposed of is estimated at 348,398.13 m^3 .

The remainder of the surplus, after the reuse of the excavation spoil to cover the needs of the project, estimated at just 348.398,13m^3 will be done in accordance with the provisions of Law 4819/129 A'/23-07-2021, Article 30 and K.Y.A. 36259/1757/E103/2010 (V' 1312), as in force. The excavated material products from the construction of the project that cannot be used for the needs of the project may be deposited: a) in aggregate disposal sites if existing in the wider area, b) for the rehabilitation of inactive quarries in the area, c) to meet the needs of loans of other approved projects or for the rehabilitation of such loans and which have approved environmental conditions and in accordance with such conditions, d) for the rehabilitation of uncontrolled waste disposal sites, e) in another legal place d

In detail, the description of all the road works, the project's horizontal plan, the topographies and the technical drawings with all their geometric characteristics are included in the relevant road study, which is provided on the optical disc (CD) accompanying the study.

[5] It will be installed in the construction square of W/T 7, so it is included there

6.4 Land Occupation and Land Character

6.4.1 Land occupation

In the previous paragraphs the required works to construct the wind farm and to interconnect it with the energy transmission system were analysed and the individual intervention areas per work were mentioned.

The total number of interventions that will take place during the construction of the project under consideration is presented in the following table and amounts to:

- Road works: 158.835,94m [2]
- Floor interventions W/T: 191.669,08 m^2
- Control Centre intervention area: two control houses (280 and 120 m^2) will be constructed within two fields of 4.000,00 m^2 each, thus a total intervention area of 8.000,00 m^2 .
- Site intervention area: will be installed within the W/T7 plaza and has therefore been accounted for in the W/T plaza interventions.

Table 30: Total project interventions - Aggregated Table.

TABLE OF INVESTIGATORS (m)[2]			
PROJECT	LENGTH	USE	SITE
TOTAL ROADS	14.884,00	93.324,53	158.835,53
TOTAL CONSTRUCTION PLATFORMS		139.686,57	191.669,08
CONTROL CENTRES		8.000,00	8.000,00
CONSTRUCTION SITE[6]		0,00	0,00
INTERNAL INTERCONNECTION N.A.[7]		6.788,94	6.788,94
UNDERGROUND MEDIUM VOLTAGE LINE (External Network)		29.522,92	29.522,92
TOTAL INTERVENTION		277.322,96	394.816,47

The total intervention amounts to 394,816.47 m^2 .

6.4.1.1 Character of the land

The character of the land has been determined according to the 1031/05-02-2021 (A.D.A.: 6Τ0ΦΟΡ1Υ-1ΕΥ) decision of the Forest Map of the Forestry Department of Xanthi, has been posted on the website of the Decentralized Department of Macedonia-Thrace & Note that the project is entirely within the jurisdiction of the Forestry Directorate of Xanthi.

[6] It will be installed in the construction square of W/T 7, so it is counted there as a surface area

[7] It concerns the intervention only on the existing road network because the rest of the length passes through the road network to be widened and is therefore included there as a surface.

Table 31: Occupation area by character of area according to the document of the Forestry Department of Xanthi (ref. no. 1031/05-02-2021) (IDA: 6Τ0ΦΟΡ1Υ-1ΕΥ)

Project	Total area occupied in public forest land (m2)
Access routes	139.974
Platforms N/A	136.025
Control buildings	828,90
Construction site [8]	0
Network of M.T.[9]	0
Total	276.827,90

6.5 Construction phase

6.5.1 Planning - timetable

It is estimated that the construction of the project will take 12 months. A timetable of works is given below.

Chart 2: Linear Gantt chart (work schedule)

[8] It will be installed in the square of W/T 7

[9] It is embedded in the surface of the roads

6.5.2 Individual technical works of the main project - Geotechnical survey

Prior to the commencement of construction, field exploration work will be required as part of the geotechnical investigation programme. This work is particularly important for the completion of the geotechnical study, its immediate evaluation and the integration of the conclusions into the overall and timely design of the project. The fieldwork to be carried out is located in the area of responsibility of the Forestry Department of Rodopi and is as follows:

6.5.2.1 Research wells

For the needs of the design of the access road to the construction site of the ASPEE, a small number of exploratory excavations of 1 m x 1.5 m and a maximum depth of 3 m will be carried out to investigate the stratigraphy and determine the thickness and composition of the surface mantle, the depth at which the groundwater level meets, etc.

One (1) soil sample will be taken from each research well to test its suitability as a road sub-base material by laboratory testing. It is clarified that the wells will be excavated locally on existing roads for the purpose of collecting samples and that they will be immediately resurfaced and restored to their previous condition.

6.5.2.2 Sampling boreholes

For the purpose of designing the foundation of the W/T, one (1) sample borehole will be drilled at the centre of the construction sites to determine the stratigraphy of the subsoil bedding, take samples for laboratory tests to determine the physical and mechanical parameters of the formations and determine the depth of groundwater encounter.

The estimated maximum depth of each sample borehole is 20m and the maximum drill diameter is 130mm. During drilling, sampling will be carried out in the case of 'dry' soil formation encounter by water shut-off or by using a special Shelby-type sampler, and in the case of rock formation encounter by using a diamond corer. It is specified that each borehole will be restored after the work has been completed.

It should also be noted that the existing road network will be used for access and the conduct of the exploration works, while in the locations of the W/T without existing road access, a mild road construction-opening will be carried out within the limits of the approved and licensed study in order to ensure the safe passage of the drill rig and personnel.

6.5.3 Supporting facilities

6.5.3.1 Loan chambers - storage chambers - construction sites.

During the construction of the W/F there will be no borrowing chambers in the project because there is excess material.

The wind turbine platforms will be used as temporary material storage areas and as construction sites and three additional construction sites will be created, while the wider control house field will also be used as a construction site.

Specifically:

The construction site is planned to use the land for the installation of the control house, which is also the construction site of W/T 7, with an area of 10,991.61 m^2 , located in the northernmost polygon of the W/F, as shown in the attached Topographical Diagram.

It is important to note that this area will be restored after the completion of the construction works of the W/F - except for the area necessary for the operation of the W/F Control House and that after the completion of the works there will be no excavation products - materials - waste in any part of the project.

During the construction of the ESDP, a construction site will be established which will ensure satisfactory working conditions for construction workers as well as for the temporary storage of equipment to be installed. The above construction site will be maintained and guarded throughout the construction of the ESDP.

The construction site includes:

-Interior site office,

-Interior construction site catering area,

-Storage areas,

-Sanitary and drainage facilities,

-First aid kit which includes the first aid room, furniture and all necessary equipment.

Electricity and drinking water will be available in the above areas.

6.5.3.2 Concrete preparation silo

A concrete preparation silo is proposed to be installed on the control house installation site. The mobile concrete assembly meets the needs for producing high quality ready-mixed concrete in remote areas where ready-mixed concrete production requires on-site production. The mobile assembly can and does operate completely autonomously without the need for external support. It is a self-contained structure with the aggregate bunkers, weighing plant, generator, electrical panel and full modern automation operation, air compressor, water pump, chemical pumps and all the necessary components for its proper and continuous operation to produce high quality ready-mixed concrete.

The operation of the unit is super-automatic using a small console with a waterproof membrane. The console is permanently connected to the electrical/electronic panel and with its long cable can be operated either on the unit or remotely within a small cabin on site.

Image from 12: Illustrative image from a concrete production unit

6.5.3.3 Crusher

For the construction of the project's road construction, the installation of a mobile - self-supporting crushing/aggregate production plant will be required. The aggregates will come mainly from excavated rock and secondarily (screening of large stones), which will be graded by a mobile aggregate crusher (production of crushed paving material 3A). In sub-chapter 6.5.6 "Solid waste, type, quantities and management" of this document estimates the excess excavated material from the construction of roads, platforms, M.T. channels at 348,398.13 m^3 .

The crusher to be used for the paving needs of the project will be self-supporting and of one of the following types depending on the type of rock, accessibility and optimum performance: - Jaw crusher, - Cone crusher or - Roller crusher.

The feeding of the crusher will be done using a wheel loader. During operation, a full dust emission containment system will be implemented, with water sprayers at all critical points and covering all conveyor belts.

For the control of noise emissions, the EU directives as they have been incorporated into Greek law will be taken into account. The KYA No. 37393/2028/2003 and the H.P. 9272/471 Government Gazette 286B/2007 mod. article 8 of the former will be followed, in compliance with the provisions of Directive 2005/88/EC. In addition, account will also be taken of Decree No 13586/724/2006, Government Gazette 384B, 'Measures, conditions and methods for the assessment of noise in the environment in compliance with Directive 2002/49/EC' (387382). The equipment to be used will be subject to noise limits in accordance with Article 8 of the above-mentioned Decree, and the number of both machines and vehicles in operation will be small.

6.5.4 Inputs of materials, energy and water during the construction of the project.

6.5.4.1 Concrete

As mentioned above, a mobile ready-mixed concrete unit will be installed for the implementation of the project. Concrete will be used mainly in the bases of the W/Ts, in the road structures (Tubular Culverts), in the control house, in the HT pylons and in the new substation. An estimated 19.900 m^3 of ready-mixed concrete will be required (approximately 800 m^3 per W/T base, 700 m^3 for the Control Houses and the culverts).

The raw materials used for production are concrete.

- Bulk aggregates
- Cements
- Chemical concrete additives: Water retarder - water reducer - liquefaction retarder according to SK 308 ELOT EN 934-2, Concrete liquefier, according to EN 934-2:T2
- Water

The composition ratios (depending on the use) of the concrete are within the following limits:

Cement: 300 to 450 kg

Water: 180 to 240 kg

Aggregates: 1700 to 1900 kg

Indicatively for the production of 1 m^3 concrete (Typical concrete composition) the following are required

Table 32 Indicative quantities of raw materials for concrete production

Material	Required quantity (kg) for the production of 1 m^3 of concrete	Volume (lt) per m^3 of concrete
Water	181	181,0
Cement	340	109,7
Hallie	575	212,7
Garbili	295	109,0
Sand	995	372,6
Air	-	15,0
Total	2.386	1.000

Source: CTS-2016 & Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete (ACI 211.1-91)

The aggregate materials are placed in metal aggregate silos. The silos consist of storage compartments for aggregates of different particle size grades. Cement is stored in two identical silos.

For the production of 19.900 m^3 of concrete, the following quantities of raw materials will be consumed as detailed in the table

Table 33 Estimated indicative quantities of raw materials

Material	Required quantity (kg) for the production of 19.900 m^3 of concrete
Water	3.601.900
Cement	6.766.000
Hallie	11.442.500
Garbili	5.870.500
Sand	19.800.500
Air	-
Total	47.481.400

There are no fuel or waste storage tanks on the site. Chemical additives are received in 20 litre containers which are stored in a shed within the concrete plant.

6.5.4.2 Water consumption

During the construction phase of the ESDP the water will be used:

- For the preparation of concrete,
- for the washing of concrete mixers/barrels and
- for the wetting of streets and platforms to suppress dust

More specifically, the expected water requirements are calculated as follows:

- Water requirements are estimated at 180 - 240 lt per m^3 of ready-mixed concrete. So for the construction of the project the water requirements are estimated at approximately 3,601.90 m^3 (19,900 m^3 of ready-mixed concrete x 181 lt water).
- Considering that in peak operation up to twelve concrete mixers/barrels are required to be washed, the maximum daily flow rate is 12x0.6 = 7.2 m^3/d.
- For the wetting needs of roads and platforms for dust suppression, another 3 - 5 m^3 /day are required depending on weather conditions.

The maximum daily water consumption for wetting and washing is about 12.2 m^3, taking into account that the construction works are about 8 months, 2,928 m^3 of water are required in total.

The table below summarises the estimated water consumption.

Table 34 Water consumption

Water use	Consumption per day (m^3/d)	Total consumption (m^3)
Preparation of the concrete (0.181 m^3 per m^3 of concrete)		3.601,90
Spraying of streets, platforms to suppress dust	5	1.200

Washing of vehicles (concrete mixers/barrels)	7,2	1.728
Total		6.529,90

The water needs, approximately 6,530 m^3 , will be covered by tankers (water carriers), which will carry the necessary permits. In particular, the water licence required for this purpose will be obtained, which will accompany the tanker when transporting water in accordance with par. 4 of article 11 of the KYA 146896/2014 (Government Gazette 2878 B') as amended and in force.

All water intake points used to meet the project's water needs will be legally licensed for the specific uses. For this purpose, prior to the construction works, the project proponent will request from the competent department of the Municipality of Myki, a certificate for the coverage of the above water needs as well as the indication of the water intake points or the contractor selected by the construction company of the W/F for the transfer and supply of water will have all the necessary permits.

6.5.4.3 Construction and Aggregates

For the construction of the control building, the usual construction materials that are needed in any building construction such as: concrete, steel, structural mesh, sand, gravel, bricks, tiles, lime, marble dust, insulating materials, tiles, paints, etc.) will be used and their transportation will be done by road by local suppliers.

The materials for the construction of the accompanying works are aggregates found on site and are the products of the excavation, backfilling and paving of roads and cable ducts.

6.5.5 Liquid waste: type, quantities and management

During the construction phase of the NPPF the intended water use is that presented above in Section 6.4.4.4. Thus, in terms of wastewater generation, apart from the wetting of materials and surfaces to avoid the dispersion of particulate dust and the wastewater generated from the washing of the mobile mixers, the only other wastewater associated with the site operation is the urban type wastewater from the construction personnel.

The wastewater from the wetting of materials and surfaces is adsorbed on site or at a short distance from the wetting area, which is the purpose of wetting in order to avoid the dispersion of particulate dust. The wastewater generated from the washing of the self-propelled mixers, at a daily rate of approximately 7.2 m^3 is estimated to total 1,728 m^3 during construction of the project. The waste is mainly water with suspended solids without organic load. The aforementioned process will be carried out on a concrete sloping floor, with discharge into a settling tank. After settling, the water will be reused in the production process, while the solids will be removed monthly and used for the production of lower quality concrete and for any backfilling.

Finally, chemical toilets will be installed for the convenience of the site personnel.

In any case, the characterization, storage and management of the liquids fall under the following legislation, from which the obligations of the owner of the Wind Farm (Hazardous Waste Holder) are derived:

- KYA 13588/725/2006 - Government Gazette 383 B'/28.3.2006 "Measures and conditions for the management of hazardous waste", which specifies the obligations of the holder of hazardous waste, the classification categories of hazardous waste (European Waste List according to the Annex of Decision 2000/532/EC, as amended by Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC of the European Commission) and finally describes other obligations such as clean-up of contaminated sites, etc.
- KYA 24944/1159/2006 - Government Gazette 791 B'/30.06.2006 "Approval of General Technical Specifications for the management of hazardous waste" as amended and in force, which prescribes the conditions for the proper collection, packaging, marking, storage and handling of hazardous waste.
- Law 4819/2021 - Government Gazette 129 A'/23.07.2021 "Integrated framework for waste management Incorporation of Directives 2018/851 and 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste and Directive 94/62/EC on packaging and packaging waste, framework for the organisation of the Hellenic Recycling Organisation, provisions on plastic products and the protection of the natural environment, spatial planning, energy and related urgent regulations.", as amended and in force.
- KYA 41624/2057/E103/2010 - FEK 1625 B'/11.10.2010 "Measures, conditions and programme for the alternative management of waste batteries and accumulators in compliance with the provisions of Directives, 2006/66/EC 'on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC' and 2008/103/EC 'amending Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as regards placing batteries and accumulators on the market' of the European Parliament and of the Council', as amended and in force.
- KYA οικ. 62952/5384/2016 - Government Gazette 4326 B'/30.12.2016 "Approval of the National Hazardous Waste Management Plan (NSWMP), in accordance with Article 31 of Law No. 4342/2015".

6.5.6 Solid waste, type, quantities and management

Solid residues will be generated during the construction phase, but these are not hazardous. The following table lists these, based on the European Waste Catalogue (EWC) codes, as well as the code of the planned disposal or recovery operation.

Table 35: List of non-hazardous solid wastes generated or likely to be generated and how they are to be managed.

ECA code	Description	Source :	Process description
17 04 05	Iron and steel	Building material waste from construction	Pre-storage and delivery to an appropriately licensed operator for further management
17 05 06	excavation spoil other than those mentioned in 17 05 05*	Excavation materials (348.398,13 m^3)	Pre-storage and delivery to an appropriately licensed operator for further management
8 01 11*	waste paints and varnishes containing organic solvents or other hazardous substances	Organic solvents	Pre-storage and delivery to an appropriately licensed operator for further management
8 01 11*	waste paints and varnishes containing organic solvents or other hazardous substances	Waste from paints	Pre-storage and delivery to an appropriately licensed body for further management
20 03 01	Mixed municipal waste	Household waste - municipal waste (from workers on site - soda cans, paper, food packaging waste, etc.)	Pre-storage and delivery to an appropriately licensed operator for further management

The quantities of solid waste generated during the construction phase of the projects are not expected to be significant. This waste is mainly from used site materials such as excess materials (construction material waste), empty mineral oil and lubricant containers and machinery parts.

The following table summarises the quantities and the balance of earthworks resulting from the construction of roads, W/T platforms and medium voltage channels:

Table 36: Balance of rutting based on pre-measurements

SECTION	ESCAPES (m^3)	HOSPITALS (m^3)
TOTAL NUMBER OF PLATFORMS A/M	453.018,00	178.600,00
Control Cage 1	3.860,00	464,00
Control Cage 2	3.670,00	5.380,00
H.E.E. (part of Platform W/T 7)	0,00	0,00
TOTAL OF PLATFORMS + P.E. + P.E.	464.218,00	189.824,00
TOTAL ROAD WORKS	205.511,00	82.487,00
MIDDLE GROUND CHANNELS	56.083,14	33.649,88
THEMELIA W/T	27.897,36	
TOTAL	751.917,07	310.314,50
PLANT LAND FOR ROADSIDE RESTORATION		0,00
ROADWAY		37.329,82
VOLUME FOR THE RESTORATION OF THE SLOPES OF PLATFORMS		55.874,62
TOTAL		93.204,44

SURPLUS EARTHMOVING EQUIPMENT FOR DISPOSAL (=Excavations - volume of restoration etc.-fillings)	348.398,13

In any case, the characterisation, storage and management of waste (liquid and solid) fall under the following legislation, from which the obligations of the owner of the Wind Farm also derive:

- KYA 13588/725/2006 - Government Gazette 383/B'/28.3.2006 "Measures and conditions for the management of hazardous waste", which specifies the obligations of the holder of hazardous waste, the classification categories of hazardous waste (European Waste List according to the Annex to Decision 2000/532/EC, as amended by Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC of the Commission E.C) and finally other obligations such as the clean-up of contaminated sites etc. are described.
- LAW NO. 4819/2021 (FEK 129/A' 23.7.2021) Integrated framework for waste management - Integration of Directives 2018/851 and 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste and Directive 94/62/EC on packaging and packaging waste, framework for the organisation of the Hellenic Recycling Organisation, provisions on plastic products and the protection of the natural environment, spatial planning - urban planning, energy and related urgent regulations
- Law 4042/2012, (Government Gazette 24/A/13.2.2012) "Criminal protection of the environment - Harmonization with Directive 2008/99/EC - Waste production and

management framework - Regulation of issues of the Ministry of Environment, Energy and Climate Change"

- KYA 24944/1159/2006 - Government Gazette 791/30.06.2006 "Approval of General Technical Specifications for the management of hazardous waste" as it is in force today and where the conditions for the proper collection, packaging, labelling, storage and handling of hazardous waste are specified.
- O.A. οικ. 62952/5384/2016, (Government Gazette 4326/B/30.12.2016) "Approval of the National Hazardous Waste Management Plan (NSWMP), pursuant to Article 31 of Law No. 4342/2015"
- Presidential Decree 82 - Government Gazette 64/02.03.2004 "Determination of measures and conditions for the management of used mineral oils" Note: *Repeal of the decree, following the adoption of the joint decisions of the Minister of Environment and Energy and the Ministers in charge of each case on End-of-Life Vehicles (ELVs), waste oils and used vehicle tyres, in accordance with Article 101§4: Article 73§b*, Law 4819/2021).
- KYA 61076/5267/15-12-2016 - Government Gazette 4123/B/21-12-2016 "Ratification of the decision to approve the Regional Waste Management Plan (Waste Management Plan) of the Region of Eastern Macedonia - Thrace".

6.5.7 Emissions of pollutants into the air

The only emissions of pollutants to the air environment during the construction phase of the projects are related to the production of dust and pollutant gases from the movement of heavy vehicles to transport the towers and blades of the turbine generators to the installation sites. These are limited quantities of dust and exhaust gases and the impact on the air environment is only temporary during the installation period of the works. In more detail, the emissions of pollutants are related to the following groups of processes:

- The earthworks.
- The movement of vehicles involved in construction e.g. trucks, excavators, bulldozers.

The atmospheric contribution of the (mostly) diesel vehicles in the 2ης process category is considered negligible, since the respective loads are expected to be very small. Essentially, the main air pollutant during the construction phase of the project under consideration is dust, which is generated by earthworks and is due to the excavation and grading required for the construction of the access road pavement, namely:

- Scraping and powdering the surface of the materials on site.
- Disturbances of soil materials, of an engineering nature, characterised by low cohesion e.g. excavations, deposits and other earthworks.
- Transport and distribution of soil and other easily crushed materials.

Theoretical calculations show that for a typical average wind speed of 16km/h, particles with a diameter greater than 100 μm settle up to 6-9m from their point of emission. Particles with a diameter of 30-100 μm are usually impeded in their settling and, depending on their degree of agitation, settle at a distance of 30-150 m from the emission point. Smaller particles have low

settling velocities due to gravity, so that the settling rate is affected by atmospheric turbulence. As an example, the USEPA suggests a dust emission factor of 1-10 kg dust/vehicle.km for vehicle traffic on unpaved surfaces. Considering the direct relationship between dust transport distance and wind intensity and in accordance with the climatic data of the study area, it is expected that the air pollution during the construction phase of the project will be low.

6.5.8 Noise and vibration emissions

During the construction phase of the project, there will be limited noise from the operation of the machinery and vehicles transporting the towers and blades of the wind turbines, the erection works, the passage and operation of the machinery necessary for the opening of the MT channel, and in general, the construction site and traffic on the road network in the area.

The assessment of noise from the construction site of the project is carried out in accordance with the methodology proposed by British Standard BS 5228 (*Noise control on construction and open sites, BSI-1984*) which refers to the need to protect people living and working near such areas from noise. At this stage, it is not possible to formulate an accurate record of site operating data (types of machinery, actual operating times etc.), therefore an approximate assessment of impacts will be carried out.

We consider a mobile construction site of 12-hour operation with the following composition:

- 1 excavator
- 1 loader
- 1 leveller
- 2 trucks
- 1 road roller

The results of the prediction of the noise level Leq(12) for a receiver located at distances of 15 to 400m from the source are presented in the following table.

Table 37: Estimation of the equivalent energy noise level of 12-hour, Leq(12) site noise

Receiver distance (m)	15	30	50	100	200	400
Leq (12) dB(A) (rural area)	81	75	71	65	59	53
Leq (12) dB(A) (urban area)	84	78	74	68	62	56

According to the above calculations, at distances greater than 400 m the construction noise is very low, even approaching the limit of 50dB(A) set by the legislation on the urban environment (PD 1180/1981), which is the strictest.

6.5.9 Electromagnetic radiation emissions

The construction phase of the project is not related to electromagnetic radiation emissions.

6.6 Operating phase

6.6.1 Detailed description of the project operation

The ASPEE under study, with a total capacity of 148.8 MW, consists of 24 gensets with a nominal capacity of 6.2 MW. The SIEMENS Gamesa SG 6.2-170 6.2 MW type was selected, which uses a pitch regulated power control method. This power control mode is considered the most optimal for maximum wind energy capture and smoothing the power curve of the Genset, given the large wind fluctuations in complex topography and the differences in air density between winter and summer.

The gensets start their operation at a wind speed of 3m/sec (cut-in wind speed). As the wind speed increases, the power output increases and is maximised for a wind speed of 11.0 m/sec. For higher speeds, the blades change their pitch so that the wind turbine delivers its rated power. For wind speeds above approximately 25 m/sec the gensets are switched off for blade protection reasons.

It is noted that the operation of the gensets is fully automated (they are automatically put into operation, orientate the level of their blades perpendicular to the wind direction, and are shut down in case of damage or strong wind), so there is no need for constant supervision or staff presence at the site of the W/F. The new lift station will also have a communication system with the remote Energy Control Centre (ECC) of ADMIE (remote controls, remote signalling, remote indications and telemetry), so there is no need for continuous supervision or staff presence on site.

6.6.2 Material, energy and water inputs

The nature of the project is not characterised by significant consumption of materials, energy and water. The operational needs of the ESPO related to the use of such resources on a regular basis are mainly related to the availability of operational staff, the planned maintenance of the works and the operational needs of the ESPO control equipment.

Material inputs are related to the basic needs of employees (consumables and household essentials), supplies of spare parts and electromechanical components and materials, and fuel inputs for vehicles. Such items include:

Consumables and essentials:

- Graphics
- Household equipment
- Furniture

Electromechanical components:

- Risers
- Toothed wheels (gears)
- Generators
- Engines

- Other electrical equipment: switches, transformers, fuses, cables, fuses
- Other Mechanical equipment: tires, Axles, Metal structures

The self-consumption for the project's operational needs is estimated at approximately 295,000 kWh/year.

Fuel consumption (mainly DIESEL) is related to the following uses:

- Vehicle movement. On average the consumption is 270lt/MW
- Generating sets (G/G) used as a back-up in the event of a complete power failure. The average consumption is 13,5lt/MW. It should be noted that the use of the E/Cs is very limited and they cover the basic needs of the control building (control room), such as lighting and powering the SCADA systems, only in case of a grid connection failure.

Finally, the water use in the ASPHE is related to consumption:

-by the operating staff (bottled water)

the necessary watering, in the quantities and at the times specified in the programme of horticultural restoration and afforestation work.

-Individual cleaning uses where needed.

For these uses, tankers (water carriers) are usually used to transport water from the local water supply network.

6.6.3 Liquid waste: type, quantities and management

The wastewater associated with the operation of the W/F is the urban type wastewater from the project operating personnel and the lubricating oils used in the mechanical parts. The quantities of these are limited as effluent discharges and it is envisaged that they will be managed and incorporated within the Company's ISO 14001 certified Environmental Management System.

The basic liquid wastes that require special management in the operation of wind power plants arise from the basic maintenance of mainly mechanical parts and consist of:

- Used mineral oils, or semi-synthetic or synthetic oils or oils from lubrication of gears and other moving parts and cooling systems (13 02 06* and 13 02 08*)
- Used oils of step-up transformers (13 03 08* and 13 03 10*)
- Used hydraulic oils from use in hydraulic pressure transmission units for braking systems (brake), blade rotation systems (pitch), aileron systems, etc. (13 01 11* and 13 01 13*)

The above materials fall under the legislation on hazardous waste. It should be noted that none of the oils used contain PCBs.

For all of the above wastes, the proper management and appropriate measures are taken to:

α) no risks to aquifers (marine, surface and underground), air, soil, flora, fauna and general agricultural, livestock, forestry and fisheries production.

b) No noise or odour nuisance.

c) No negative effects on the natural landscape and areas of special environmental interest.

(d) Not to endanger public health

The characterisation, storage and management of waste generated by the operation of Wind Power Plants fall under the following legal regulations, which also impose obligations on the owner of the Wind Power Plant (Hazardous Waste Holder):

-KYA 13588/725/2006 - Government Gazette 383/B'/28.3.2006 "Measures and conditions for the management of hazardous waste", which specifies the obligations of the holder of hazardous waste, the classification categories of hazardous waste are given (European Waste List according to the Annex of Decision 2000/532/EC, as amended by Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC of the Commission E.C) and finally other obligations such as the clean-up of contaminated sites etc. are described.

-KYA 24944/1159/2006 - Government Gazette 791/30.06.2006 "Approval of General Technical Specifications for the management of hazardous waste" where the conditions for the proper collection, packaging, labelling, storage and handling of hazardous waste are specified

-Presidential Decree 82 - Government Gazette 64/02.03.2004 "Determination of measures and conditions for the management of used mineral oils"

-KYA 8668/2007 - Government Gazette 287 B "Approval of the National Hazardous Waste Management Plan, in accordance with Article 5 of No. 13588/725 of KYA"

- ης KYA 4859/726/01 (Government Gazette 253/B): 'Measures and restrictions for the protection of the aquatic environment from discharges and in particular the establishment of limit values for certain dangerous substances included in List II of Council Directive 74/464/EEC of 4 May 1976' as in force.

The holder of a hazardous waste company shall, as provided for, deliver the waste to a natural or legal person (public or private law) for collection, transport, storage, treatment, recovery or disposal, which has been granted a permit or, on its behalf, to an authorised alternative management system for such waste under the conditions laid down in the relevant provisions. The delivery and legal possession of hazardous waste shall be evidenced by the Identification Form which shall accompany the hazardous waste. Upon transfer of the identification form, the responsibility of the previous holder ceases and the new holder becomes responsible. The final holder (management entity or alternative management system) is responsible for the various procedures for the proper management of the waste, including regeneration, re-refining, recycling, decontamination, burial, incineration, etc.

Tanks enclosed by a spillage collection system are used for the temporary storage of hazardous waste on the holder's premises until collection. The collection containers shall be located in an area with appropriate signage and adequate ventilation and lighting. They are also located in such a place and in such a way that they do not interfere with other activities of the installation.

The holder of waste lubricating oils (WTE) shall enter into a contract with a holder of a national licence for the collection and transport of Waste Lubricating Oils (WTE) that cooperates with an approved Alternative Waste Management System. The licence holder is obliged to issue an 'Identification Form - Receipt of Waste Waste Oil Receipt Certificate'.

The owner of the AELs (i.e. the owner of the Wind Farm) is obliged to keep a Hazardous Materials Record Book.

6.6.4 Solid waste: type, quantities and management

The solid type of waste from the operation of the RDF is related to waste from operating personnel and solid materials such as rubber or metal waste resulting from replacement or maintenance operations of mechanical parts. However, these quantities are not considered to be significant, and it is furthermore foreseen that they will be managed in accordance with national legislation.

The basic solid wastes that require special management in the operation of wind power plants arise from the basic maintenance of mainly mechanical parts and consist of:

-Unauthorised packaging of the above-mentioned oils: metal drums and plastic containers (15 01 02 and 15 01 04 and 15 01 07 and 15 01 10*)

-Used filters impregnated with the above oils (usually paper and metal) (15 02 02* and 16 01 07*)

-Liquid packaging of lubricating greases based on mineral oils and special additives, in packages of 250gr, 400gr, 18kg etc.

-empty metal cans and sprays containing adhesives, pastes, lubricants, mild solvents and cleaners (15 01 02 and 15 01 04 and 15 01 07* and 15 01 10*)

-Cotton cloths used for cleaning surfaces and consequently impregnated with the above materials (oils, greases, detergents, etc.) (15 02 02)

-Low-capacity accumulators (batteries) for use in automatic gear cutting machines and small automatic machines in general (16 06 01* and 16 06 04)

-Higher capacity accumulators for use in UPS systems (16 06 01*)

The above materials fall under the legislation on hazardous waste.

-Waste of mechanical, electrical and electronic equipment

The above materials are not considered hazardous waste

All of the above wastes are properly managed and appropriate measures are taken to:

α) no risks to aquifers (marine, surface and underground), air, soil, flora, fauna and general agricultural, livestock, forestry and fisheries production.

b) No noise or odour nuisance.

c) No negative effects on the natural landscape and areas of special environmental interest.

(d) Not to endanger public health

The characterisation, storage and management of waste generated by the operation of Wind Power Plants are subject to the following legal regulations, which also impose obligations on the owner of the Wind Power Plant (Hazardous Waste Holder):

The characterisation, storage and management of waste generated by the operation of Wind Power Plants are subject to the following legal regulations, which also impose obligations on the owner of the Wind Power Plant (Hazardous Waste Holder):

- KYA 13588/725/2006 - Government Gazette 383 B'/28.3.2006 "Measures and conditions for the management of hazardous waste", which specifies the obligations of the holder of hazardous waste, the classification categories of hazardous waste (European Waste List according to the Annex of Decision 2000/532/EC, as amended by Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC of the European Commission) and finally describes other obligations such as clean-up of contaminated sites, etc.
- N. 4819/2021 (FEK 129 A`/23.7.2021) Integrated framework for waste management - Integration of Directives 2018/851 and 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste and Directive 94/62/EC on packaging and packaging waste, framework for the organisation of the Hellenic Recycling Organisation, provisions on plastic products and the protection of the natural environment, spatial planning - urban planning, energy and related urgent regulations
- Law 4042/2012 (Government Gazette 24 A'/13.2.2012) "Criminal protection of the environment - Harmonization with Directive 2008/99/EC - Waste production and management framework - Regulation of issues of the Ministry of Environment, Energy and Climate Change"
- KYA 24944/1159/2006 (Government Gazette 791 B'/30.06.2006) "Approval of General Technical Specifications for the management of hazardous waste" as it is in force today and where the conditions for the proper collection, packaging, labelling, storage and handling of hazardous waste are specified.
- O.A. οικ. 62952/5384/2016 (Government Gazette 4326 B'/30.12.2016) "Approval of the National Hazardous Waste Management Plan (NSWMP), pursuant to Article 31 of Law No. 4342/2015"
- KYA 61076/5267/15-12-2016 (Government Gazette 4123 B'/21-12-2016) "Ratification of the decision to approve the Regional Waste Management Plan (Waste Management Plan) of the Region of Eastern Macedonia - Thrace"

UN-compliant packaging shall be used for the temporary storage of hazardous solid waste on the holder's premises until collection. The collection containers shall be in an area with appropriate signage and adequate ventilation and lighting. They shall also be located in such a place and in such a way that they do not interfere with other activities of the installation.

The collection of hazardous waste is carried out by a company - holder of a Panhellenic Hazardous Waste Management Licence from the Ministry of Environment, which is registered in the Register of Hazardous Waste Management Organizations. At each collection, the collector provides an "Identification Form - Receipt Certificate" and after the final disposal of the waste, a Certificate of Disposal is provided.

For the collection and management of batteries, a contract is concluded between a nationwide organization approved by the Ministry of Environment and Natural Resources, (Government Gazette 1124/23-7-04), for the collection, transport and alternative management of used batteries

weighing more than 1.5kg and AFIS SA, which is the operator of the collective system for the alternative management of portable batteries and accumulators.

The disposal of other (non-hazardous waste) is carried out in consultation with the local Local Authorities and with bodies such as Appliance Recycling SA and in accordance with the general provisions governing waste management and the recycling of paper, glass, aluminium, etc.

6.6.5 Emissions of pollutants into the air

The operational phase of the ESDP is not associated with any kind of emissions of pollutants to the local air environment. Vehicle movements within the ESDP site for maintenance and repair of the Gensets are considered to be negligible. The emissions of pollutants and dust associated with road traffic are estimated to be very limited despite the fact that the roads are planned to be dirt roads, as they will be used exclusively for the approach to the EIS under consideration.

6.6.6 Noise and vibration emissions

The exploitation of wind energy, despite its environmental friendliness, may cause acoustic disturbances. The proposed project, given its location and the specifications of the type of wind turbines to be used, will not cause any particular acoustic disturbance in the area.

There are two main sources of noise from W/Ts, mechanical noise from the generator, auxiliary reducers and speed multiplier and aerodynamic noise generated by the rotation of the blades. The selected types of W/Ts operate at extremely low noise levels. Mechanical noise is practically zero due to the very good design of the mechanical parts of the engine (special care has been taken with the generator, which is mounted on a plastic base to absorb vibrations so that it can operate quietly). Aerodynamic noise is also low, thanks to the technologically advanced design of the blades.

The results of the noise model applied for the considered RES-EHP, show that the noise generated by the operation of the Gensets is already at a maximum distance of about 500 m from the installation sites, at the level of 45dB. In any case, the conditions of PD 1180/11 are fully met as the noise generated by the operation of the Gensets is much lower than 45dB at the boundaries of the neighbouring settlements, the nearest of which is the settlement of Kusla Slatojgrad (Bulgaria), which is 0 dB away,78 km from the nearest W/T (W/T8) and the settlement of Gidotopos (Greece) which is 0,80 km from the nearest W/T (W/T15) of this ESPO.

With regard to any vibrations, the project will have no such impact.

6.6.7 Electromagnetic radiation emissions

From a radiation point of view, in the NPP site, the only subsystems emitting low-level electromagnetic radiation are the generator and the M/S and the Medium Voltage (MV) panel for the collection of incoming energy. The electromagnetic field of the generator is extremely weak and is confined to the engine shell, which in this case is located 135 m above the ground. Also the M/S is located inside the tower of the genset. In general, the emitted electromagnetic radiations are very low and certainly negligible in places where access is free.

The above are confirmed by indicative measurements that have been carried out in operating UPSOs, at selected points of the UPSO, where the magnetic field intensity, only at points, at the

positions of the M/S and the Medium Voltage panels, exceeds the prescribed limits (> 4 milliGauss). However, these locations are not permanent workplaces, whereas in the newer type of Gensets, such as those proposed for the Genset under study, the M/S is placed inside the machine shell, thus limiting the existence of the electromagnetic field in this part of the Genset.

Regarding the assessment of the EM radiation from the existing "IASMOS" Voltage Booster, no significant change is expected compared to the existing situation.

6.7 Shutdown - recovery

6.7.1 Estimation of shutdown time or conditions

The design of the W/Ts provides for a lifetime of about 25 years. This period can be significantly extended by proper maintenance of the W/Ts. According to the legal framework, it is possible to renew the operating licence of the project for a further 20 years. The standard practice worldwide for GHPs is either to renew their licences and continue operation or to replace them with newer and more advanced technologies (repowering).

After the expiry of the renewed operating license of the project, the decision on the definitive termination or not of the project will be taken on the basis of the assessment of the operational status of the generating units, the operating and maintenance costs for the continued operation of the RES-E, the market situation in the electricity sector and the technology available at that time.

6.7.2 Dismantling procedures and timetable

After the definitive cessation of operation of the W/F, the process of complete dismantling of the equipment includes full site development for the removal of all the W/Ts, their foundations to a certain depth, the removal of the underground electrical interconnection cables between the Gensets and the underground cables connecting them to the existing IaSMOS, their removal and the transport of part of the dismantled equipment to recycling or final disposal centres, after consultation and in compliance with the instructions of the Competent Authorities.

In short, the dismantling work will include:

- Dismantling and removal of all parts of the W/T (blades, hub, nacelle, metal tower) with the help of crane vehicles. In order to facilitate transport to recycling, and if necessary, the above will be cut to smaller than original dimensions.
- Disassembly and removal of the transformer for recycling.
- Excavation and transport of the crushed fill material for the W/T bases. Use of crushers and equipment to cut and break up the bases and concrete piles. Subsequently, the area of the W/T bases and pads will be restored by appropriate earthworks and horticultural works, in cooperation with the competent Forestry Department.
- Excavation of the underground channel MT for the removal of the electrical interconnection cables.
- Unless otherwise required by the competent authorities, the building will be dismantled and the solid waste will be removed to appropriate waste management facilities.

- Access roads and internal roads, unless otherwise required by the competent authorities, will be rehabilitated by removing the 3A surface layer.

Of the materials resulting from the dismantling of the electromechanical equipment, those that can be used in the future will be recycled. In any case, for the materials that will result from the demolition work, the materials mentioned in the KYA 36259/1757/E103/2010 (Government Gazette 1312 B'/24.08.2010) "Measures, conditions and program for the alternative management of waste from excavation, construction and demolition (AEKK)", as amended by Law 4030/2011 (Government Gazette 249 A'/25.11.2011) "New way of issuing building permits, construction control and other provisions". The estimated time for the removal of the buildings and the dismantling of the electromechanical equipment is approximately one year.

Regarding the dismantling procedures, to date, there is limited knowledge on this issue due to the lifetime of the W/Ts which has not yet been fulfilled for those already installed. At this point in time, this experience is beginning to be built up in the field of NPP installations and primarily concerns the countries where the first NPPs were installed, i.e. Germany, Denmark and California. The following pictures show illustrative snapshots of the tower and nacelle decommissioning at a NPP in the Orkney Islands, Scotland.

Image from 13: Nassel removal work on the W/T in the Orkney archipelago, July 2012

(source: Scottish Natural Heritage)

Image from 14: Dismantling work on an W/T tower in the Orkney archipelago, July 2012

(source: Scottish Natural Heritage)

6.7.3 Site restoration

Restoration of the disturbed site, in theory, refers to the process of fully restoring the ecosystem to its original state before the installation of the ESDP. In practice, this process focuses on creating conditions that make the site suitable for the establishment of vegetation species that are components of the natural ecosystem of the site and restoring the disturbed surfaces to an improved condition after the removal of the equipment. The necessary work will therefore be aimed at the appropriate shaping of the topography, with partial or total backfilling of the bases of the W/Ts, the working areas and the cable ducts, and the adoption of the most appropriate solution for the reestablishment of native vegetation (by planting, seeding or, where possible, natural re-vegetation of the soil), in cooperation with the competent Forestry Department.

The following are also noted:

- If the material used to fill the bases of the W/Ts is deemed suitable, it may be reused for restoration work requiring backfilling, otherwise it shall be removed by appropriate vehicles to appropriate disposal sites (legally operating quarries in the area or other disposal sites, or disposal of the material for legal use) as deemed appropriate by the Competent Forestry Authorities.
- The metal parts of the W/Ts and their foundations are transported for disposal in a legal place or are subject to recycling.
- Given the use of the network of existing roads and the opening of the absolutely necessary new road openings (a total of 14,884.00 m of new roads are required), which are required in the case of this AAPIE, the management of forest roads can vary from their restoration with earthworks and planting of indigenous species to their maintenance and continued

use as forest roads. This will primarily depend on and be finalised by the directions of the Competent Forestry Authorities during the period of project closure.

In any case, given that the W/F has been in operation for at least 25 years, any changes in the environmental conditions of the area, the changes in the legal framework related to such interventions in the natural environment, as well as the latest practices in the field of environmental restoration, and in any case, the advice and guidance provided by the competent Forestry Service, should be taken into account for the restoration of the site.

6.8 Exceptional circumstances and risks to the environment

The adverse contingencies related to the construction and especially the operation of the ASPEE, and in particular in the case of the location of the project under study, the environment of which is devoid of potential sources of additional risks and hazards from other infrastructures, concern:

- the possibility of fire and related accidents due to the occurrence of lightning.
- The possibility of accidents and disasters caused by extreme weather events.
- The likelihood of accidents and disasters caused by fire
- The likelihood of accidents occurring due to the physical presence of W/Ts in aviation

The case of an accidental oil spill, during the construction and/or operation phase of the ESPEO, is not considered in this chapter as a potential extraordinary circumstance as it is a case that has been thoroughly examined and is subject to integrated management through the company's certified Environmental Management System. Planning for the proper management of all oils used during the construction, maintenance and operation of mechanical parts, in accordance with the applicable legislation, prevents such accidents from occurring. In any case, in the event of any spillage of used oils, all necessary actions are foreseen, immediately, for the decontamination of the soil, depending on the type and extent of the spillage. For this reason, no further analysis is provided. It should also be noted that the possibility of a fire is also covered by the integrated management of the above system, but the possibility of a fire caused by extreme external factors is mentioned in more detail. Integrated prevention for fire protection and preparedness to respond to a possible fire event on site minimises the chances of such incidents occurring.

6.9 Delimitation of a watercourse

In the case of the case of the studied ESDP, no settlement interventions or other interventions are foreseen that by the applicable legislation require the application of the process of delineation of the bed of a watercourse in the area, therefore, no further analysis is undertaken.

7 ALTERNATIVE SOLUTIONS

7.1 Presentation of viable alternatives - Zero option

The following subsections present the viable alternatives considered in terms of location, size and scale, design, technology, production process and the construction process. The no option is included.

Subchapter 7.2 provides the evaluation and justification in relation to the final chosen solution.

7.1.1 Alternatives as to location

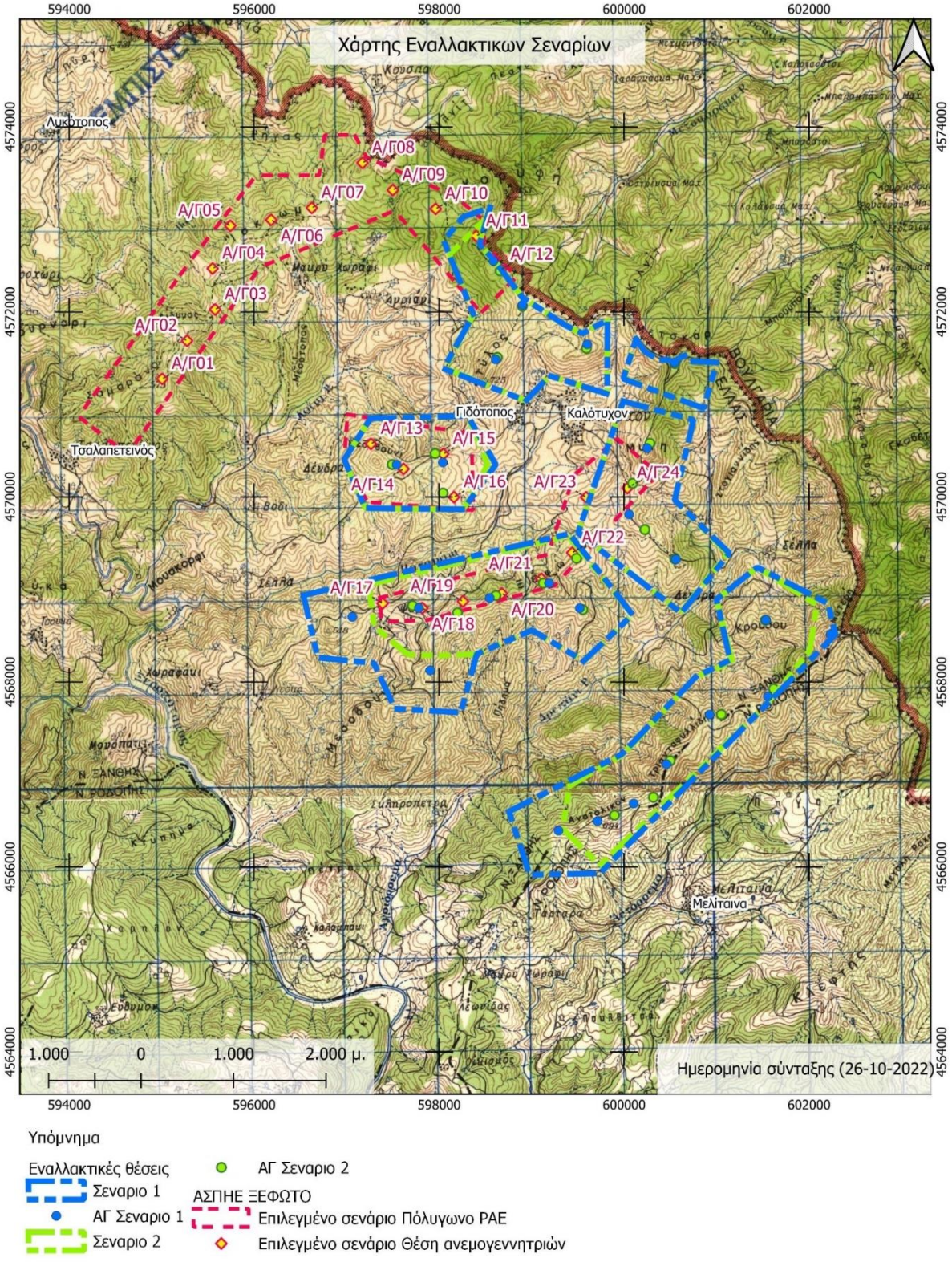
The feasibility of installing the ESPO to the south of the final proposed location of the ESPO was considered.

Access to the alternative sites is achieved by using parts of the existing forest roads in combination with the opening of a new road network.

For the existence of other possible alternative sites, the area around the finally selected sites was also examined, taking into account the data of the RAE's Geo-Information Map, so as not to raise the issue of overlapping with operating licences, production licences and applications under evaluation.

The following is a map of alternatives in terms of location.

Map 47: Alternative scenarios for the location of the ESDP



7.1.2 Size and scale

The alternative considered was the siting of 31 smaller 4.8MW and smaller scale gensets, each in different locations but in new, larger installation blocks than the ones considered in this study.

In this scenario, the final access solution (proposed) was also evaluated but since these are the same extended topographic locations, access is achieved in exactly the same way as the final selected solution, which is optimal.

The differentiation in this alternative scenario is the need for additional access roads for the approach to the W/T and the need for more W/T installation platforms. In essence, in this scenario the location of the GIS installation remains the same but with more GIS and access to the site remains the same with more openings within the siting polygons.

7.1.3 Design

Alternative in terms of access:

It should be noted that for the proposed location of the GIS, no alternative access was considered mainly due to the inaccessibility of the area where the proposed GIS is proposed to be installed.

Alternative to the interconnection:

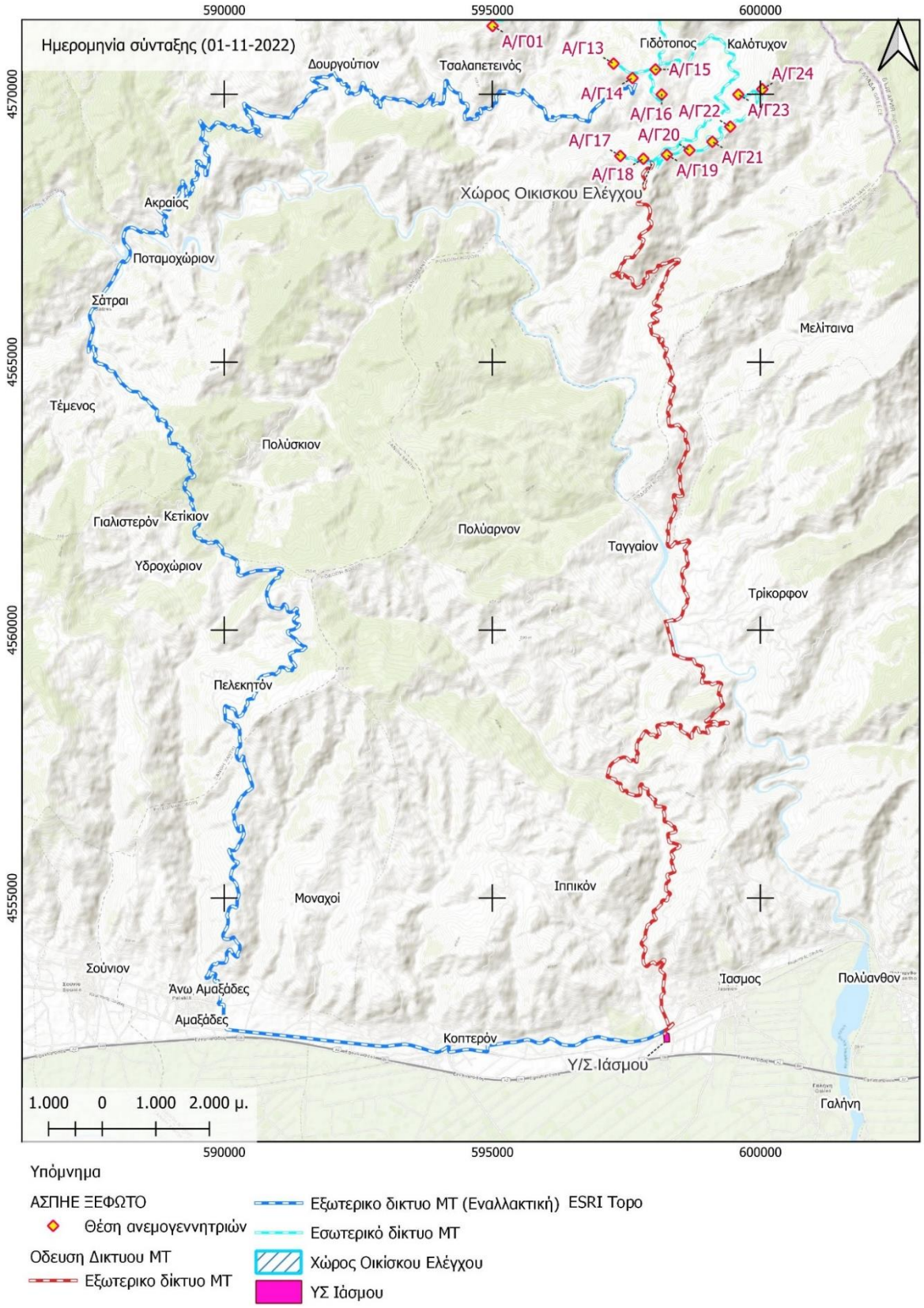
Regarding the electrical interconnection alternatives of the project, it should be noted that in the wider study area there is a Medium Voltage substation of Iasmos available so interconnection is the only realistic solution.

The route of the medium voltage network was similarly chosen based on the shortest possible route to the existing substation. Alternatively, the routing of the external MT network from W/T 14 to the east to the settlement of "Tsalapeteino" and then to the settlement of "Satrai", following a southern route to the settlement of Amaxades was considered. From there and up to the "Iasmos" substation, the route follows an easterly course on the Xanthi - Iasmos road. A map is provided below.

In either of the two options, the route is along the existing forest, rural or country road network.

On the alternative interconnection map, the alternative route is marked in blue and the proposed final solution in red.

Map 48: Alternative to the interconnection of the ASPHE with the "Iasmos" substation (external MT network)



7.1.4 Technology

Regarding the technology alternatives, there are no viable alternatives for the production of electricity from other forms of RES in this area or in neighbouring areas, as the alternatives are theoretically:

A. Biomass: The construction of a biomass plant on a ridge is not recommended as the best option.

The area under consideration does not have significant amounts of residues from organized livestock activity that could be used for the development of biomass power generation of a capacity equivalent to that of the GCHP under consideration.

Biomass energy production is appropriate for lowland areas, so that agricultural residues can also be used.

With these data, the construction of a Biomass Power Plant is not recommended for this region compared to the construction and utilization of wind energy.

B. Solar energy: The construction of a PV plant is not preferred for this region compared to the construction and exploitation of wind energy.

The installation of a PV power plant of equivalent capacity (148.8MW) requires significantly larger areas of intervention.

Γ. Hydraulic power: The objective conditions for this option do not exist, and in the wider area, due to its specificity, there would probably be negative impacts.

D. Geothermal energy: The objective conditions for this option do not exist.

For the production of electricity in this area, other Renewable Energy Sources technologies were considered as alternatives. In combination, however, the existing wind potential and the topography of the area are exclusively suitable for the development of RES-E.

7.1.5 Production process as well as the manufacturing process

Production process:

No alternatives to the "production process" were explored as it is a primary exploitation of the wind potential of the area and the production of clean energy.

Construction process:

The W/Ts consist of prefabricated parts that are assembled on site according to the manufacturer's instructions and in a specific order as described in detail in the previous chapter. The assembly procedure is the only technically appropriate one and cannot be varied.

On the other hand, the accompanying interventions such as the installation platforms and road works follow specific specifications in order to ensure both the safe transport of the W/T components in the field and the necessary space for their assembly. The MT grids are designed exactly according to PPC standards.

Therefore, no alternatives to the construction process were considered.

7.1.6 Zero solution

First of all, it should be said that the non-implementation of the project eliminates the objectives and feasibility of the project as presented in chap. 4 of this paper. The wind potential existing in the area will remain untapped and the potential for carbon dioxide emission reductions will be limited. In addition, the sustainable development objectives are not met and the potential to contain electricity supply costs is reduced.

Focusing on the project area, it is observed that in terms of vegetation, the predominant vegetation is oak interspaces, which sometimes grow sparsely and sometimes form an oak forest, and broadleaf interspaces, which also sometimes grow sparsely and sometimes form a forest.

The state of the natural environment, as it is expected to develop over the next 20 years in the area under consideration, is not expected to vary significantly. Agriculture and livestock farming will continue to be practised in the area, while the remaining vegetation cover will be maintained at the same level. Similar habitat types abound in both the immediate and wider study area and occupation by the project is limited both in terms of size and the need for interventions for associated works.

At the same time, in the entire Special Ecological Assessment Study (SEA), following a literature review and field observations for the period November 2021 - October 2022, all the necessary records and assessments were made in order to carry out a special ecological assessment of the project under study in relation to the neighbouring protected areas.

Based on this, and subject to the implementation of all of the mitigation measures identified in this EIS (with the grouped priority listed), it is assessed that the proposed project:

- It is not likely to delay or interrupt progress towards achieving the conservation objectives of the Natura 2000 sites concerned .
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.
- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is unlikely to interact with predicted or expected natural changes to the Natura 2000 sites concerned.

In addition, the EIA concludes that the accompanying works of this particular ESPO are not considered to have an adverse impact on the site and its integrity, nor on the species living there due to the proposed undergrounding of the cabling for the transmission of the electricity generated. The new borehole for the installation of the wind turbines is relatively short and will not cause any adverse effects on the Natura 2000 site and its protected objects, due to the correct siting (and the relevant proposals herein).

In terms of the man-made environment, there are not a large number of settlements in the wider area. All of the nearest settlements to the ESDP are small and consist of a few dwellings. In more detail

- *The settlement of Kalotycho is 632m from W/T23 (permanent population: 31 inhabitants, 2011 census)*
- *The settlement of Gidotopos is 799m from the W/T15 (permanent population: 15 inhabitants, 2011 census)*
- *The settlement of Tsalapeteinos is approximately 1.28km from the W/T1 (permanent population: 4 inhabitants, 2011 census)*

The disturbance is therefore limited to the few residents of Kalotychos and Gidotopos. While in the other settlements there will not be much vehicular traffic, on the sites of the W/F and the accompanying works, traffic is limited and is mainly related to agricultural and livestock activities. Also, no agri-tourism activity has been developed or observed in the project development area.

Furthermore, it is stated that there are no other RES projects installed in the area.

Regarding anthropogenic parameters, no significant differences are expected over a 20-year time horizon. In particular, the nearest settlements are not expected to increase their population significantly, since they consist of only a few dwellings. No technical infrastructure projects are planned that could cause additional pressures on the social and economic environment. The distance of the project under consideration from the nearest settlements and more widely, the fact that within a large radius of the location under consideration, residential development has an extremely limited land use, ensures that the construction and operation of the ASPHE is not foreseen to have any impact on the potential expansion of the built environment. Traffic volumes in the study area are not expected to vary significantly and the potential for the construction of various projects in the vicinity to cause fragmentation, noise or vibration in the future is limited.

The main occupation of the inhabitants of the area is animal husbandry and agriculture, activities which are dominant elements of the primary sector of the economy of mountainous Thrace in general. According to the data of recent years, the agricultural sector has not shown a downward trend. However, taking into account the observed decline in the population of the region, a gradual decline in agricultural and livestock activities is also a likely consequence. Therefore, depending on the future development of economic activities, a corresponding impact on the fauna and flora of the study area is expected.

As regards the main land uses, no substantial changes are expected in the future and no other anthropogenic activity is expected to develop. In the wider study area, no future vertical development of tourism activity is expected in the future since the necessary technical infrastructure and facilities are lacking. However, with the implementation of the proposed APSIE, the possibilities of constructing a complex of recreational paths will be explored, in cooperation with the Municipality of Myki. Giving the visitor a basis for transition to the area.

Taking the above into account, the study area is not expected to be significantly different from the construction and operation of the project under study, compared to its situation as it would be in the future under the no action scenario.

The zero solution clearly does not serve the company's objectives. HELPE Renewables has set a target to develop significant installed capacity from wind, photovoltaic (PV) and biomass in the coming years, diversifying the energy portfolio and contributing to balancing the Group's greenhouse gas emissions balance. Specifically, it targets 600 MW of RES in operation in 2025 and 2,000 MW in 2030.

It is worth noting that 193,991 MWh of clean energy was produced through the RES of HELPE Renewables. It is clear that without RES-E the above MWh produced would have had to be obtained from other sources, most likely from burning lignite.

In conclusion, the zero option is rejected as the negative impacts from the construction and operation of the ESDP appear to be of a significantly lower intensity and duration than the positive impacts of the development of the project under study.

7.2 Evaluation and justification of the final choice in relation to the impacts on the natural and man-made environment

7.2.1 A more detailed description of the viable alternatives considered

In the previous sub-chapter, a clear presentation of all available information regarding the alternatives considered for the project under study was given. Therefore, any further reference in this sub-chapter is, by default, considered redundant.

7.2.2 Inventory the current state of the environment for each viable alternative, and trends in its evolution.

The alternatives considered for the siting of the ESDP are located within a radius of up to 3 km from the final proposed solution. The existing environmental situation is described in detail in the next chapter (Chapter 8) and relates to all the parameters that make up the natural and man-made environment in both the immediate and the wider area of the siting of the ESPO. It is therefore appropriate to mention, before presenting the current state of the environment in the next chapter, that in any of the alternative locations studied, no substantial variation in the environmental parameters considered has been identified.

7.2.3 Assessment and evaluation of the significant environmental impacts for each viable alternative and justification of the main reasons for its rejection

7.2.3.1 Alternative siting

The alternatives presented in the previous subchapter (7.1) were thoroughly examined in terms of the combination, first of all, of the environmental parameters related to the installation of the G/Gs, but also in relation to all the economic and technical factors for the implementation of the project.

As for Scenario 1:

Scenario 1 faces a proximity problem with two Egyptian Vulture nesting sites, which have been identified and recorded in the framework of the European LIFE project "Urgent Actions to Strengthen the Balkan Population of the Egyptian Vulture and Secure Its Flyway" - LIFE16

NAT/BG/000874 ("Urgent Actions to Strengthen the Balkan Population of the Egyptian Vulture and Secure Its Flyway"), in which WWF Hellas participates as a partner.

Specifically, the southern polygon of scenario 1 did not meet the minimum distance of 5 km from the Egyptian Vulture nesting site.

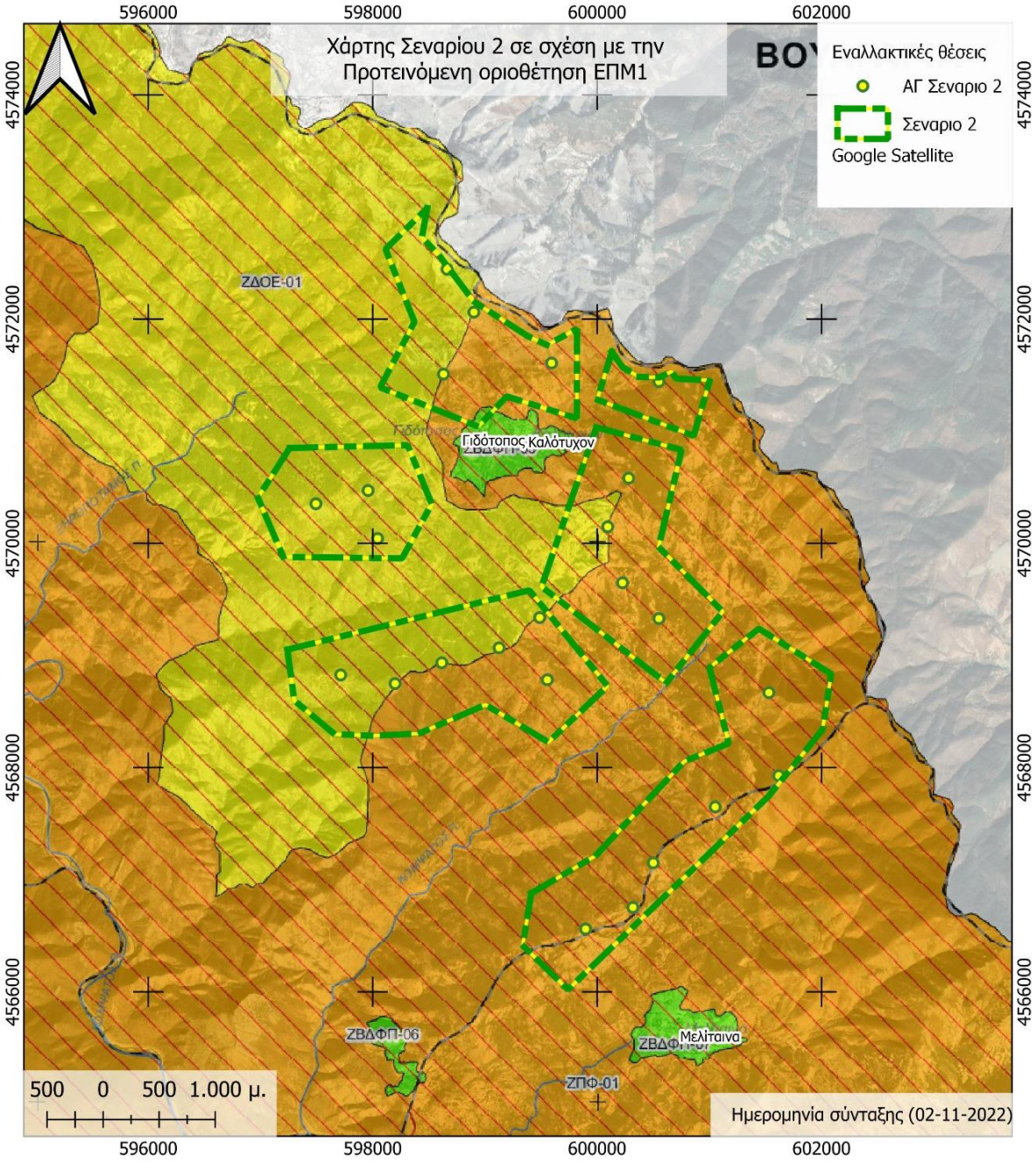
As for Scenario 2:

During the preparation of the study, the public consultation of the project "Preparation of Special Environmental Studies, Drafting of Presidential Protection Decrees and Management Plans for the Natura 2000 Network Areas" was announced through the website of the Ministry of Environment and Energy https://ypen.gov.gr/diavouleusi. Specifically, the "EIA 1b: Natura 2000 sites of the Regional Units of Rodopi (part), Xanthi, Kavala, Thassos and Drama" which includes the wider area of the ASPEE under study.

It was found that the polygons and the locations of the AGs of scenario 2 fall largely within the protection zone ZPF-01 (Nature Protection Zone) where, among other various special land uses, the installation of wind farms is not allowed.

The map below depicts the alternative scenario 2 in relation to the Proposed Delimitation of Protection Zones within the protected area "Complex Biodiversity Protection Area of the River and the Komsatou Valley" of Study 1: Preparation of the EIA and SE for the Natura2000 sites of the region of AMTH.

Map 49: Correlation of Scenario 2 with the Proposed zoning of OPM1.



Απόσπασμα του χάρτη «Προτεινόμενη οριοθέτηση Ζωνών προστασίας εντός της προστατευόμενης περιοχής "Σύνθετη περιοχή προστασίας βιοποικιλότητας ποταμού και κοιλάδας Κομψάτου"» της Μελέτης 1: Εκπόνηση ΕΠΜ και ΣΔ για τις περιοχές Natura2000 της περιφέρεια ΑΜΘ (Έργο ΕΜΠ)

Κατηγορίες ζωνών (άρθρο 19 Ν.1650/1986)

- Ζώνη Προστασίας της Φύσης (ΖΠΦ)
- Ζώνη Διατήρησης οικοτόπων και ειδών (ΖΔΟΕ)
- Ζώνη Βιώσιμης Διαχείρισης Φυσικών Πόρων (ΖΒΔΦΠ)
- Περιφερειακή Ζώνη (ΠΖ)

FINAL SELECTED SOLUTION (ASPEC):

The final selected solution concerns the placement of 24 G/G plants, each with a capacity of 6.2 MW, and exploits to the maximum extent the existing forest road network of the area, with the least possible interventions in the forest vegetation. Like the other possible scenarios, it requires

parts of a new opening, but makes optimum use of the existing road network and certainly causes the least interference compared to the other alternatives.

Also the selected scenario exceeds the minimum distance of 5km from the Egyptian Vulture nesting site.

Finally, with the selected scenario the project is located entirely within the ZDOE - 01 (Habitat and Species Conservation Zone) where, among other various special land uses, the code "34": "Installations of Renewable Energy Sources - Operation of legally existing and new RES is allowed after specific commitments" is allowed.

Taking into account the above elements of the natural environment, the location solution under study was chosen as the best possible (from an environmental point of view) combination for the installation of the W/F.

7.2.3.2 Alternative size and scale

For the suitability of the locations of the NPPs, the needs for accompanying road and interconnection works were taken into account, always in relation to the environmental changes they could potentially bring about.

It is obvious that more wind turbines result in a larger zone/perimeter of disturbance around them as well as more extensive interventions in proportion to the loss of land while on the other hand the barrier effect is enhanced.

This solution would inevitably require an additional Site Facilities Area (SFA), i.e. an additional 4,000 m^2 for the optimal technical servicing of the project during the construction phase.

Therefore, this scenario was rejected in an attempt to improve siting by limiting the area of occupation and the number of W/Ts.

7.2.3.3 Alternatives to design

Regarding the external MT network, for the interconnection of the W/F with the existing Iasmos substation, it should be noted that the alternative was rejected as its length, compared to the proposed final solution, is 24.4 km longer.

7.2.3.4 Technology

The specific geographical area and the existing wind potential contribute exclusively to the installation of RES-E in the area. Any other RES technology is not based on realistic scenarios. The specific size of the wind turbines was chosen to maximize wind utilization as smaller wind turbines would result in more installation sites to meet the 148.8MW design.

Moreover, the manufacturer proposes this type of W/T for the area under study.

7.2.3.5 Production process as well as the manufacturing process

As stated in sub-chapter 7.1.5, no alternatives to the 'production process' were explored.

On the other hand, in the same sub-chapter it is made clear that the construction phase follows specific specifications and does not allow for substantial variations.

7.2.3.6 Zero solution

Once again, it is noted that the zero option is rejected as the negative impacts from the construction and operation of the ESDP appear to be of lower intensity and duration than the positive impacts of the development of the project under study.

8 EXISTING SITUATION OF THE ENVIRONMENT

In accordance with the provisions of Annex 2 of the IO. A.P. οικ. 170225/20-01-2014, the current parameters of the natural and anthropogenic environment in the study area, as well as their evolution trends without the project or activity are recorded, analysed and evaluated in this chapter. The depth and breadth of analysis in each case should be commensurate with the magnitude of the anticipated direct and indirect significant impacts, as well as the synergistic impacts of other existing, ongoing or environmentally permitted projects or activities. Where it is estimated that no significant effects are expected, a justification shall be given for this assessment instead of a description of the parameters of the natural and man-made environment.

8.1 Study area

Firstly, it is noted that in order to define the study area, the following characteristics should be taken into account:

- Project classification according to environmental legislation; and
- Type of project depending on whether it is linear or point - area.

As described in chapters 3 and 6 of this study, the proposed project is both linear, due to the access roads and the routing of the medium voltage network, but at the same time it is also area/point due to the W/Ts and their platforms, while according to the M.A. YPEN/DIPA/17185/1069/2022 (Government Gazette 841/B` 24.2.2022) "*Modification and codification of the ministerial decision "Modification and codification of the ministerial decision 1958/2012 - Classification of public and private projects and activities in categories and subcategories according to par. 37.37.3. 4014/21.9.2011 (A' 209), as amended and in force" (B' 2471)*", is classified in subcategory A1 (see subsection 1.4 of this document).

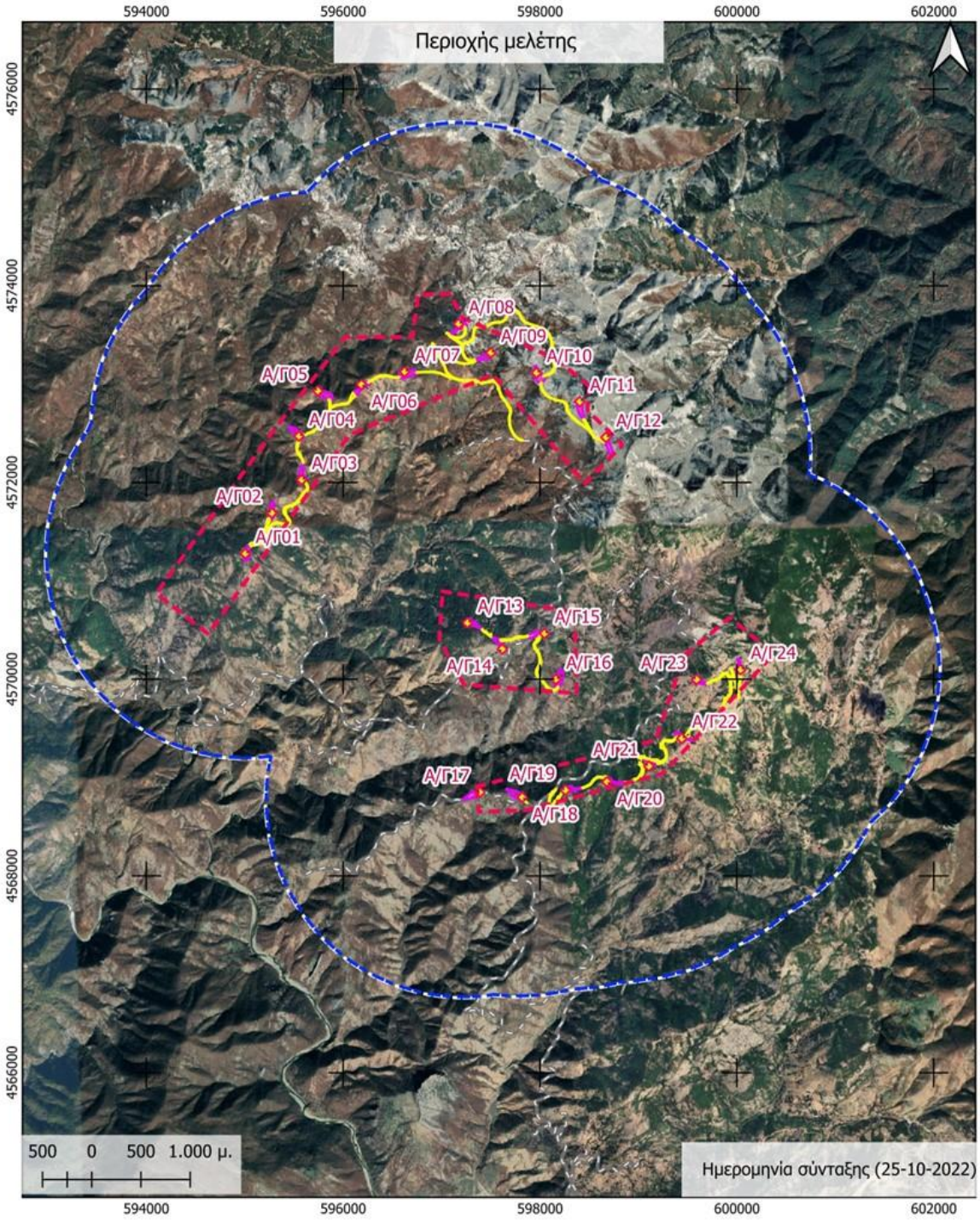
Therefore, according to the I.A. A.P. οικ. 170225/2014 (Annex 2 subsection 8.1) the minimum radius of the study area:

- for linear works of subcategory A1, shall be set at 1 000 m from their axis for areas outside the limits of built-up areas or city plans; and
- for point and area works 2 km from the boundaries of the land or the occupation site for areas outside the boundaries of settlements or city plans.

In the present study, a total minimum study radius of 2 km from the W/T occupation site and 1,000 m on either side of the axis of the linear works was taken into account.

Regarding protected areas, the project is located within the Special Protection Area (SPA) called "KOMPSATOU SOCIETY" (code GR1130012 - SPA).

Map 50: Study area radius .



8.1.1 Development of the project in whole or in part within a Natura 2000 site

The project under study is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Kompsatou Valley", code GR009.

However, it should be noted that within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SPA) called "Rodopi

- Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

The project under study is located outside the boundaries of any other protected areas of Law 3937/2011 (A/60).

Further information is provided in subsection 8.5.2 '*Areas of the national system of protected areas*' of this document.

8.1.2 Identification of a wetland protected area downstream of the activity

There is no wetland protected area downstream of the activity. More information is provided in subsection 8.5.2 '*Areas of the national system of protected areas*' of this document.

8.2 Climatic and bioclimatic characteristics

8.2.1 Climatic characteristics

The stations of Echinos and Dimariou were used for the delineation of the basic hydrometeorological parameters in the study area (technical report Kotoulas 1987). The station of Dimario is located at an altitude of 750 m, operated by the YEB in the period 1966-1971 and the station of Echinou at an altitude of 350 m, operated by the YED in the period 1973-1985. Furthermore, rainfall is distributed throughout the year with a decrease of course in the summer months.

Rainfall and temperature changes in the sub-basin of the river Echinos favour intense erosion over its entire area.

In detail, for the investigation of these changes as well as the variation of atmospheric precipitation and temperature, the records of the Hellenic Meteorological Service at the Ehinos meteorological station for the period 1973-1985 were used. For the Dimariu station (YEV), only the existing data on atmospheric precipitation for the period 1966-1971 were used.

Table 38 Geographical data and period of record at the weather stations of Echinou and Dimariou.

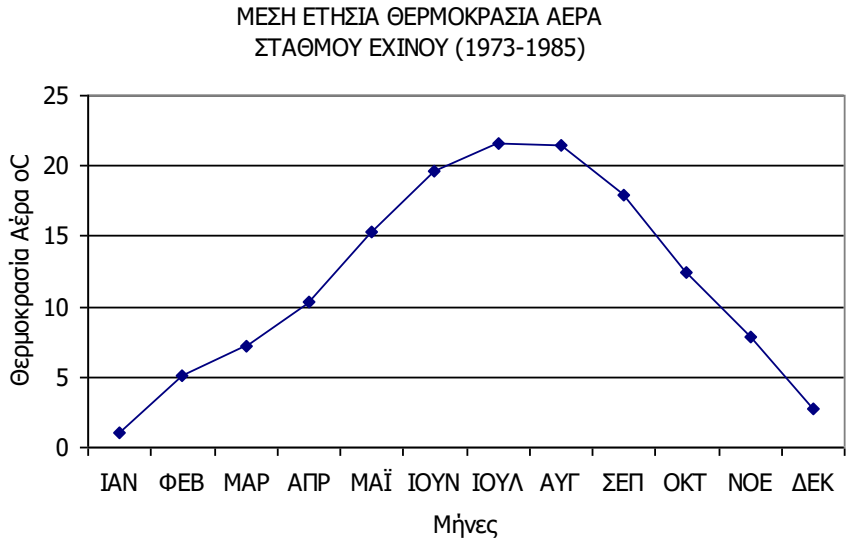
Station	Station owner	Altitude in metres	Period of recording
Echinau	YMCA	350	Temperature? 1973-1985
Demarion	YEB	750	Atmospheric Precipitation: 1966 1971

Air Temperature :

As is well known, daily and seasonal variations in air temperature, combined with differences in humidity, lead to a loosening of the cohesion of the rocks and the weathering of their components. Therefore, knowledge of air temperature variation is important in this direction.

From the Ehinos meteorological station, the temperature regime in the area for the period 1973-1985 is as shown in Figure 1. From this diagram it can be seen, based on the average monthly temperatures, that the coldest month is January and the warmest month is July. The annual temperature range is 11,9 °C. The value of this parameter facilitates the weathering of rocks with low thermal capacity, which are involved in the geological structure of the investigated sub-basin of the Echinos.

Chart 3 Average monthly temperature for the station of Echinou.



Atmospheric Precipitation :

The wider area of the Echinos sub-basin receives relatively high levels of atmospheric precipitation, which is unevenly distributed over the different seasons.

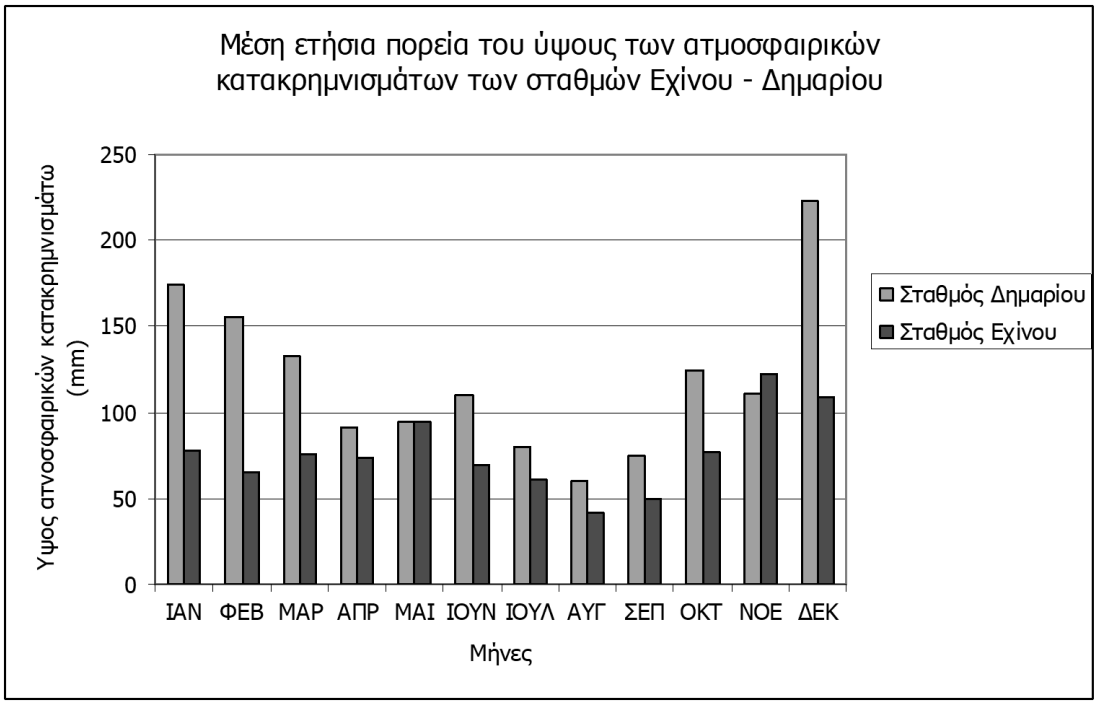
At below table shows the monthly average values of precipitation from recordings at the stations of Echinou and Dimariou.

Table 39 Average values of atmospheric precipitation at the Ehinos and Dimari meteorological stations for the years 1973-1985 and 1966-1971 respectively

	Stations of Echino Average Rainfall (mm)	Stations of Dimari Average Rainfall (mm)

IAN	78	173,8
FEB	65,1	155,7
MAP	75,6	132,4
APR	73,2	91,1
MAY	94,7	94,1
JUN	69,7	109,7
JUL	61,1	79,7
AWG	41,1	59,7
SEP	49,7	74,7
OKT	77,1	124,6
NOE	122,6	111,4
ICJ	109,2	222,6
Annual	917,3	1429,5

Chart 4 The distribution of the annual average values of atmospheric precipitation in mm for both stations is shown.



From the above tables and diagrams the following conclusions are drawn, which are directly related to the weathering processes of the formations of the wider area.

In the winter months, 27.5% and 38.6% are observed at the stations of Echinou and Dimariou respectively. The corresponding values for the summer months are 18.7% and 17.4% respectively.

There is therefore a relatively wide variation in annual precipitation values at both stations. In general, the course of atmospheric precipitation during the year is exactly opposite to that of temperature. Thus, the wells, having undergone a strong contraction during the summer months, receive a large volume of atmospheric precipitation in winter, which is drained or transported with a lag. As a result, slope zones with steep slopes are prone to landslides or slides, while streams are subject to increased solids flow.

The combined sequential effect of thermal weathering (summer period) and mechanical erosion (winter period) causes additional loosening of the cohesion of the formations and consequently a reduction in their strength.

More detailed data for the characterization of the climate of the wider study area were taken from the Weather Station of Xanthi (EMY) at an altitude of 81 meters and exact position (latitude F 41o 03'S and longitude L 24o 53'E. These data can give a picture of the climate of the region in recent years.

Temperature - Sunshine :

The table below lists the average, absolute maximum and absolute minimum temperatures for each month at the station. The following diagram shows the monthly variation of the mean, mean maximum and mean minimum temperatures. The coldest months are January, February and December, while the warmest months are July and August.

Table 40 Monthly air temperature variation (Co)

	Average air temperature (° C)	Absolute maximum temperature (° C)	Absolute minimum temperature (° C)
IAN	5,6	9,4	2
FEB	5,6	9,7	1,9
MAR	8,9	12,8	5
APR	14,1	18,6	9,5
MAI	18,8	23,3	13,2
JUN	23,3	28,1	17,1
JUL	26,6	31,4	20,2
AWG	26,9	32,1	20,8
SEP	22,5	28,1	16,7
OKT	16	20,9	11,8
NOE	10	13,8	6,7
ICJ	6,2	9,8	2,9

In the study area, northerly winds of 0.83 to 1.47 m/sec are observed. The months with the strongest winds are February, March, November and December.

8.2.2 Bioclimatic characteristics:

The bioclimate of an area is the biological expression of its environment and especially its climate through its natural vegetation.

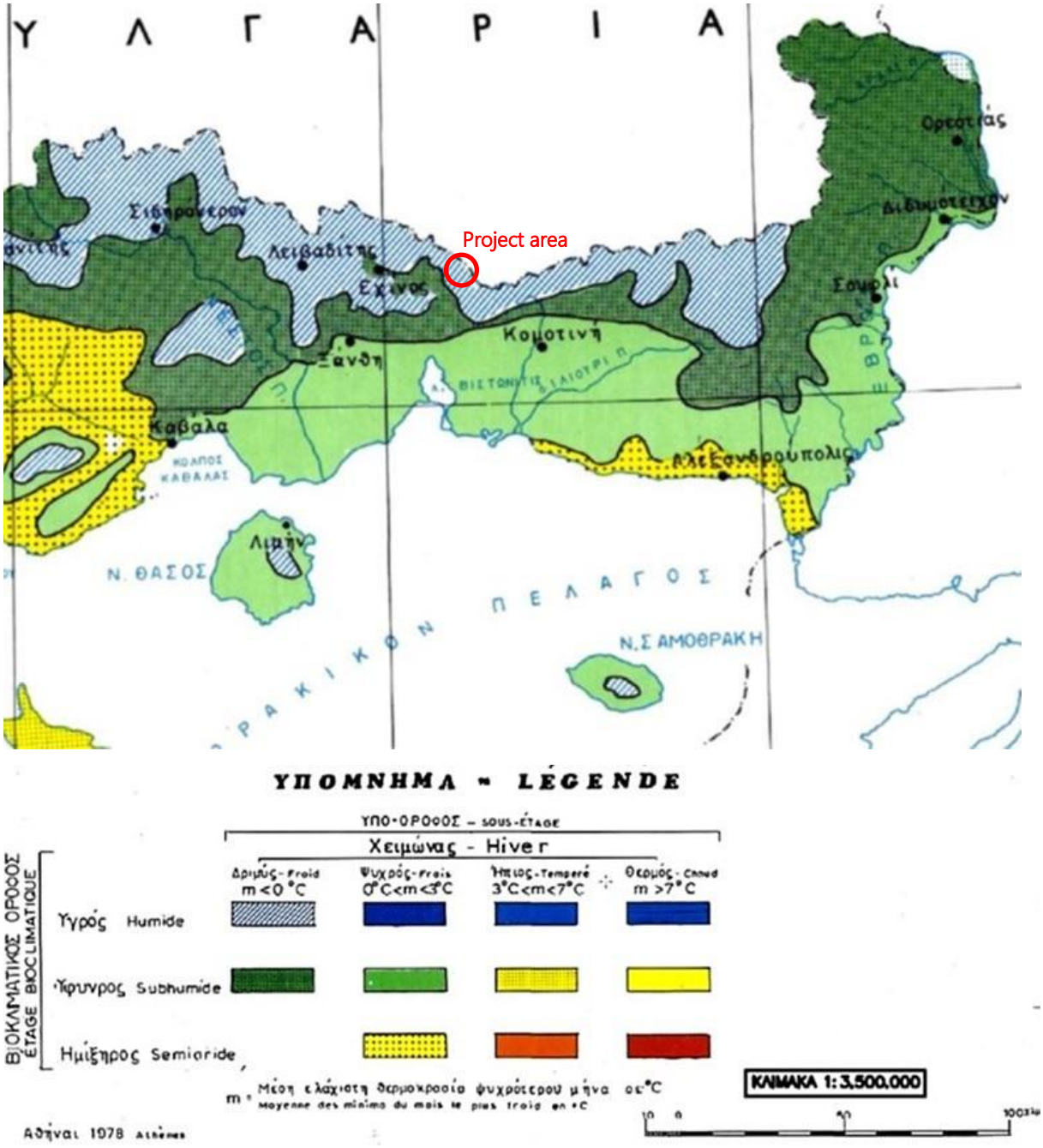
Based on the data presented above and according to the bioclimatic map of Greece (classification of the Institute of Forest Research (Athens 1978) the study area is classified as a wet bioclimatic floor with severe winter ($m<0^{O}$ C, where m: average value of Tmin of the coldest month).

With the precipitation-thermal diagrams and the dry season dry heat indices it is possible to distinguish subdivisions within the Mediterranean bioclimate. In this area the character of the bioclimate is Sub-Mediterranean, which means that the dry season lasts from 1 to 39 days. Of course, a dry period of such a duration, i.e. around one to one and a half months - which coincides with the period of maximum temperature - is not considered 'dry' in the strict sense of the term, but is rather the result of increased evaporation due to the warmer part of the year.

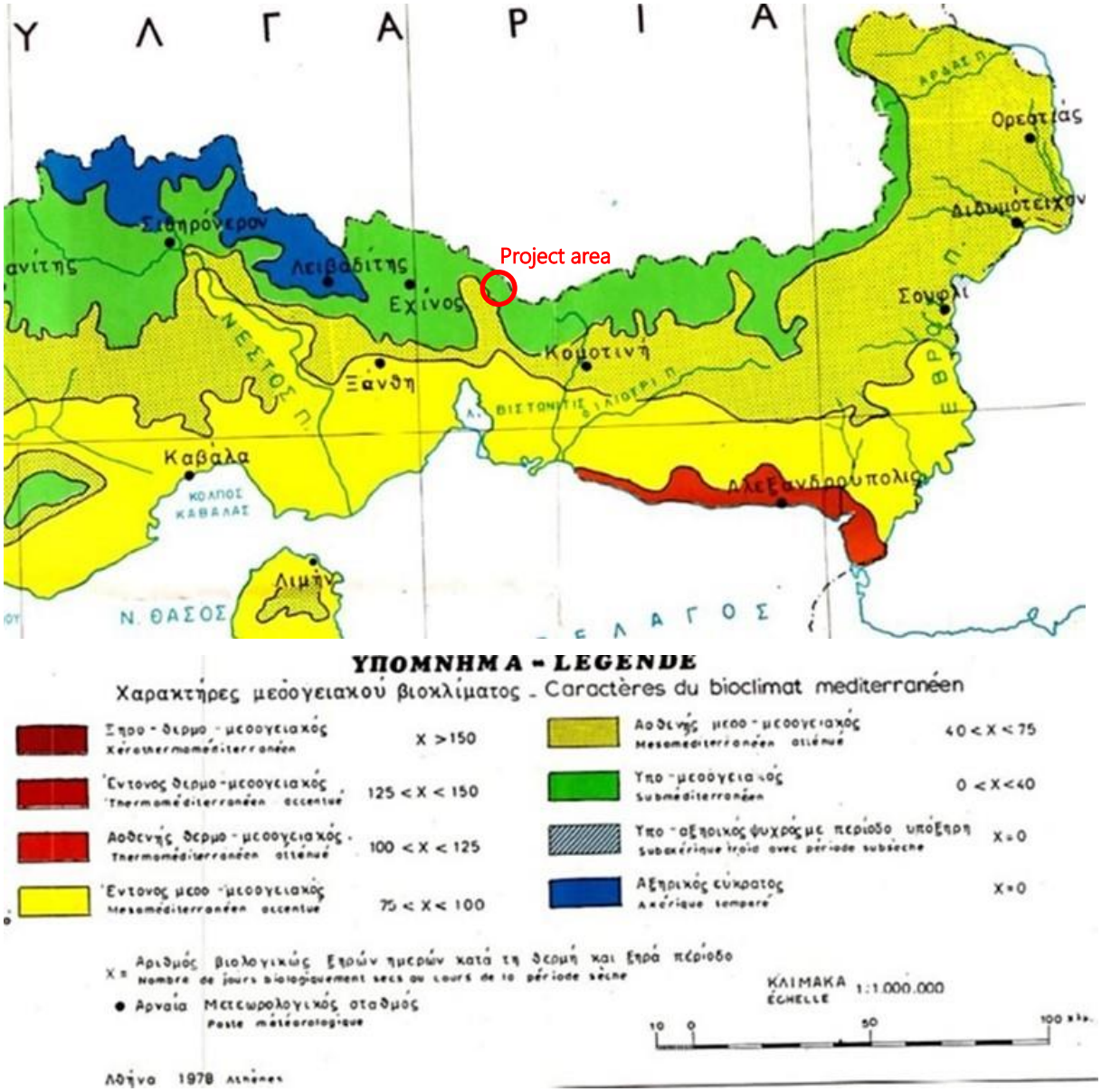
On the other hand, as far as the phytosocial structure of the study area and the wider area is concerned, it can be said that we are in the Mediterranean vegetation zone.

Below are the general maps of the Institute of Forest Research.

Map 51: Bioclimatic floors.



Map 52: Mediterranean bioclimate features.



Map 53: Vegetation map.

8.3 Morphological and landscape characteristics

8.3.1 Overall reference landscape and individual modules

The need to define and protect the landscape in Greece has existed since 1950, when the landscape was identified with areas of outstanding natural beauty (Law 1468/1950). Subsequently, the institutional framework for the protection, enhancement and management of the landscape was enriched (PD 161 D/84, Law 1650/86) along with the expansion of the concept and the spatial scale of the landscape. Since 2000, the European Landscape Convention has highlighted the need for a new, more integrated view of the landscape, according to which the landscape is the result of the interaction of natural and human factors. The recent ratification of the European Landscape

Convention (Law 3828/2010) has activated the mechanisms of spatial and urban planning with the aim of protecting and managing the landscape.

According to Law 3827/2010 (A΄30) "Ratification of the European Landscape Convention", the EU Member States are obliged to promote the protection of landscapes through mechanisms of protection, good management and organisation. The general measures for the protection of the morphological and landscape characteristics of an area can be summarised as follows: Each Member State must:

- legally recognise landscapes as an essential component of the human environment, as an expression of the diversity of their common cultural and natural heritage, and as a foundation of their identity,
- to establish and implement landscape policies aimed at the protection, management and planning of landscapes by adopting the specific measures listed in Article 6 of the said Law,
- establish procedures for the involvement of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies referred to in paragraph b above,
- integrate landscape into its regional and urban planning policies and its cultural, environmental, rural, social and economic policies, as well as many other policies with a potential direct or indirect impact on landscape.

Having therefore, as a reference, the legal texts existing at international level in the field of protection and management of natural and cultural heritage, regional and spatial planning, local government and cross-border cooperation, and in particular:

- the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 19 September 1979),
- the Convention for the Protection of the Architectural Heritage of Europe (Granada, 3 October 1985),
- the European Convention for the Protection of the Archaeological Heritage (revised) (Valletta, 16 January 1992),
- the European Framework Convention on Transfrontier Cooperation between Local Communities or Authorities (Madrid, 21 May 1980) and its additional protocols,
- the European Charter of Local Self-Government (Strasbourg, 15 October 1985),
- the Convention on Biological Diversity (Rio, 5 June 1992); and

the Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 16 November 1972)

Regarding the morphological characteristics of the study area, we observe that the P.E. of Xanthi is generally divided into a mountainous and a lowland zone.

In this case, the project is located in the mountainous zone, mainly in the northern exposures of the massif.

The wider area presents a strong terrain, which in combination with the equally strong folding of the ground, create a constant change in both slope and exposure. The prevailing gradients are strong from 40-80 %. In general the orientation is South-Southeast.

It is also crossed in all directions by a number of small and larger streams, due to the intense relief of the terrain. The central stream in the area is the Xeropotamos stream, which is the recipient of the microcurrents that infiltrate the area of Thermi and the eastern part of the Satra region and flows into the Komsato stream in the prefecture of Rodopi.

The W/Ts are placed on a double axis SW-NE based on a double axis, at an altitude of ~550-700m on the ridges "Xefoto, Samarano, Iskima & Mesovouni" in 3 polygons. Around the periphery, hill ranges of similar altitude (600-800m) are found.

The closest distance between the W/Ts of the studied RES (within the same polygon) is ~429.6 m, between W/T 19 and W/T 20, while the farthest distance is approximately 1,248 m as depicted in the relevant map [Distance zones of the EIAA rules (1.5d, 2.5d, and 7d) and distance from the nearest W/T] of subchapter 4.4 of this report.

All the streams of the area are connected to the river Komsato that ends in the Vistonida lagoon which is located between the P.E. Xanthi and P.E. Rodopi.

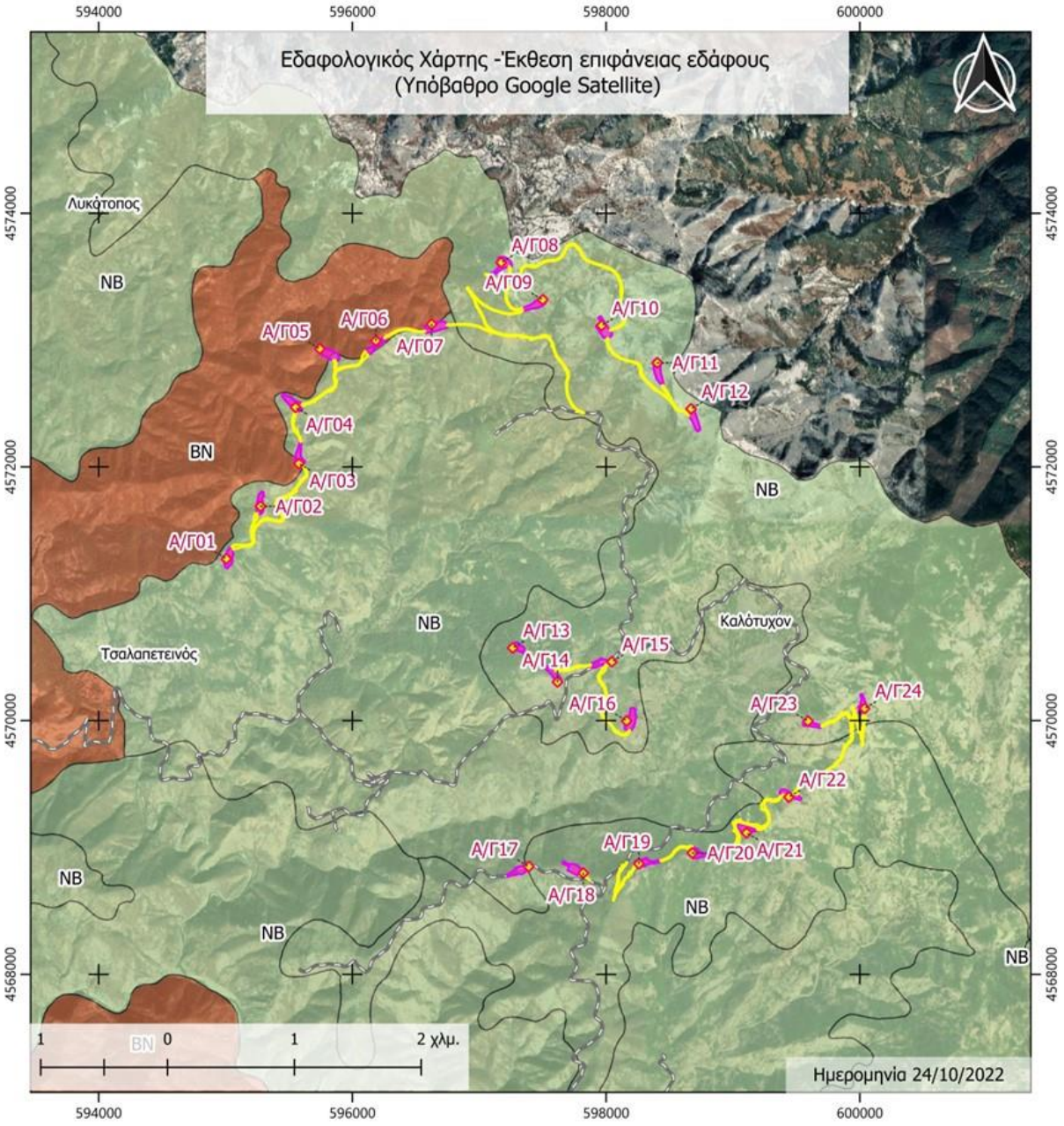
The nearest surface water body is the river Xeropotamos (EL1208R0000060070N), one branch of which is located in the northern polygon (where W/T 1 to 12 are located) and in particular in the south-southwest of W/T 1 at a distance of > 1,2 km and another branch between the northern and the central polygon (W/T 13 to 15) at a distance of approximately 780 m from W/T 13. In the southern polygon (A/R 17 to 24) and at a distance of > 1,2 km southeast of A/R 21 is the river Komsatos (EL1208R0000040083N).

In the wider area there are extensive forest areas with remarkable forest species and lush gorges. Many half-gorges and deeper streams furrow the slopes of the wider area in all directions. The ground surface exposure to the horizon throughout the project is in a NW or NNE direction.

According to the soil map presented below, the predominant landscape feature in the immediate study area is the rounded peaks and ridges at least at the locations of most of the W/Ts, while in parts, such as the locations of W/Ts 8 to 15 and W/Ts 23 and 24, the physiography changes to steeper slopes in the middle part of cliffs. In addition, the terrain slopes in the area are gentle (0%-40%) and moderate to only moderate in places (40%-70%).

It should be noted that no existing and/or licensed (or to be licensed) RES-EEs are identified in the area of the installation of the considered RES-Es. As discussed in detail in subchapter 4.4 of this report, the nearest licensed NPP is located at a distance of > 16 km, while the nearest licensed NPP is located at a distance of > 8 km. However, slightly more than 4 km away, two other NPPs with a production licence are located.

Map 54: Ground surface report



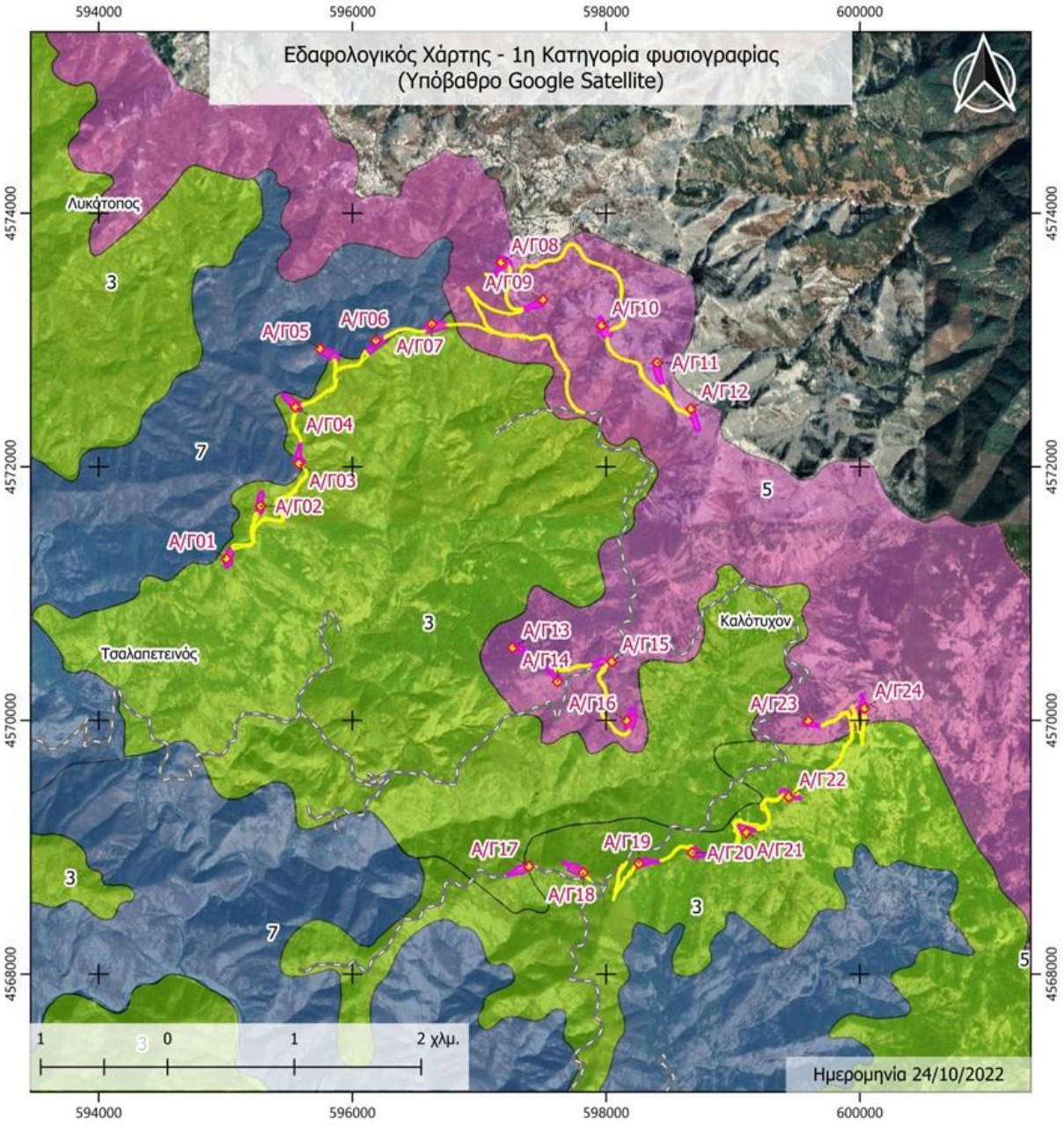
Υπόμνημα

Εδαφολογικός Χάρτης - Έκθεση επιφάνειας εδάφους Satellite only

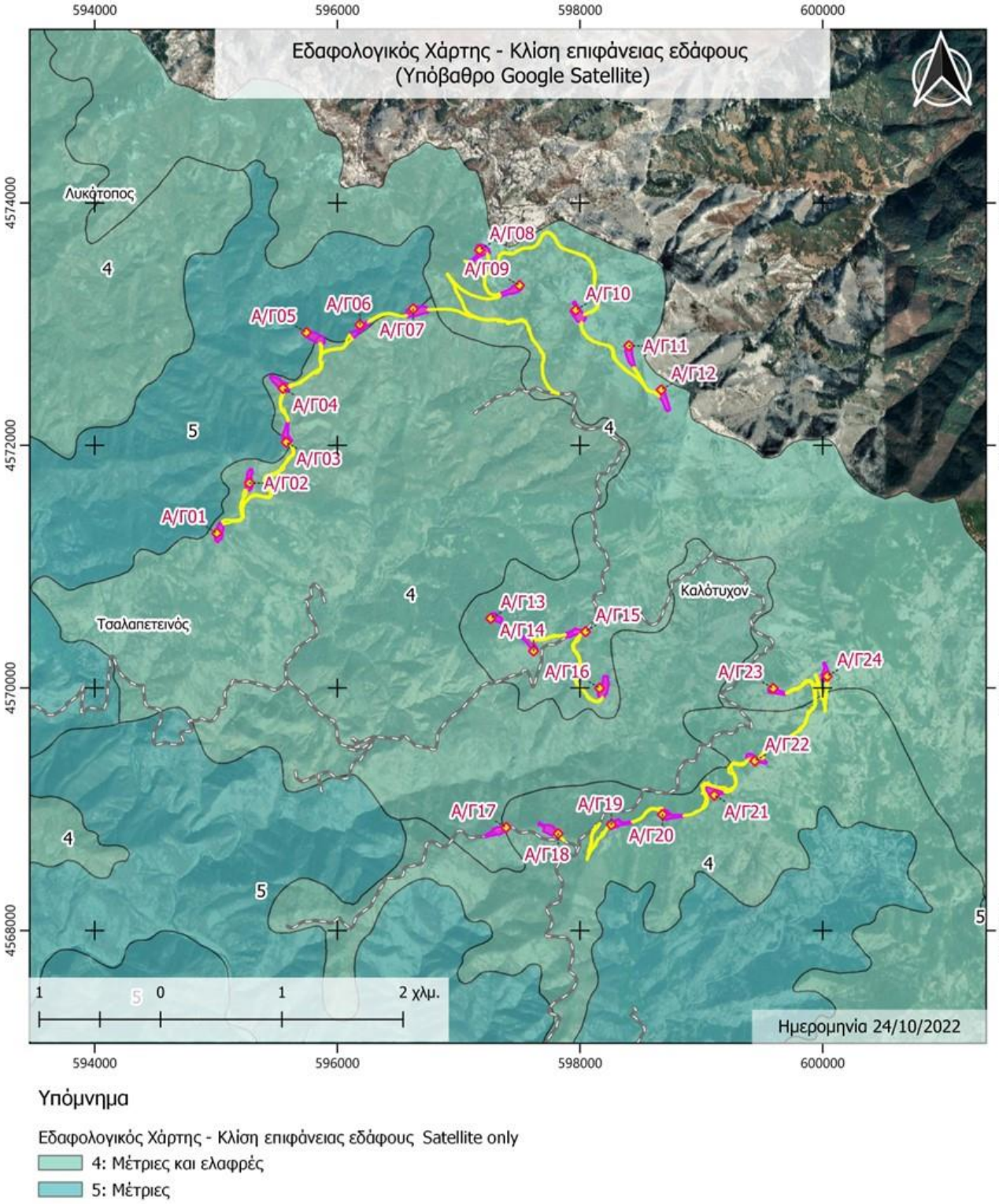
BN: Βόρειες και νότιες

NB: Νότιες και Βόριες

Map 55: Physiography



Map 56: Ground surface slopes.



At the same time, as mentioned in the project's compatibility checklist for RES (which can be found in Annex IV), the distances of the project under consideration from areas and points of particular interest are as follows:

- Within a distance of at least 5 km, from the boundary of the ESDP, no World Heritage-listed monuments are identified, therefore the landscape integration rules do not need to be applied.
- The nearest absolute protection zone boundary (A) of other archaeological sites is located at a distance of more than 10 km from the boundaries of the AAPIE (archaeological site "Fortress enclosure, Thermo's Settlement" at a distance of 13.14km from W/T6), therefore the landscape integration rules are not required to be applied.
- Within a distance of at least 5 km from the boundaries of the ESDP, there are no cores of National Parks, natural monuments or aesthetic forests, therefore the landscape integration rules do not need to be applied.
- No traditional settlements are identified within a distance of at least 5 km from the boundaries of the ESDP, therefore no landscape integration rules are required. There are also no settlements with a population of >2000 or settlements with a population of <2000 inhabitants that are classified as dynamic, touristic or remarkable in the sense of article 2 of decree 24.4/3.5.1985.
- The settlement network of the wider area consists of small mountain settlements. Within the study area are the settlements of Tsalapeteinos (1,28 km from W/T01), Gidotopos (0,8 km from W/T15) and Kalotycho (0,63 km from W/T23); therefore the landscape integration rules for the settlements of Kalotycho, Gidotopos and Tsalapeteinos need to be applied.
- The nearest boundary of an established or developed tourist area, medium or large tourist accommodation, special tourist infrastructure or tourist ports is located at a distance of more than 5 km from the boundaries of the ESDP, therefore the landscape integration rules do not need to be applied.

In conclusion, the application of the landscape integration criteria is required for the settlements of Kalotycho, Gidotopos and Tsalapeteinos.

8.3.2 Relevance to the European Landscape Convention

In the study area there are no areas related to the Law 3827/2010 (A΄30) "Ratification of the European Landscape Convention". No identified area or areas where the Landscape Convention applies were identified.

In this case, no area or part of an area in the wider study area has been designated as "protected", no Landscape of Special Natural Beauty (SSSI) has been identified, and no protected natural formation has been designated to date. There are also no declared aesthetic forests, riparian forests, protected forests or listed natural monuments in the study area.

In the immediate study area and further afield, within a radius of at least 10 km, there are no spatial units of landscape of particular importance. The overall reference landscape is not assessed as being of natural beauty. However, at this point it is mentioned that according to the revised Regional Spatial Planning and Sustainable Development Framework for Eastern Macedonia - Thrace (RSPSPF) for the 'Rhodope Mountains / Rhodope Mountain Settlements Zone' which has been classified as a landscape of Regional Importance is given as a guiding strategy: "-Promote

uniform regulation of the area in the Municipality of Myki; -Recognition of areas of the special mountainous rural landscape as "High Natural Value". -Identification of typical products such as oriental tobacco ('bassmas'). -Systematic implementation of the Integrated Programme for the Sustainable Development of the Rhodope Mountains (IPBAOR). -Connection with other landscapes in a network of routes of ecotourism interest'.

At the same time and according to the database "FILOTIS" it is noted that in the wider area and at a distance of at least 10 km. from the study area there is no TIFK. The Beech Forest in Tsichla Haidou of Xanthi and the Virgin Forest of Central Rhodope are located much further west at a distance of more than 10 km.

In all other respects, the provisions of the previous sub-chapter apply.

8.3.3 Correlation with landscape features

The study area is in a landscape exaltation as it is predominantly mountainous terrain with altitudes ranging from 550-700m and the entire area of intervention is dominated by mainly gentle to moderate slopes (see the relevant map in subsection 8.3.1). However, it is proposed to develop the ESDP along the hills

8.3.4 Reporting of materiality and vulnerability data

No elements of landscape significance are identified in the study area and as discussed in subsections 5.2.2 and 8.3.1 of this report, the application of the landscape inclusion criteria within the framework set out in the SEAAP for RES is not required.

Relevant information is also provided in the issue "PROJECT COMPATIBILITY STUDY WITH RES RES PROJECT COMPATIBILITY - SPECIAL AUDIT ISSUE".

In any case and according to the above mentioned special control document, the examined RESEO meets criterion 1 of maximum density of E/C and is integrated into the landscape in line with the quantitative criteria of the EIAAP. In particular, for the Municipal Unit of Satra, the number of equivalent W/Ts holding a Production License (92.01) is lower than the maximum allowed (98.89).

Otherwise, no other elements of landscape vulnerability are detected in the existing situation as no particularity or feature of outstanding natural beauty is identified.

8.4 Geological, tectonic and soil characteristics

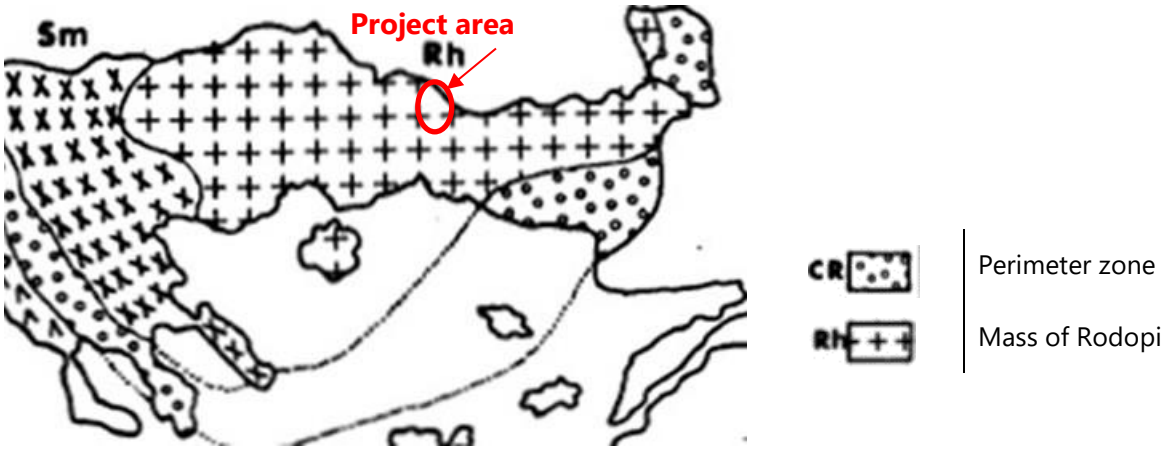
8.4.1 Geological - Geotectonic data

Geologically and geotectonically, Thrace is usually considered as a single unit together with Eastern Macedonia (geotectonic zones "Rhodope Mass", "Serbo-Macedonian Mass" and "Thrace peridotopic zone").

Geologically, the area under study belongs to the "Massas Rodopi" geotectonic zone characterized by crystalline schistose and igneous rocks 10 to 20 km thick and extends between the rivers Struma and Evros. It mainly occupies the mountainous area of Mount Rodopi, in part of which it is proposed to install this RES-EPP. The lack of sedimentary rocks results in a relatively

unclear stratigraphy. It consists mainly of gneiss, marble, shale, granite-granodiorite, rhyolite, andesite and dacite. It has been affected by three fold tectonic phases: a) a pre-Eocene high-pressure high-pressure metamorphism seen in eclogites and eclogitic amphibolites, b) a lower to mid-Eocene lower-pressure amphibolite metamorphism followed by c) a retrograde greenschist-rock phase metamorphism seen in amphibolites, metapolites and gneisses.

The Zone is bounded to the east and southeast by the Peripatetic Zone (CR), and to the west in the area of Strimonas by the Serbo-Macedonian Mass (Sm).



The Rodopi Zone, based on the thrust of the Nestos River, which has a northeast-southwest direction, is divided into two tectonic lithostratigraphic units, the lower or "Paggaio unit" and the upper or "Sideronero unit".

In this case we focus on the Ironstone unit which includes rocks of a much higher degree of metamorphism, which can be distinguished in three horizons, a lower one of orthogneisses, marble schists and amphibolites, a middle one with marbles and an upper one with alternations of schists and marbles.

It is known that the Rhodope Rila mass was affected by Alpine movements, during the lower Pliocene the southernmost parts of the Rhodope zone were affected by a NNE directional tensile movement which was related to the Aegean back arc basin, which is still active today. The wider area is characterised by rapid uplift trends.

During the relaxation by the compressive trends from the Miocene until today, the large Xanthi - Komotini depression and at the same time other smaller depressions with main directions from NE-SW and NW-SE were created. The southernmost parts of the Rhodope zone were affected by NE-EP tensions and by NW-NW and NE faults.

The recent tectonic action combined with the rapid uplift of the area and the withdrawal of the sea due to the eustatic movements during the upper Holocene, resulted in the intense erosion of the area.

The study area is part of the Rhodope massif, the predominant rocks are crystalline schistose metamorphic rocks. The mass of these rocks consists of rocks of high degree of metamorphism, formed in two stratigraphic series. The gneiss, gneissic schist and marble series. Small areas of andesites, plutons and aluminous deposits also occur.

All the rocks are gneissic, gneissic slates while the marbles occupy the western areas.

- Gneissic, gneissic schists: they are fine-grained to coarse-grained and vary in colour, texture and texture depending on the particular mineral composition and degree of recrystallisation. The predominant minerals are plagioclase quartz, biotite, granite, potassic feldspar, etc.

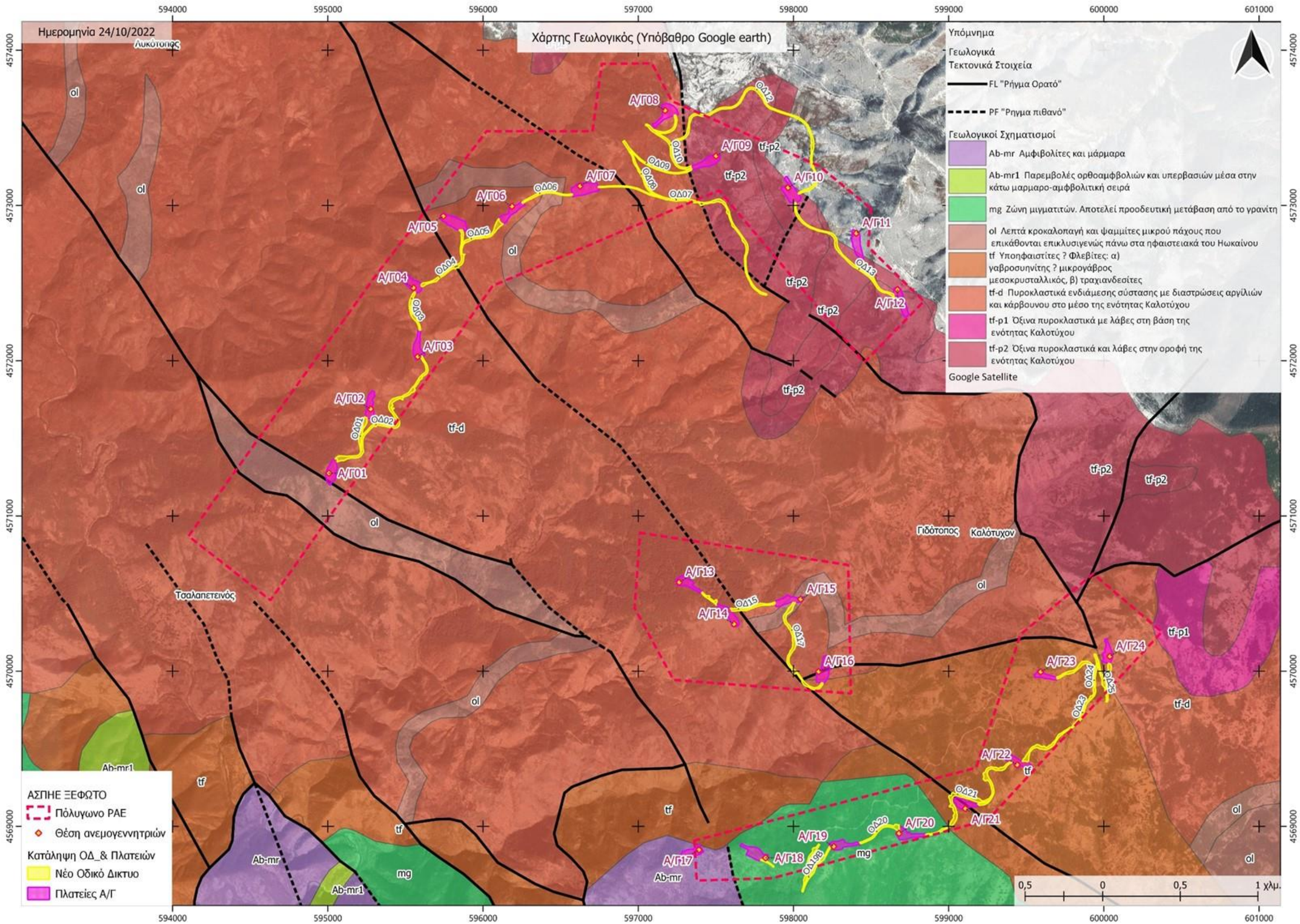
- Marbles: the marbles are for the most part white to pale black with poor bedding, usually compact, often alternating vertically and laterally with amphibolite rocks, shales and gneisses.

According to the maps below, the following geological formations are located in the study area:

- in the area of the platforms of W/T 1 to 8, W/T 13 to 16 and in the platforms of W/T 21 to 24, i.e. in the greater part of the project, pyroclastic formations of intermediate composition with layers of clay and charcoal predominate, and veins of fine conglomerates and sandstones are found in places in the deposition of the above-mentioned volcanic rocks,
- acid pyroclastic formations and lavas are found in the area of the platforms of W/T 9 to 12,
- in the area of the plazas of W/Ts 18 to 20, a zone of migmatites derived from the partial melting of the gneissic rocks is found,
- a zone of amphibolite and marble is found in the area of the Platform of W/T 17.

Below is an extract from a geological map.

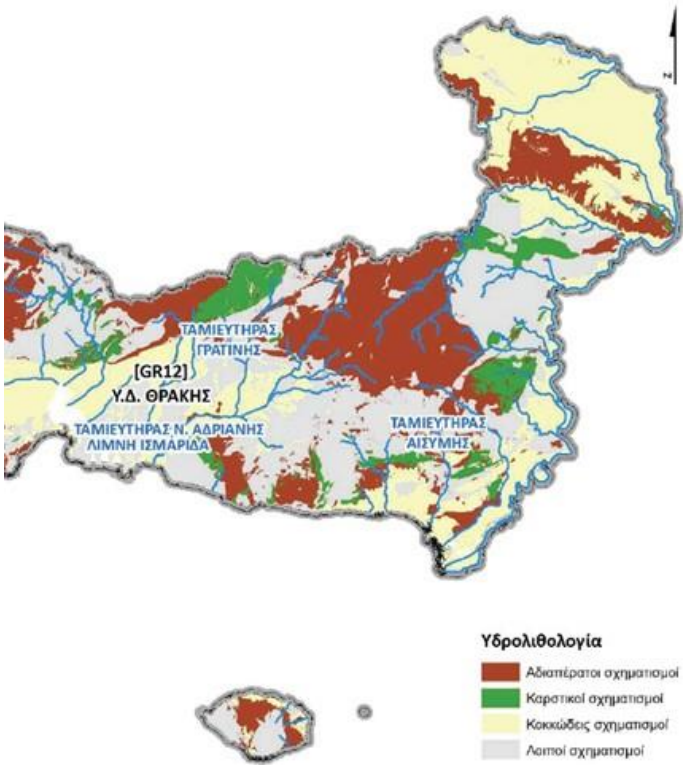
Map 57: Extract from the geological map (Main project, access road and part of the MT network)



8.4.2 Hydrology

In the Thrace Water Region, three groundwater aquifer systems are distinguished, namely granular, karstic and fractured aquifers. In particular:

Granular aquifers, which (study area), are mainly developed in pleseo-quaternary formations and are generally characterised by a well-shaped surface aquifer and one or more overlying deeper ones, which are pressurised or partially pressurised. Pressurised aquifers are the result of hydro-lithological changes in the materials of the geological strata, both in the vertical and horizontal sense. In granular formations, the aquifers of wells and pressurised aquifers are considered to be uniform.



The karstic aquifer is mainly developed within the formation of marbles, limestones and carbonate shales. They are mainly developed in the mountainous parts of the HC and their quantitative and qualitative state is usually not subject to anthropogenic pressures. They are fed almost exclusively by meteoric precipitation, and only in the case of the karstic system of the Ore Basin has it been established that the karstic aquifer communicates bidirectionally with the Nestos River. They are discharged mainly through large karst springs.

Fractured aquifers (in the study area) develop mainly in metamorphic, igneous and volcanic rocks which are generally adjacent to tertiary sediments. Magmatic and volcanic rocks are generally considered to be water tight, but in the area of the Thrace WD, the conditions of strong tectonism create secondary porosity which allows the existence of underground aquifers, usually of local importance and low capacity.

8.4.3 Mectonics

By means of the IA. D17a/141/3/FN 275/1999 (Government Gazette 2184/B/20-12-1999) the new Greek Earthquake Regulation (E.A.K.) was approved, as amended by:

1. the IA. D17a/67/1/FN 275/03, (781/B΄/18-06-2003) "Modification and completion of the decision of approval of the "Greek Earthquake Regulation - EAK - 2000"
2. the IA. D17a/115/9/FN275/03, (1154/B/12.8.03) "Modification of the provisions of the "Greek Seismic Regulation EAK-2000" due to the revision of the Seismic Hazard Map"
3. the IA. D17a/10/44/FN 275/10, (270/B/16-03-2010) "Amendment of the decision approving the "Greek Earthquake Regulation - EAK -2000", as in force"

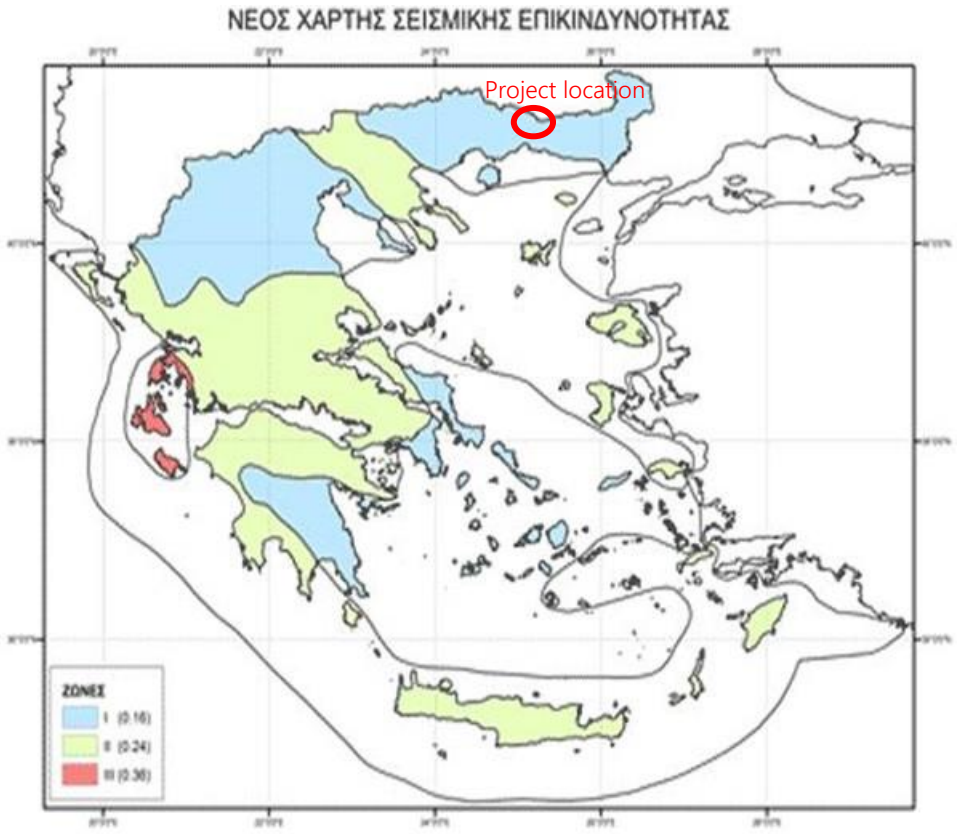
and in force until today, the wider area in terms of seismicity is classified as Zone I seismic risk (low risk).

The seismic acceleration of the ground according to the second relevant amendment of the NAC is calculated from the relation A = a * g.

The horizontal ground acceleration factor for Zone I is taken as α = 0.16 while the acceleration factor of gravity g = 9.8 m/s^2 so from the above relation:

A = 0.16 * 9.8 = 1.568 ≈ 1.57 m/s^2 .

Map 58: Seismic hazard



According to the data presented at the Geodynamic Institute, only 5 earthquakes with a magnitude of more than 5 degrees on the Richter scale have been recorded in the region since 1970.

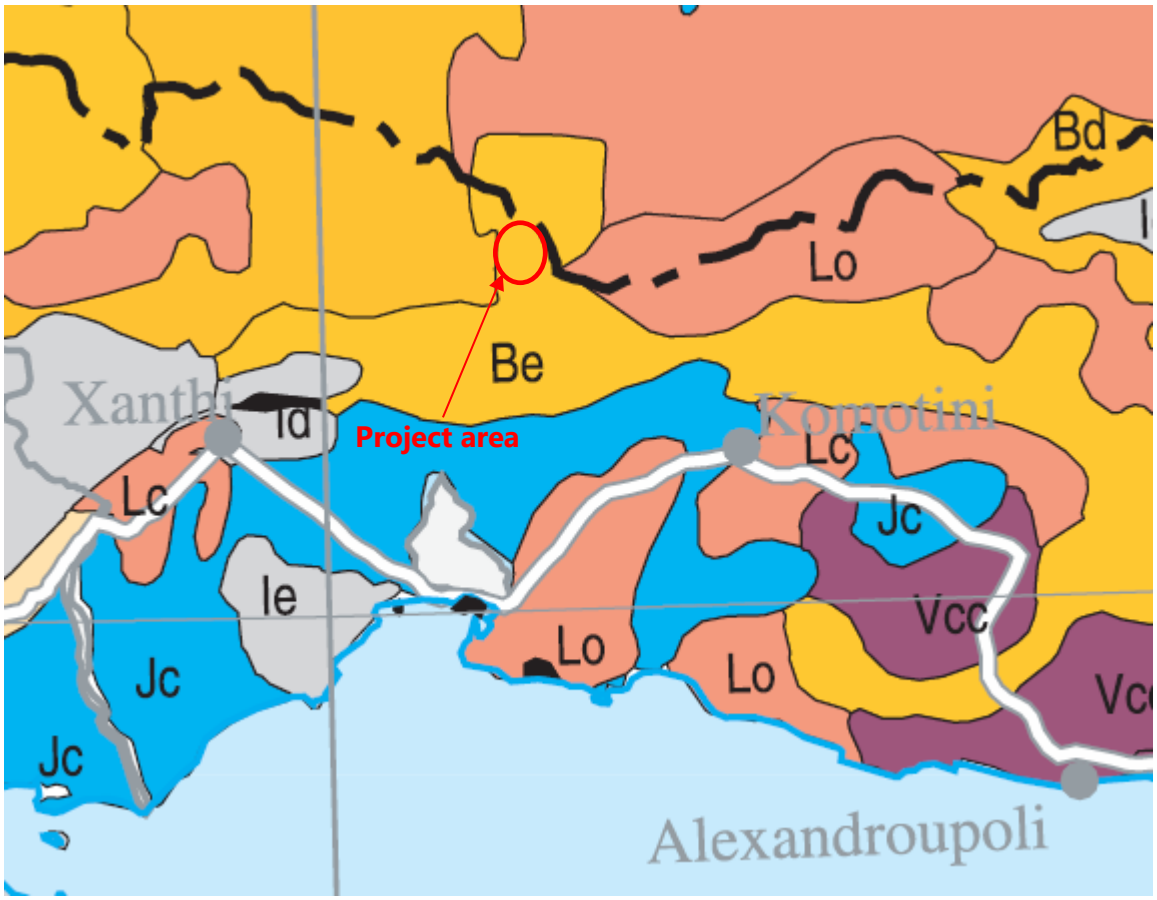
It is estimated that the values of seismic ground accelerations, according to seismological data, have a probability of exceeding 10% in 50 years.

8.4.4 Soil data

The morphology of the P.E. Xanthi is classified in three zones. The first occupies the southern lowland part of the prefecture and has almost zero slopes. The second zone extends northwards parallel to the first and occupies the centre of the south up to the height of the Rhodope mountain range. It includes semi-flat and semi-plain areas with moderate slopes. The third zone is located to the north of the second zone and occupies the mountainous part of the P.E.

According to the data of the European Soil Data Centre (ESDAC) and the relevant mapping (see map below), the specific characteristics of the area's soils are derived. It can therefore be seen that the project area falls within a zone categorised as Eutric Cambisol (Be on the map below).

Map 59: Extract from the soil map of Greece



Eutric Cambisols are soils characterised by the absence of a layer of accumulated clay, humus, water-soluble salts or oxides of iron and aluminium. The suffix eutric identifies the saturation basis of the soil in > 50 % over most of the soil and at a depth of between 20 and 100 cm from the surface. These are soils with a differentiated initiation horizon, which is evident by changes in colour, structure and/or carbonate content. They grow on native parent material, usually of medium size, or on alluvial or aeolian deposits and are characterised by good fertility. They are also characterised by light to moderate deterioration (erosion) of the parent material and the absence of significant amounts of clays, organic matter, aluminium and/or chemical iron compounds.

In the marble zone the soil is generally shallow to very shallow and uncovered. These soils are characterised as alkaline and poor in humic substances.

In the zone of gneiss - granite etc. the basic rocks, the climatic conditions, the vegetation and the topography of the area (slopes, orientations) favour soil formation. The humid to almost humid climate, the well-textured and slightly permeable crystalline and shaley subsoil and the vegetation create soils rich in soil with a clay-sand to clay-sand composition, with a high percentage of sand for permeability and a high percentage of clay for moisture retention.

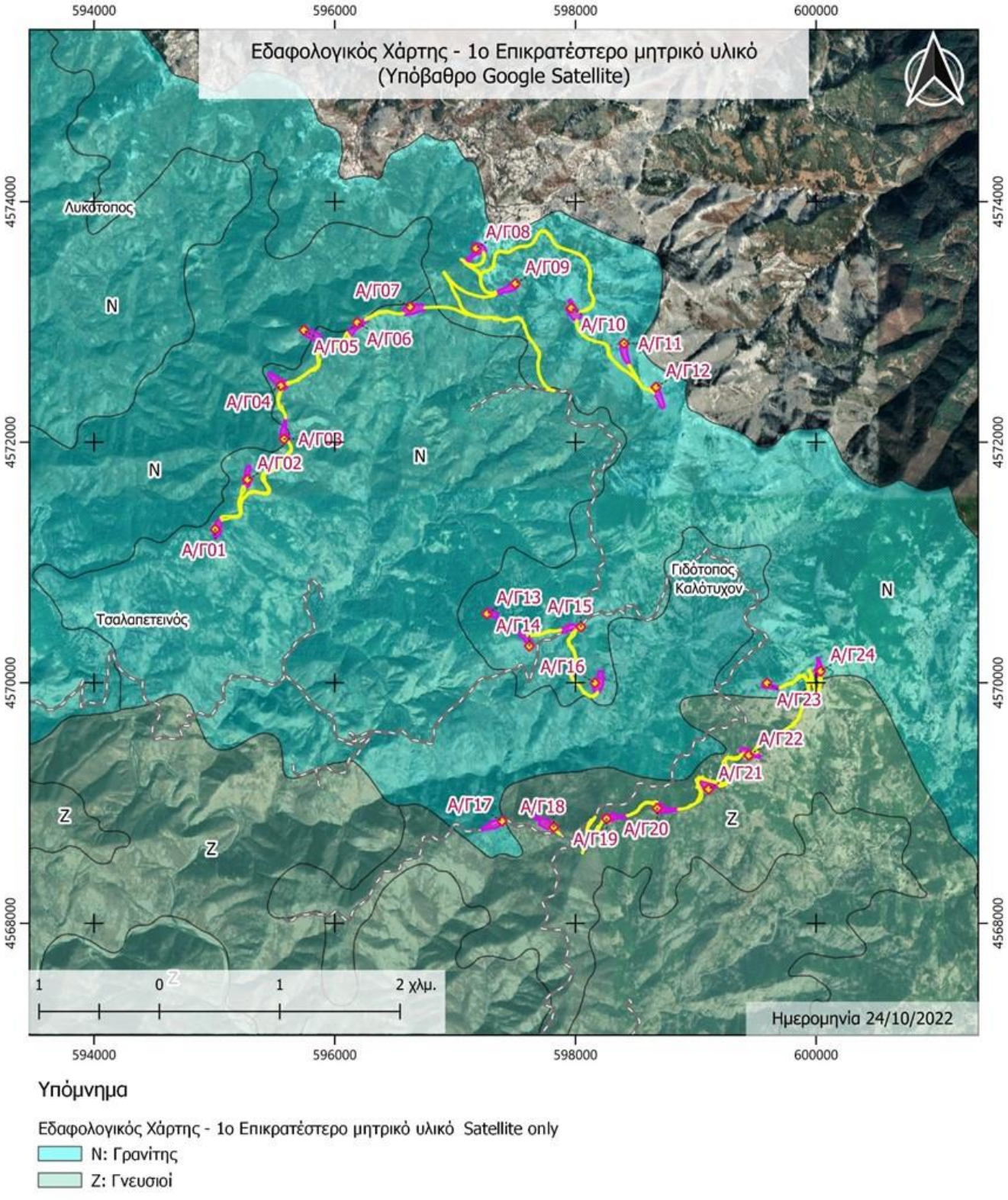
On mild to moderate slopes and where the forest cover is in good condition, the soils are deep to very deep, with sufficient moisture and well ventilated. These soils are dominated by deciduous oaks, beech and various fragrant broad-leaved trees (fox, maple, ash, ash, sorb, cherry, etc.). In these soils the reaction is acidic or slightly acidic with little base (Ca. Mg, K) and therefore these

soils are good to very good for forestry use, growth of existing forests and creation of new forests by natural regeneration.

Below the organic soil horizon the first predominant parent material is granite which is found in the largest part of the project (Platforms W/T 1 to 17 and 23 and 24) while in the remaining part (Platforms W/T 18 to 22) the first predominant parent material is gneiss. The cambisols described above differ from the unaltered parent material in terms of aggregate structure, colour, clay content and carbonate content.

When acidic rocks (granite, diorite, gneiss, etc.) predominate, they produce sandy to sandy soils with a high content of gravel and rich in potassium ions. The clay of the soils consists largely of montmorillonite and illite and to a lesser extent of vermiculite and kaolinite.

Map 60: Map of predominant parent material in the project area (Main project, access road and part of the MT network).



8.5 Natural environment

8.5.1 General data

The immediate area of the ESDP site is characterised as mountainous with gentle to moderate slopes (see Chapter 8.3) and is characterised by the widespread presence of oak forests. The area outside the settlements is not encumbered by incompatible uses.

Regarding the existing situation in terms of natural ecosystems, the following types of ecosystems dominate the study area:

1. Natural ecosystems of pasture and barren land characterised by occasional patches of scrubby vegetation occurring on the hilly outcrops of the area,
2. Forest ecosystem of dry deciduous deciduous forest and shrub ecosystems.
3. Anthropogenic ecosystem: settlements with scattered agricultural land.

In the area of the W/F installation, oak trees and evergreen hardwood vegetation dominate (see Chapter 13 of the photographic documentation).

Phytosociologically, the area belongs to the dry deciduous forest subzone (Quercion confertae) of the Mediterranean zone (Quercetalia pubescentis).

In the wider area the anthropogenic influence is weak due to the mountainous character of the area.

8.5.1.1 Flora

The lower parts of the valley in the area of Echinos, up to an altitude of about 800 m, and the southernmost areas, belong to the Quercion confertae subzone where deciduous oak forests used to dominate, but today the vegetation has been largely altered due to the influence of man.

In the lower part of the valley, from Aora to Sminthis, we find bushes, tobacco fields and fields with natural hedges. From Sminthis to Echinos, there are extensive reforestations of Pinus brutia, and higher up with Pinus nigra, as well as natural forests of Quercus frainetto and other deciduous trees, and locally also of Fagus sylvatica.

Deciduous oak forests, mixed with other deciduous species, extend higher than Echinos, on the surrounding slopes.

In the northernmost part of the valley in the area of Echinos and towards the higher peaks, the Mediterranean vegetation zone gives way to beech, fir, etc. The subzone Fagion moesiacae is mainly represented in the area, with common beech (Fagus sylvatica) as the dominant forest tree, probably mixed with eastern beech (Fagus moesiaca).

Beech trees predominate and form pure forests above 1100 m, while lower down they are mixed with various other mountain deciduous species, forming mixed mountain forests.

8.5.1.2 Fauna

The forest complex north - northeast of Echinos and the area north and northwest of Dimario are important ecosystems in the area for large mammals.

The following Large Mammals are found in the area

Capreolus capreolus Roe deer, is a rare visitor. It is found only in the north-eastern oak forests and in the area north-west of the Demarion. It is protected by Greek legislation since 1969 (Law 86/69) article 258.

Sus scrofa Wild boar

Ursus arctos Bear, is a rare visitor. It is found only in the north-eastern oak forests and in the area north-west of the Dimari. It is protected by the Greek legislation since 1969 (Law 86/69), the Community legislation (Directive 92/43), and the international legislation (Bern International Convention 1335/83).

Vulpes vulpes Fox

Martes foina Petrocanavo

Mustela nivalis Weasel

Meles meles Badger, is protected by the Bern International Convention, which has been adopted by Greece (PD 1335/83).

Lutra lutra Otter, Listed in the EC Habitat Directive (92/43/EEC)

Felis sylvestris Wildcat, its presence in the area is unknown and uncertain. Possible presence in the NE oak forests and in the area NW of the village. Protected by the Bern International Convention, which has been adopted by Greece (PD 1335/83).

All of the above mammal species are extremely rare and are found only in the northeastern area with the oak forests and in the area northwest of Dimari. Exceptions are the stonechat, badger, weasel and fox, which are widely distributed throughout the area.

The following small mammals are found in the area

Apodemus flavicollis Creeping moth

Apodemys flavicollis: found in a variety of habitats, such as shrubs, hills, tree stands, etc.

Apodemys sylvaticus Forest moth

Apodemys sylvaticus: found in a variety of habitats, such as reed beds, hills, etc.

Mus abbotti Abbott's moth

Mus abbotti: found in a wide variety of habitats with the exception of wooded areas and buildings

The following amphibians are found in the area

For the amphibians of the area, the main habitats are grasslands without a steep slope, interspersed with streams. Waterholes and stream widenings are important breeding sites for most amphibian species. 11 species have been recorded in the area, of which two species, the bobbin (Bombina variegata) and the crested newt (Triturus cristatus) are listed in Annex II of Directive 92/43/EEC and four species - the green toad (Bufo viridis), the tree frog (Hyla arborea), the agile frog (Rana dalmatina) and the brook frog (Rana graeca) - are listed in Annex IV of the Directive. The most abundant species in the area is the mountain frog (Rana temporaria), while the most widespread species is the salamander (Salamandra salamandra).

Salamanda salamandra Salamandra Salamander, Bronzewing, Brontalida, Bronzewing, Bronzewing. Included in the list of PD 67/81, and in the lists of the EC Habitat Directive (92/43/EEC). However, it does not appear to be threatened in Greece.

Salamandra salamandra is restricted to the higher elevations, usually above the villages in the area where deciduous forest still exists.

Bombina variegata Yellow-bellied toad, Listed in the EC Habitat Directive (92/43/EEC). However, it does not seem to be threatened in Greece.

Bufo viridis Green toad, Zampa, listed in the list of PD 67/81, and in the lists of the EC Habitat Directive (92/43/EEC). However, it does not appear to be threatened in Greece.

Bufo bufo Pileated, Braska, Braska, Busa, Ascovaza, Busaka, included in the list of PD 67/81. However, it does not appear to be threatened in Greece.

Hyla arborea Tree frog, included in the list of PD 67/81, and in the lists of the EC Habitat Directive (92/43/EEC). However, it does not appear to be threatened in Greece.

Rana dalmatina Agile Frog, Celtic Frog, Clay Frog, included in the list of PD 67/81, and in the lists of the EC Habitat Directive (92/43/EEC). However, it does not appear to be threatened in Greece.

Rana graeca Greek Frog, Gray Frog, Common Frog, Common Frog, species with a relatively small distribution (southern Balkans) is included in the list of PD 67/81, and in the lists of the EC Habitat Directive (92/43/EEC).

Rana ridibunda Pond frog, Baccacus, Thistle

Around and below the villages the area has been cleared and turned into small plots of land and pastures. Bufo viridis, Bufo bufo, Hyla arborea, Rana dalmatina are especially found here, often around the small artificial dams that have been built on the rivers in the area.

The following Reptiles are found in the area

Lacerta agilis bosnica Sand lizard, listed in the EC Habitat Directive (92/43/EEC).

Elaphe quatuorlineata sauromates Lafiatis, Lafitis, Tetragrammosis, protected, although it does not seem to be threatened in Greece. Included in the list of PD 67/81, and in lists II and IV of the EC Habitat Directive (92/43/EEC).

Vipera ammodytes meridionalis Vipera ammodytes meridionalis Viper, Ochetra, Astrid, listed in the EC Habitat Directive (92/43/EEC).

8.5.1.3 Habitat types and fauna types found in the study area s

In the wider study area we find the following habitat types.

Bare land with ferns (ferns):

It is usually found in moist, nutrient-rich soils, while the parent substrate varies greatly. It may be limestone, gneiss, shale or ultrabasic-basic of the ophiolite series. The topography also varies from flat to steeply sloping, as does the exposure, and the altitude ranges from 200 to 1700 m.

Plant species that predominate are mainly Pteridium aquilinum, while Dactylis glomerata, Fragaria vesca, Berberis cretica, etc.

The different vegetation structures correspond to the communities: (515011) Pteridium aquilinum-comm., (515012) Pteridium aquilinum-Fragaria vesca-comm. (515021) Pteridium aquilinum-Berberis cretica-comm.

Beech forests of Luzulo- Fagetum:

The substrate where it is found is usually silicate rocks, such as gneisses, shales, ophiolites, granites, granodiorite and rarely carbonates (limestones, marbles). It extends from low altitudes in the valleys (~ 100 m) to 2000 m on slopes with varying slope and exposure.

The predominant plant species are Fagus sylvatica, Fagus moesiaca, Fagus sylvatica ssp. sylvatica, Vaccinium myrtillus, Abies borisii-regis, Prenanthes purpurea, Hieracium bracteolatum, Galium rotundifolium, Orthilia secunda, Hieracium murorum, Luzula sylvatica, Mycelis muralis, etc.

The different vegetation structures correspond to the syntaxa: (911010) Fagion moesiacae hellenicum, (911020) Fagion sylvaticae, (911022) Lathyro alpestris-Fagetum, (911023) Luzulo-Fagetum, (911025) Abies borisii regis-Fagus sylvatica-comm.

Beech, eastern anchor and mixed thermophilic forests

It occurs in a variety of substrates, such as carbonate (limestone, marble), gneiss, shale, shale, volcanic and alluvial deposits. It is common in valleys and on slopes with a low or high gradient, with varying exposure and altitudes of 50 to 1500 m.

The predominant plant species are Fraxinus ornus, Carpinus orientalis, Quercus frainetto, Paliurus spina-christi, Juniperus oxycedrus, Ostrya carpinifolia, Quercus pubescens, Helictotrichum convolutum, Festuca sp., Brachypodium sylvaticum, Cornus mas, etc.

The vegetation structures formed correspond to the syntaxa: (925A10) Ostryo-Carpinion, (925A20) Quercion frainetto.

Thermophilic oak forests of An. Mediterranean and Balkan:

The substrate as well as the depth of the formed soil varies greatly and can be carbonate (limestone, marble, crystalline limestone), superbasic of the ophiolite series (amphibolite, greenstone), gneiss, shale, acid granite, but also volcanic rocks and correnches. The altitude ranges from 20 to 1600 m and the exposure and slope vary greatly.

The predominant plant species are Quercus pubescens, Quercus frainetto, Quercus petraea, Quercus cerris, Quercus coccifera, Cynosurus echinatus, Sanguisorba minor, Rosa canina, Eryngium campestre, Buxus sempervirens, Gelium turrita, Fraxinus ornus, Carpinus orientalis, Juniperus oxycedrus, etc.

The different vegetation structures correspond to the communities: (924A1A) Quercus cerris-comm., (924A1B) Quercetum frainetto, (924A18) Quercus pubescens-Buxus sempervirens-comm., (924A19) Quercetum petraeae, (924A21) Quercus pubescens-Paliurus spina-christi-comm.

Forests with Quercus frainetto:

The substrate varies greatly and may be carbonate (limestone, marble), shale, schist, gneiss, ophiolite or granite.

The predominant plant species are Quercus frainetto, Fagus sylvatica, Fagus moesiaca, Carpinus orientalis, Pteridium aquilinum, Coryllus avellana, Poa nemoralis, Quercus petraea, Quercus petraea ssp., Sorbus torminalis, Fagus sylvatica ssp. sylvatica, etc.

The different vegetation structures correspond to the communities: (92801A) Digitalis viridiflora-Fagus moesiaca-comm., (92801B) Corylo-avelanna-Fagetum, (928014) Quercetum frainetto, (928018) Quercus frainetto-Fagus sylvatica-comm., (928019) Quercus pubescens-Fagus moesiacae-comm.

8.5.1.4 Birdlife

As for the avifauna, 139 species of birds have been recorded in the wider mountainous area, which either live permanently, nest and breed in the area, or use it as a stopover during their migration or wintering. The forest complexes of the Rhodope Mountains are also the main habitat of ostriches, most of which occur in the study area. Finally, it is worth noting that predator species such as the golden eagle, peregrine falcon, bufflehead and woodpecker, as well as woodpeckers such as the black-crowned woodpecker and white-throated woodpecker, breed in the area.

A) For the GR1130012 SPA the designation species are *Emperiza hortulana, Microcarbo Pygmaeus, Ficedula semitorquata* and *Dendrocopos syriacus,* and the designation species of the GR009 SPA (the four designation species of the GR009 SPA coincide with the four designation species of the GR1130012 SPA).

According to the MEOA, the most important species of hornbills of the GR1130012 SPA are presented below, as described in the 2019 edition of its Standard Data Forms (TED/SDF) (End 2018_15/03/2019). The reason chosen by the team preparing the Special Ecological Assessment Study not to take into account the revised version of the TEDs consists both in the fact that the latter is included in full, without the slightest difference, in the 2019 version chosen, and in the existence of large birds of prey that, according to their ecology, are active over a large radius, capable of covering the distance to the study area. These important birds of prey-scavengers (e.g. Aquila chrysaetos, Clanga pomarina, Hieraaetus pennatus, Gyps fulvus, Neophron percnopterus) for which the area, as mentioned in previous subsections of this ERA, is very important, are not included in the latest version of the TENs for the GR1130012 SPA area. Also, important species of Annex I of Directive 2009/147/EC, such as e.g. Ciconia nigra, are not mentioned. The same applies to the nearest SPA GR1130010, within the revised TAP of which no important waterbirds, wading birds and birds of prey are mentioned (e.g. Ardeola ralloides, Ardea purpurea, Buteo rufinus, Circus aeruginosus, Circus pygargus, Gyps fulvus, Haliaeetus albicilla, Hieraaetus pennatus, Neophron percnopterus, Pelecanus crispus, Pelecanus onocrotalus, Platalea leucorodia, Recurvirostra avosetta, Tadorna ferruginea, Tadorna tadorna etc.) for which the area is very important both at national and European level, while many of them are also species of characterization (e.g. Platalea leucorodia, Recurvirostra avorsetta, Tadorna ferruginea, Ardeola ralloides, Tadorna tadorna, Pelecanus crispus) Also, important species of Annex I of Directive 2009/147/EC are not mentioned, e.g. Coracias garrulus, Ciconia nigra, Ciconia ciconia (the latter is also a designation species of the area).

The most important species of avifauna of the SPA GR1130012, as described in the 2019 version of the Standard Data Form (SDF/SDF), are presented below:

Table 10. Standard data forms of the GR1130012 region (End 2018_15/03/2019) (https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=GR1130012)

Table 41: List of species for ZEP GR1130011.

Species					Population in the site						site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
B	A402	Accipiter brevipes			r				P		C	A	B	B
B	A223	Aegolius funereus			p				P		C	A	C	C
B	A247	alauda arvensis			r				C		C		C	B
B	A229	Alcedo atthis			r				P		C	B	C	B
B	A255	Anthus campestris			r				P		C	A	C	B
B	A228	Apus (Tachymarptis) melba			r				P		C	B	C	B
B	A226	Apus apus			r				P		C		C	B
B	A091	Aquila chrysaetos			p				P		C	B	C	B
B	A089	aquila pomarina			r				P		C	B	B	B
B	A215	bubo bubo			p				P		C	A	C	B
B	A087	Buteo buteo			r				P		C		C	B
B	A403	Buteo rufinus			p				P		C	B	B	B
B	A224	Caprimulgus europaeus			r				P		C	A	C	B
B	A030	Ciconia nigra			c				P		C	B	B	B
B					r	1	1	p			C	B	B	B
B	A080	Circaetus gallicus			r				P		C	A	C	A
B	A231	Coracia garrulus			r				R		C	B	C	B
B	A738	Delichon urbicum (urbica)			r				P		C	B	C	B
B	A238	Dendrocopos medius			p				P		C	B	C	B
B	A429	Dendrocopos syriacus			p				P		C	A	B	B
B	A379	Emberiza hortulana			r				P		C	B	B	B
B	A098	Falco columbarius			w				P		C	B	C	B
B	A095	Brown Falco			r	3	3	p				B		
B	A709	Falco peregrinus brookei			p				P		C	A	C	B

Species					Population in the site						site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
B	A442	Ficedula semitorquata			r				R		B	B	C	A
B	A078	Gyps fulvus			p	5	8	p			B	B	C	B
B	A075	Haliaeetus albicilla			p	1	1	p			A	B	B	B
B	A092	Hieraaetus pennatus (Aquila pennata)			r				P		C	B	C	B
B	A439	Hippolais olivetorum			r				P		C	B	C	B
B	A251	common hirundo			r				P		C	B	C	B
B	A233	Jynx torquilla			r				P		C		C	B
B	A338	Lanius collurio			r	10	10	i/sq.km			C	B	C	B
B	A339	Lanius minor			r				P		C	B	C	B
B	A433	Lanius nubicus			r				P		C	B	C	B
B	A179	Larus (Chroicocephalus) ridibundus			w				P		C		C	B
B	A246	Lullula arborea			p				P		C	A	C	B
B	A230	Merops apiaster			c				P		C	B	C	B
B	A230				r				P		C	B	C	B
B	A077	Neophron percnopterus			r	1	1	p			C	B	C	B
B	A610	Nycticorax nycticorax nycticorax nycticorax			c				R		C	B	C	B
B	A337	Oriolus oriolus			c				P		C	B	C	B
B	A771	passer hispaniolensis			r				P		C	B	C	B
B	A072	Pernis apivorus			r				P		C	A	C	B
B	A393	Phalacrocorax pygmaeus			w				C		B	B	C	A
B	A234	picus canus			p				P		C	B	B	B
B	A210	Streptopelia turtur			r				C		C	B	C	B
B	A307	Sylvia nisoria			r				R		C	B	B	B
B	A104	Tetrastes (Bonasia) bonasia			p				R		C	B	B	B

Species					Population in the site						site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C| D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
Other important species of the area based on the same source														
B	A726	Charadrius dubius curonicus						P			X			
B								P					X	
B								P						X
B	A211	Clamator glandarius						P			X			
B								P					X	
B	A207	columba oenas						P			X			
B								P					X	
B								P						X
B	A687	Columba palumbus palumbus						P			X			
B								C			X			
B								P						X
B								C						X

IMPLICATIONS:

Group: A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants, R = reptiles

S: in case the species data are sensitive and therefore need to be blocked for any public access enter: yes

NP: in case a species no longer exists in the site enter: x (optional)

Type: p = permanent, r = reproduction, c = concentration, w = winter (for plants and non-migratory species use permanent)

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

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to be completed if data are insufficient (DD) or in addition to information on population size

Data quality: G = 'Good' (e.g. based on surveys), M = 'Moderate' (e.g. based on partial data with some extrapolation), P = 'Poor' (e.g. rough estimation), VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

Population: size and density of the species in the area in relation to the total population within the national boundaries. A: 100%>=p>15%, B: 15%>=p>2%, C: 2%>=p>0.

Conservation: the degree of protection of the habitat that is important for the species and the potential for its restoration. A: Excellent conservation, B: Good conservation, C: Moderate or degraded.

Isolation: Degree of isolation of the population occurring in the area in relation to the natural distribution of the species. A: Isolated (almost) population, B: Non-isolated population, but located at the edge of the range, C: Non-isolated population, with a wide distribution.

Global assessment: the overall conservation value of the site. A: Excellent, B: Good, C: Adequate.

Motivation categories: IV, V: Annex species (Habitats Directive), A: Species included in the Greek Red Data Book, B: Endemic species, C: Species protected by international conventions, D: Other reasons

As shown in Table 10 above, detailed population data are very limited and for the majority of species the information available is an estimate of their presence in the area (present, common, rare, very rare). Population data appear for only six species: Ciconia nigra, Falco naumanni, Gyps

fulvus, Haliaeetus albicilla, Lanius collurio and Neophron percnopterus which are Annex I species of the avifauna of Directive 2009/147/EC, none of them being a designated species of the area.

During the designation period, the conservation status of the majority of the species was assessed from excellent (B) to very good (A), except for Alauda arvensis, Apus apus, Buteo buteo, Jynx torquilla and Larus ridibundus, for which the conservation status was not assessed. For the characterisation species Phalacrocorax pygmaeus (Microcarbo pygmaeus) and Ficedula semitorquata the area supported 2-15% of the Greek population (population criterion B), while for the characterisation species Emberiza hortulana and Dendrocopos syriacus the area supported 0-2% of the Greek population (population criterion C). For the majority of species, except for the above characterisation species, the area supported 0-2% of the Greek population (population criterion C), with Gyps fulvus appearing with population criterion B (the area supported 2-15% of the Greek population) and Haliaeetus albicilla appearing with population criterion A (the area supported more than 15% of the Greek population).

B) SPA GR009 is important for breeding raptors and forest species, as well as for migratory raptors. According to the official website of the Hellenic Ornithological Society, the following are defined as important species for the SPA GR009:

Table 42: Important bird species for the study area

Latin name	Common name	Latin name	Common name
Ciconia nigra	Blackbird	*clanga pomarina*	Screamer
microcarbo pygmaeus	Lagos	*aquila heliaca*	Basil Eagle
Falco biarmicus	Goldilocks	*Aquila chrysaetos*	Golden Eagle
Haliaeetus albicilla	Sea Eagle	*Hieraetus pennatus*	Falcon Eagle
Neophron percnopterus	Egyptian vulture	*aquila fasciata*	Spiraeus
Gyps fulvus	Vulture	*Dendrocopos syriacus*	Balkan woodpecker
Aegypius monachus	Black vulture	*picus canus*	Ashy woodpecker
Circaetus gallicus	Snake Eagle	*Ficedula semitorquata*	Oak woodpecker
Circus macrouros	Stepocirkos	*Emberiza hortulana*	Strawberry
Buteo rufinus	Aetogeracina		

(Source: https://www.ornithologiki.gr/el/oi-draseis-mas/diatirisi-erevna/simantikes-perioxes-gia-ta-poulia-tis-elladas/xartis-perioxon/GR009)

Table 43 Species of avifauna of the area listed in the Ornithological Society's Data Sheet for SPA GR009, population estimates and criteria

Kind of	Year	Status of presence	Plenty	Minimum population	Maximum population	Measurement unit	Data accuracy	Criteria 2000
Ciconia nigra	1998-08	B		2	4	P	B	
microcarbo pygmaeus	1998-08	W	R				B	A1, C1

Kind of	Year	Status of presence	Plenty	Minimum population	Maximum population	Measurement unit	Data accuracy	Criteria 2000
Falco biarmicus	1998-08	B		1	1	P	B	
Haliaeetus albicilla	1998-08	R		0	1	P	A	
Neophron percnopterus	1998-08	B		2	3	P	B	
Gyps fulvus	1998-08	R		0	3	P	A	
Aegypius monachus	1998-08	U		1	3	I	B	
Cicraetus gallicus	1995	B		2	5	P	A	
Circus macrourus	1998-08	P	R				B	
Buteo rufinus	1998-08	R		2	3	P	B	
aquila pomarina	1998-08	B		2	3	P	B	
aquila heliaca	1998-08	P	R				B	
Aquila chrysaetos	1998-08	R		1	2	P	A	
Hieraetus pennatus	1998-08	B		1	2	P	C	
Hieraetus fasciatus	1998-08	U	P				C	
Dendrocopos syriacus	1998-08	R	A				C	B3, C6
picus canus	1992	B	R				C	
Ficedula semitorquata	1990	B	R				C	B2, C6
Emberiza hortulata	1995	B	C				B	B2, C6
Gyps fulvus	2013-2018	B		1	2	P	A	
Neophron percnopterus	2012-2018	B		1	1	P	A	
Aquila chrysaetos	2010-2013	B		3	3	P	A	

**MEMORANDUM EXPLAINING THE CRITERIA*

CATEGORY	*CRITERION*
A. Areas of global importance	
A1. Globally threatened species	*The area regularly supports significant numbers of a globally threatened species, or another species in need of global protection*
A2. Species of limited distribution	*The site is known, or is considered, to support a significant proportion of a species of restricted distribution, the breeding distribution of which defines an EBA (Bird Endemic Area) or SA (Secondary Area)*
A3. A group of species whose distribution is restricted to one type of habitat (biome)	*The site is known to support, or is thought to support, a significant proportion of the group of species whose distributions are mainly or entirely restricted to a biome*
A4. Gatherings	*(i) The site is known to support, or is considered to support on a regular basis, more than 1% of a biogeographic population of an aquatic species* *(ii) The area is known or believed to support on a regular basis more than 1% of the world population of a seabird or terrestrial species* *(iii) The site is known or believed to support on a regular basis more than 20,000 waterfowl, or 10,000 pairs of seabirds of one or more species.* *(iv) The area is known to, or is considered to, exceed the population limits set for migratory species*
B. Areas of European importance	
B1. Gatherings	*(i) The site is known to support, or is believed to support, more than 1% of a flyway or other distinct population of an aquatic species* *(ii) The area is known to support, or is thought to support, more than 1% of a distinct population of a seabird.*

	(iii) The area is known or believed to support more than 1% of a flyway or other distinct population of another wild species
	(iv) Area where more than 5000 Stork, or 3000 raptors or Cranes regularly pass during spring or autumn migration
B2. Species with an unfavourable conservation status in Europe (SPEC 1, 2 and 3)	*The site is one of the "n" most important in the country for a species with an unfavourable conservation status in Europe (SPEC 1, 2 and 3), for which a site-based approach is considered appropriate*
B3. Species with favourable conservation status but concentrated in Europe (SPEC 4)	*The site is one of the "n" most important in the country for a species with a favourable conservation status in Europe (SPEC 4), for which a site-based approach is considered appropriate*
C. Areas of importance in the European Union	
For species or subspecies listed in Annex I of the Community Birds Directive	*C1. The site regularly supports significant numbers of a globally threatened species, or another species in need of global protection*
	C2. The site is known to support at least 1% of a flyway or population size in the EU of an endangered species
	C3. The site is known to support at least 1% of a flyway of another migratory species
	C4. The area is known to support on a regular basis at least 20,000 migratory waterfowl, or 10,000 pairs of seabirds of one or more species.
	C5. Area where more than 5000 Stork, or 3000 migratory raptors or Cranes regularly pass during spring or fall migration
	C6. The site is one of the 5 most important in a European region for a species or subspecies considered threatened in the European Union.
	C7. The area designated as SPA, or selected as a candidate SPA on the basis of ornithological

C) The most important bird species of the neighbouring Bulgarian SPA BG0001032 are presented below (the project under study, as it has been mentioned, is located on the Greek-Bulgarian border and is adjacent, at a minimum distance of 110 meters, to this Bulgarian SPA - see maps in subsection C). 5.1.2), as described in the revised version 2022 of its Standard Data Form (TED/SDF).

Table 44: Standard data forms of the BG0001032 area (End 2021_07/02/2022)

Species						Population in the site					site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
A	1193	*Bombina variegata*			p	129	129	localities	C	G	B	A	C	A
A	1171	*Triturus karelinii*			p	24	24	localities	C	G	B	A	C	A
F	1130	*Aspius aspius*			p	3635182 7	3635182 7	area	P	P	C	B	A	A
F	5088	*Barbus cyclolepis*			p				C	DD	B	A	C	A
F	1149	*cobitis taenia*			p	3255320	3255320	i	C	G	B	B	C	A

Species			Population in the site							site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
F	5339	*Rhodeus amarus*			p	28981541	28981541	i	C	G	C	B	C	B
F	1146	*sabanejewia aurata*			p	86478	86478	i	V	G	C	A	C	A
I	1093	*Austropotamobius torrentium*			p			i	R	M	C	A	B	A
I	1088	*Cerambyx cerdo*			p	719443	1061539	i	R	M	B	B	C	A
I	4045	*Coenagrion ornatum*			p	1	1	localities	R	G	C	A	C	A
I	4032	*dioseghyana schmidtii*			p	139300	204282	i	C	M	B	A	B	A
I	1074	*Eriogaster catax*			p	80	865	i	V	P	A	A	C	B
I	1065	*Euphydryas aurinia*			p	26551	52864	i	C	P	B	A	A	A
I	6199	*Euplagia quadripunctaria*			p	326977	625794	i	C	P	B	A	C	A
I	1083	*Lucanus cervus*			p	733930	1443777	i	R	M	B	B	C	A
I	1060	*Lycaena dispar*			p				V	DD	C	A	B	A
I	1089	*Morimus funereus*			p	1023658	1189018	i	R	M	B	B	C	B
I	1084	*osmoderma eremita*			p	102651	201042	i	R	M	B	B	C	B
I	4053	*Paracaloptenus caloptenoides*			p	15	15	localities	C	M	B	A	C	A
I	4022	*probaticus subrugosus*			p				V	DD	B	B	C	A

Species			Population in the site							site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
I	1087	*Rosalia alpina*			p	141916	258451	i	R	M	B	B	C	B
I	1032	*unio crassus*			p	49425850	49425850	i	R	M	B	A	C	A
M	1308	*Barbastella barbastellus*			p	725	1146	i	V	M	B	B	C	B
M	1352	*canis lupus*			P	25	30	i		G	B	A	C	A
M	1355	*Lutra lutra*			p	43	86	i		G	B	A	C	A
M	1310	*Miniopterus schreibersii*			r	2000	3500	i	C	G	B	B	C	B
M	1310				w	250	500	i	R	G	C	B	C	C
M	2617	*Myomimus roachi*			p	0	2	localities	V	P	B	B	B	B
M	1323	*Myotis bechsteinii*			p	973	1947	i	R	M	B	B	C	B
M	1307	*Myotis blythii*			p	3000	4500	i	C	G	A	A	C	A
M	1316	*Myotis capaccinii*			w	11	50	i	V	G	C	B	C	C
M	1316	*Myotis capaccinii*			r	2000	3500	i	R	G	A	B	C	A
M	1321	*Myotis emarginatus*			r	6000	10000	i	R	G	A	B	C	A
M	1324	*Myotis myotis*			r	3500	5000	i	C	G	A	B	C	A
M	1324	*Myotis myotis*			w	51	100	i	C	G	C	B	C	C
M	1306	*Rhinolophus blasii*			w	1000	1500	i	R	G	A	B	C	A
M	1306	*Rhinolophus blasii*			r	800	1200	i	R	G	A	B	C	A
M	1305	*Rhinolophus euryale*			w	101	250	i	V	G	C	B	C	C
M	1305				r	500	1000	i	C	G	B	B	C	B
M	1304	*Rhinolophus ferrumequinum*			p	2000	3000	i	C	G	A	B	C	A
M	1303	*Rhinolophus hipposideros*			p	250	500	i	C	G	B	B	C	B
M	1302	*Rhinolophus mehelyi*			p	250	500	i	R	G	B	B	C	B
M	1335	*Spermophilus citellus*			p	11	11	colonies	R	G	C	C	C	B
M	1354	*Ursus arctos*			p	1	2	i		G	C	B	B	B
M	2635	*Pre-melon peregusna*			p	2	2	localities	R	M	C	B	C	A
P	2327	*Himantoglossum caprinum*			p				R		C	B	C	B
R	5194	*Elaphe sauromates*			p	1	1	localities	V	P	B	A	B	A

Species			Population in the site							site assessment			
G	Code	Scientific name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Big.	Glo.
R	1220	*Emys orbicularis*			p	22	22	localities	C	G	B	A	C	A
R	1222	*caspica*			p	16	16	Localities	C	G	A	A	B	A
R	1219	*Testudo graeca*			p	136	136	Localities	C	G	B	A	C	A
R	1217	*Testudo hermanni*			p	162	162	Localities	C	G	B	A	C	A

(https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=BG0002106)

Memo

Group: A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants, R = reptiles

S: in case the species data are sensitive and therefore need to be blocked for any public access enter: yes

NP: in case a species no longer exists in the site enter: x (optional)

Type: p = permanent, r = reproduction, c = concentration, w = winter (for plants and non-migratory species use permanent)

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

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to be completed if data are insufficient (DD) or in addition to information on population size

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

Population: size and density of the species in the area in relation to the total population within the national boundaries. A: 100%>=p>15%, B: 15%>=p>2%, C: 2%>=p>0.

Conservation: the degree of protection of the habitat that is important for the species and its potential for restoration. A: Excellent conservation, B: Good conservation, C: Moderate or degraded.

Isolation: Degree of isolation of the population occurring in the area in relation to the natural distribution of the species. A: Isolated (almost) population, B: Non-isolated population, but located at the edge of the range, C: Non-isolated population, with a large distribution.

Global assessment: the overall conservation value of the site. A: Excellent, B: Good, C: Adequate.

Motivation categories: IV, V: Annex species (Habitats Directive), A: Species included in the Greek Red Data Book, B: Endemic species, C: Species protected by international conventions, D: Other reasons

As shown in Table 8 above, the conservation status of all species was assessed from good (B) to excellent (A), except for *Spermophilus citellus*, for which the conservation status was assessed as moderate or degraded (C). Population data are shown for the majority of species, except for *Barbus cyclolepis*, *Austropotamobius torrentium*, *Lycaena dispar*, *Probaticus subrugosus*, *Himantoglossum caprinum*. For the species *Eriogaster catax*, *Myotis blythii*, *Myotis capaccinii*, *Myotis emarginatus*, *Myotis myotis*, *Rhinolophus blasii*, *Rhinolophus blasii*, *Rhinolophus ferrumequinum*, *Mauremys caspica*, the area supported more than 15% of the Bulgarian national population, having a population criterion of A, for the species *Bombina variegata*, *Triturus karelinii*, *Barbus cyclolepis*, *Cobitis taenia*, *Cerambyx cerdo*, *Dioszeghyana schmidtii*, *Euphydryas aurinia*, *Euplagia quadripunctaria*, *Lucanus cervus*, *Morimus funereus*, *Osmoderma eremita*, *Paracaloptenus caloptenoides*, *Probaticus subrugosus*, *Rosalia alpina*, *Unio crassus*, *Barbastella barbastellus*, *Canis lupus*, *Lutra lutra*, *Miniopterus schreibersii*, *Myomimus roachi*, *Myotis bechsteinii*, *Rhinolophus*

Euryale, Rhinolophus hipposideros, Rhinolophus mehelyi, Elaphe sauromates, Emys orbicularis, Testudo graeca, Testudo hermanni, the area supported 2- 15% of the national Bulgarian population, with a population criterion of B, while for the species *Aspius aspius, Rhodeus amarus, Sabanejewia aurata, Austropotamobius torrentium, Coenagrion ornatum, Lycaena dispar, Miniopterus schreibersii, Myotis capaccinii, Myotis myotis, Rhinolophus Euryale, Spermophilus citellus, Ursus arctos, Vormela peregusna, Himantoglossum caprinum,* the area supported less than 2% of the Bulgarian national population.

More information on the species of the above protected areas is presented in the accompanying MEA.

8.5.2 Areas of the national system of protected areas.

Following on from the previous sub-chapter and as already stated in sub-chapter. 5.1.2 the project under study is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 network, as well as within the Important Bird Area "Kompsatou Valley", code GR009.

However, it should be noted that within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SPA) called "Rodopi - Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

According to Article 10 of Law 4014/2011, in the case of projects and activities taking place in protected areas of the Natura network, environmental permitting is carried out on the basis of the relevant provisions of specific presidential decrees and ministerial decisions on protection. In the absence of relevant provisions, as in the present area, the preparation and submission to the environmental permitting authority of a Special Ecological Assessment Study (SEA) as part of the EIA is required. With regard to the established SPA GR1130012, which is the main study area within which the project under study is located, according to the publication: 'Identification of compatible activities in relation to the species designation of the Special Protection Areas of avifauna, Supplementary deliverable: National List of Species Designation of Special Protection Areas" with the contracting authority being the Ministry of Environment and Natural Resources - Environmental Planning Directorate, Department of Natural Environment Management (Demaleksis 2010)", and in accordance with the decision no. H.P.8353/276/E103 (Government Gazette 415/B/23-02-2012), the species classified are Dendrocopos syriacus, Ficedula semitorquata, Emberiza hortulana and Phalacrocorax pygmeus (Microcarbo pygmaeus).

Table 45: Natura 2000 protected areas and distance from the nearest W/T of the ESDP

Natura 2000 site (Name)	Code	Category	Distance to nearest point
"VALLEY OF THE BEARD"	GR1130012	Special Protection Areas (SPAs) for avifauna	WITHIN the whole project
"Komsatos River"	GR1130007	Special Conservation Zones (SACs - SCI)	W/T 19 at 8,44 km (south)

"Rodopi - Iztochni"	BG0001032	Special Conservation Zones (SACs - SCI)	W/T 12 at 0,11 km W/T 11 at 0,16 km

Regarding the "*Poas - Dihalas*" CIZ (code K808) which is the closest to the intervention area, it is located at a distance of 8.44 km south of W/T 19.

No specific presidential decrees and ministerial protection decisions have been issued for the study area.

Based on what is mentioned for the content of the MEOA in Law 4014/2011 for the environmental licensing of projects and activities and in the specifications for the MEOA (YA A.P. οικ. 170225, Government Gazette 135/B/27.01.2014), the MEOA presents, analyses and evaluates the data on avifauna from the existing literature data and from the data collected during the field survey (ornithological records, from November 2021 - October 2022, with the field recording spanning 56 daily visits) to encompass the ecological requirements of an annual avifauna cycle (breeding season of avifauna species, spring and autumn migration and wintering period).

During the above field days, all the field work was carried out, which involved the recording of avifauna (diurnal and nocturnal) and other fauna (with an emphasis on chironomids). The above field days also included hours spent observing behaviour and finding possible raptor nesting sites and critical habitats by the study team researchers.

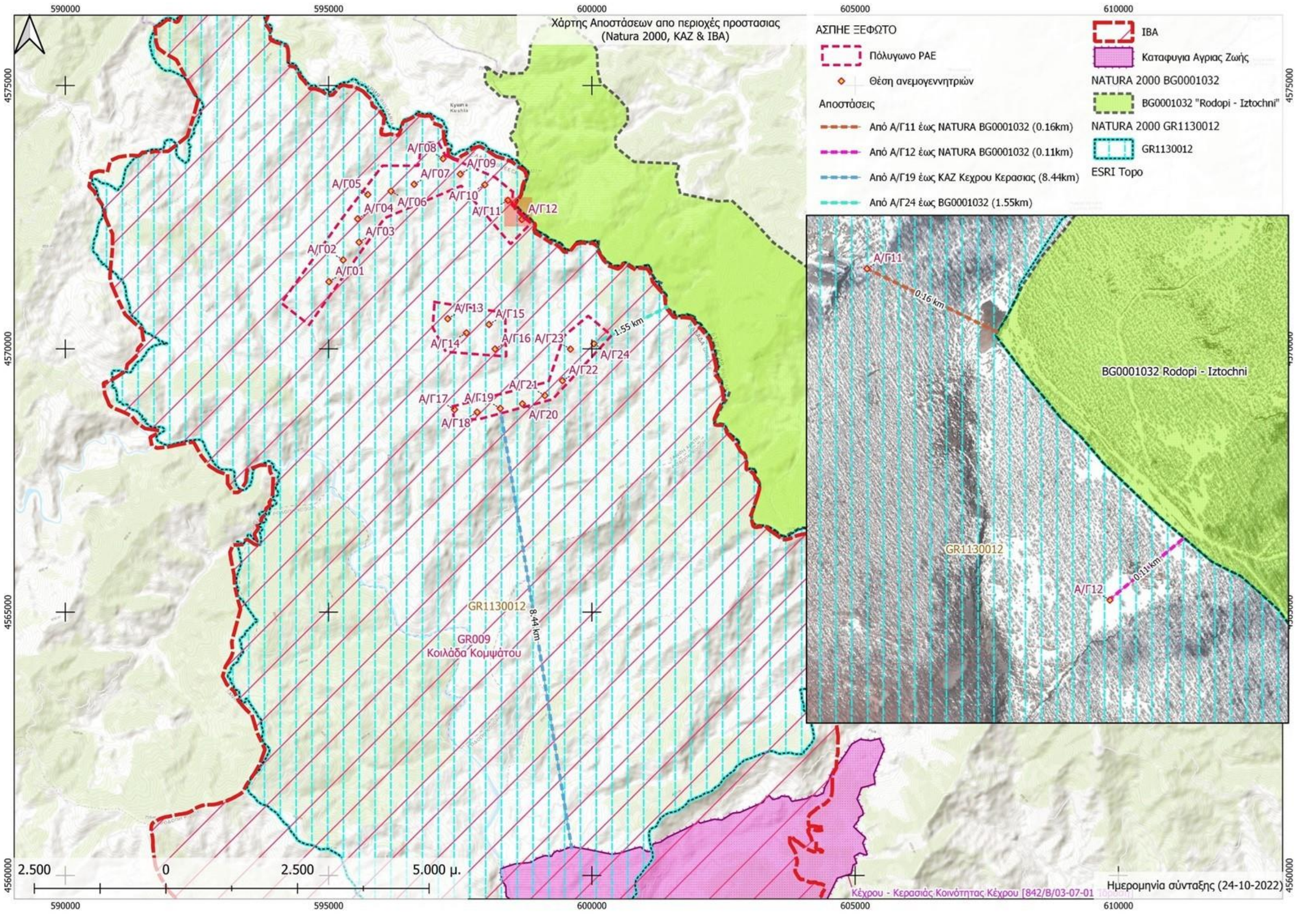
In general, for a Natura 2000 'site', the conservation objective relates to maintaining or restoring specific conservation levels for the species (for which the site has been designated), so that the site contributes (as far as possible) to the maintenance or achievement of satisfactory conservation status at national, biogeographic or European level (Commission note on setting conservation objectives for Natura 2000 sites).

The project under study is located outside the boundaries of any other protected areas of Law 3937/2011 (A/60).

8.5.2.1 Display of the boundaries of protected areas:

In the subheading. 5.1.2 of this document, relevant maps showing the boundaries of the protected areas are provided. However, the map showing the boundaries of the protected areas is reproduced below.

Map 61: Natura 2000, KAZ & IBA sites and distances



8.5.2.2 Summary of the ecological elements of the affected Natura 2000 network site

Since the project under study requires the preparation of a Special Ecological Assessment Study (SEA) in accordance with Annex 3.2.1 of Annex 3.2.1 of the Order No. 170225/20-01-2014 Ministerial Decision and in accordance with the guidelines of paragraph 8.5.2.ii of the said Ministerial Decision, a summary of the ecological elements of the affected Natura 2000 network site is presented in this section.

In summary, the conclusions of the JRC are as follows:

The project under study is located within the protected area of the Natura 2000 network ZEP GR1130012, as well as within the SPA GR009. It is also adjacent to the Bulgarian Natura 2000 network protected area BG0001032, and is located more than 18 km from the nearest SPA GR1130010, whose protected area is the bird fauna. (as regards the SPA and SPA) and the habitat types listed in Annex I to Directive 92/43/EEC, as well as the fauna and flora species listed in Annex II to the above Directive (as regards the SPA).

In the whole of the MEOA, following a literature review and field observations for the period November 2021 - October 2022, all necessary records and assessments were carried out in order to carry out a specific ecological assessment of the project under study in relation to the neighbouring protected areas. Based on these, and subject to the condition of implementing all of the mitigation measures for potential impacts listed in this EIS (with the grouped priority listed), it is assessed that the proposed project:

- It is not likely to delay or interrupt progress towards the conservation objectives of the Natura 2000 sites concerned.
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.
- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is not likely to interact with predicted or expected natural changes in the Natura 2000 sites concerned.

The accompanying works of the specific ESDP project are not considered to have an adverse impact on the site and its integrity, nor on the species living in it due to the proposed undergrounding of the cabling for the transmission of the electricity generated. The new borehole for the installation of the wind turbines is relatively short and will not cause any adverse impacts on the Natura 2000 site and its protected objects, due to the correct siting (and the relevant proposals herein).

The impacts of the project synergistically with other related (under permitting) projects in the area are not considered to be significant given that all of the mitigation measures identified in the attached EIR will be implemented.

More detailed information is presented in the issue of the MEOA.

8.5.3 Forests and woodlands

The W/F will be constructed within the boundaries of the Thermon-Satras forest, which grows within the deciduous broadleaf forest vegetation and in particular in three growth areas:

α) Increasing area of Quercus conferta (Broadleaf oak) which together with the anchovy (Carpinus betulus & Carpinus orientalis) occupies the southernmost and lower positions of the forest.

b) Growth area of Quercus petrea and Quercus cerris occupying the highest positions in the forest. In this area the species of ash, fir, maple, maple, sorb also coexist.

c) The growth area of beech (Fagus moesiaca) occupying the north, north-east and north-west exposures. This area is dominated by beech, which forms pure formations or in groups with the oak. Poplar also occurs in this area in groups.

The first two growth areas belong to the Upper Mediterranean - Subcontinental zone (oak forest zone). The climate of this zone retains its Mediterranean character, with higher rainfall in autumn, winter and spring. The dry season is limited to 2-3 months. Temperatures in the winter period often fall below 0 °C and snowfall is more frequent. This is essentially a transition from a purely Mediterranean climate to a subcontinental-continental climate. Oak forests (oak woodlands or forests) continue to play an important economic, ecological, aesthetic, hydrological, protective and cultural role to this day. Their great value is due to the large number of species they host, since, because of their wide ecological range, they provide a habitat for many species of trees, shrubs, grasses, greens, lichens, mosses and fungi, as well as for large and small mammals, a large number of birds, reptiles and invertebrates.

The third growth area of beech belongs to the Continental zone of cold deciduous broadleaves. The climate becomes mountainous Mediterranean to continental and approaches that of Central Europe. Winters become harsher, summers cooler, rainfall increases and is more regularly distributed, snow lasts for some months and the dry season, without disappearing completely, is reduced to 1-1,5 months. Pure or mixed beech forests are highly productive and have a high economic and aesthetic value. They provide a habitat for large and small mammals (e.g. bear, deer, wild boar, badger, skunk) and eight of the ten species of oak trees in our country. Furthermore, thanks to the chemical properties of their leaflets, beech trees produce the best quality drinking water.

Along the streams the riparian vegetation is found, represented by alder, which forms longitudinal rows of trees parallel to the mainly large streams of the area. Other species found here include walnut, willow, crape myrtle and fern.

The following are listed as secondary species that occur throughout the forest surface:

Fraxos	Fraxinus ornus
Maple	Acer platanoides/ pseudoplatanus
Lefki	Populus tremula
Filyra	Tilia platyphyllos
Sorbia	Sorbus aucuparia

Leptokarya	Corylus avellana
Cherasia	Pirus avinum
Walnut	Juglans regia
Krania	Cornus mas
Cedar	Juniperus communis/ oxycedrus

From the semi-parasites:

Ixos	Viscum album
Milos	Loranthus europ.

From the climbing:

Ivy	Hedera helix
Clematis	Clematis sp.
Wildcat	Rubus ulmifolius

From the undergrowth:

Wild strawberry	Fragaria vesca
Nettle	Urtica urens
St. John's wort	Stipa bromoides

The above forest vegetation forms forest clusters that are divided into three main categories of forest cover:

- Beech.

- Oak pure or mixed with atoms of various broad-leaved species.

- Of various broadleaves.

As stated in the corresponding section of subsection 5.1.3, the area where the proposed RES-E project is proposed to be installed is mostly located within forested areas. The total area of occupation falling within forest land in general is 276,827.9sq.m, while 81,677.1sq.m is located on other types of land (including existing road surfaces to be used for the project roads and platforms).

The wider study area belongs to the Satra forest complex which is under the supervision and management of the Forestry Department of Xanthi.

It is noted that for the study area a relevant Forest Map has been posted in the Greek Cadastre according to the document of the Forestry Department of Xanthi (IDA: Ω2ZXOP1Y-3ΘΤ).

However, prior to the issuance of the Information Character Act, the project proponent will ensure the filing and issuance of Characterization Acts in order to precisely define the proposed intervention areas subject to the provisions of the Forest Law.

For the type of land in question, no type of incompatibility with the installation and operation of a CEMS arises. In any case, cooperation with the Competent Forestry Directorate will determine

any management requirements for the forest environment in which the project will be installed. The relevant Forest Area Map and the Forestry Map are provided in the Map Annex.

In order to better assess the project's impact on forest areas, a cartographic analysis of the project intervention areas was carried out. In the following tables the intervention areas are analysed in relation to their forest character according to the Forestry Map of Satra.
It is important to mention that based on the forest map from the design of the project under consideration, 49.3% and 4.27% of the surface of the areas affected by the project is bare grassland and agricultural land respectively, thus significantly reducing the impact on the flora of the area. While 10.53% of the project occupies partially forested land (Broadleaf & Oak) further reducing the impacts while making it easier to restore the land after the completion of the construction phase. Finally, 24.75% and 10.97% of the area of land affected by the project is Forest Covered Oak and Forest Covered Other Broadleaf land respectively.

In the following tables, based on the forest map of the area, the areas, the percentage and the type of affected surfaces (total area per intervention) of both the individual projects and the whole project are presented in detail.

Table 46: Area (m2) of occupation by intervention area and type of area.

Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partially Forested Other Broadleaves	Barren	Total
Road 01	2506,11	94,77	543,5					3144,38
Road 02	7632,84	1014,56	5941,34					14588,74
Road 03	1703,14	1750,2	0					3453,34
Road 04	2752,47	3534,88	0					6287,35
Road 05	1623,41	3019,19	38,69					4681,29
Road 06	3186,54							3186,55
Road 07	7054,43	6043,97		1715,47				14813,87
Road 08	789,61	3424,3						4213,91
Road 09	1008,52	2615,63						3624,15
Road 10	1379,98	3691,8						5071,78
Road 11	741,34	1543,7						2285,04
Road 12	6969,97	7977,67	2846,51					17794,15
Road 13	1668,82	7921,73						9590,55
Road 14		1729,57						1729,57
Road 15	3369,23	41,77						3411
Road 16	954,28	511,79						1466,07
Road 17	2627,71			4227,64		3139,67		9995,02
Road 18	677,31							677,31
Road 19A	2413,13				1633,21			4046,34
Road 19B	2489,23				646,65			3135,88
Road 20					3929,67			3929,67
Road 21	194,86				8308,19	5705,24	630,4	14838,69
Road 22	0				876,04			876,04
Road 23	7472,48				4218,35	2777,93		14468,76
Road 24	772,79					1239,8		2012,59
Road 25	315,52					2904,99		3220,51
Road 26	1376,9					916,59		2293,49
Total surface area O.D.	61.680,62	44.915,53	9.370,04	5.943,11	19.612,11	16.684,22	630,4	158.836

Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partially Forested Other Broadleaves	Barren	Total
Platform W/T01	5590,96	606,27	1906,07					8103,3
Platform W/T02	5931,06	1099,53						7030,59
Platform W/T03	4467,16	2551,14						7018,3
Platform W/T04	9427,93							9427,93
Platform W/T05	8701,46	1567,79						10269,25
Platform W/T06	4136,81	3059,37						7196,18
Platform W/T07	11345,45							11345,45
Platform W/T08	3373,06	5720,9						9093,96
Platform W/T09	7080,45	1147,84						8228,29
Platform W/T10		10074,41						10074,41
Platform W/T11	942,51	7607,03						8549,54
Platform W/T12	2236,65	6439,32						8675,97
Platform W/T13	4491,89	2217,79						6709,68
Platform W/T14	1038,37	1718,28	4400,16					7156,81
Platform W/T15	6984,22					2,51		6986,73
Platform W/T16	762,05			9375,64				10137,69
Platform W/T17	8925,1					2,51		8927,61
Platform W/T18	8502,19				96,27			8598,46
Platform W/T19					5883,02	872,9		6755,92
Platform W/T20					5959,61	1312,62		7272,23
Platform W/T21	1498,1				2264,46	3206,52	11,72	6980,8
Platform W/T22	1028,81				5500,1			6528,91
Platform W/T23	4469,63							4469,63
Platform W/T24	6131,57							6131,57
Total platforms	107065,43	43809,67	6306,23	9375,64	19703,46	5397,06	11,72	191669,2
Control dwellers	8.000							8000
Total intervention	176.746,05	88.725,15	15.676,27	15.318,74	39.315,55	22.081,26	642,12	358.505

Table 47: Type and percentage (%) of affected areas (total per intervention) based on Satra forest map.

Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partly Forest Cover Other Broadleaves	Barren	Total
Road 01	79,70%	3,01%	17,28%					100%
Road 02	52,32%	6,95%	40,73%					100%
Road 03	49,32%	50,68%						100%
Road 04	43,78%	56,22%						100%
Road 05	34,68%	64,49%	0,83%					100%
Road 06	100%							100%
Road 07	47,62%	40,80%		11,58%				100%
Road 08	18,74%	81,26%						100%
Road 09	27,83%	72,17%						100%
Road 10	27,21%	72,79%						100%
Road 11	32,44%	67,56%						100%
Road 12	39,17%	44,83%	16,00%					100%
Road 13	17,40%	82,60%						100%
Road 14		100%						100%
Road 15	98,78%	1,22%						100%
Road 16	65,09%	34,91%						100%
Road 17	26,29%			42,30%		31,41%		100%
Road 18	100%							100%
Road 19A	59,64%				40,36%			100%
Road 19B	79,38%				20,62%			100%
Road 20					100%			100%
Road 21	1,31%				55,99%	38,45%	4,25%	100%
Road 22					100%			100%
Road 23	51,65%				29,15%	19,20%		100%
Road 24	38,40%					61,60%		100%
Road 25	9,80%					90,20%		100%
Road 26	60,04%					39,96%		100%
Total surface area O.D.	38,83%	28,28%	5,90%	3,74%	12,35%	10,50%	0,40%	100%

Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partly Forest Cover Other Broadleaves	Barren	Total
Platform W/T01	69,00%	7,48%	23,52%					100%
Platform W/T02	84,36%	15,64%						100%
Platform W/T03	63,65%	36,35%						100%
Platform W/T04	100%							100%
Platform W/T05	84,73%	15,27%						100%
Platform W/T06	57,49%	42,51%						100%
Platform W/T07	100%							100%
Platform W/T08	37,09%	62,91%						100%
Platform W/T09	86,05%	13,95%						100%
Platform W/T10		100%						100%
Platform W/T11	11,02%	88,98%						100%
Platform W/T12	25,78%	74,22%						100%
Platform W/T13	66,95%	33,05%						100%
Platform W/T14	14,51%	24,01%	61,48%					100%
Platform W/T15	99,96%					0,04%		100%
Platform W/T16	7,52%			92,48%				100%
Platform W/T17	99,97%					0,03%		100%
Platform W/T18	98,88%				1,12%			100%
Platform W/T19					87,08%	12,92%		100%
Platform W/T20					81,95%	18,05%		100%
Platform W/T21	21,46%				32,44%	45,93%	0,17%	100%
Platform W/T22	15,76%				84,24%			100%
Platform W/T23	100%							100%
Platform W/T24	100%							100%
Total platforms	55,86%	22,86%	3,29%	4,89%	10,28%	2,82%	0,01%	100%
Control dwellers	100%							100%
Total intervention	49,30%	24,75%	4,37%	4,27%	10,97%	6,16%	0,18%	100%

Table 48: Type and percentage (%) of total affected area based on Satra forest map

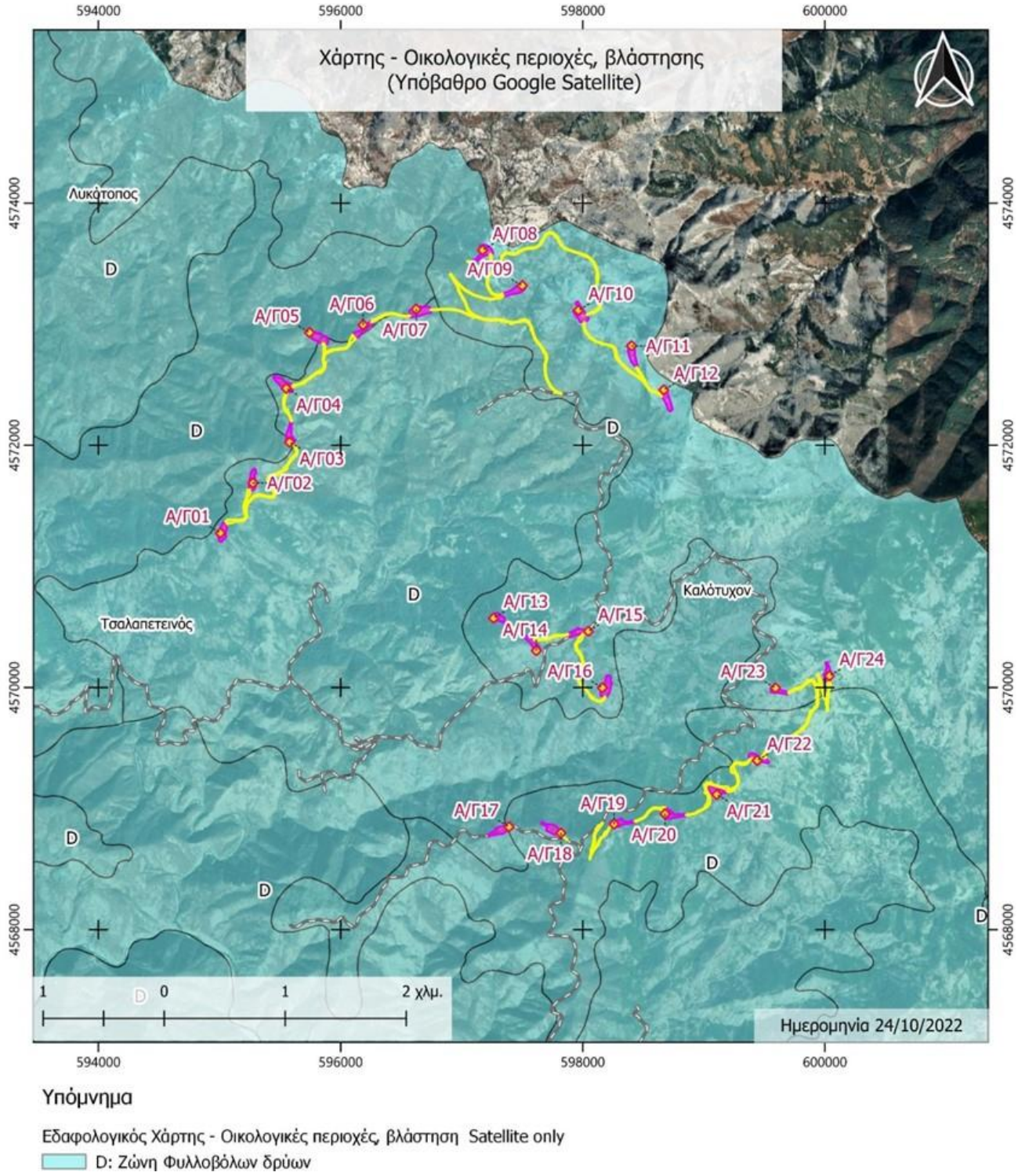
Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partly Forest Cover Other Broadleaves	Barren	Total
Road 01	0,70%	0,03%	0,15%					0,88%
Road 02	2,13%	0,28%	1,66%					4,07%
Road 03	0,48%	0,49%						0,96%
Road 04	0,77%	0,99%						1,75%
Road 05	0,45%	0,84%	0,01%					1,31%
Road 06	0,89%							0,89%
Road 07	1,97%	1,69%		0,48%				4,13%
Road 08	0,22%	0,96%						1,18%
Road 09	0,28%	0,73%						1,01%
Road 10	0,38%	1,03%						1,41%
Road 11	0,21%	0,43%						0,64%
Road 12	1,94%	2,23%	0,79%					4,96%
Road 13	0,47%	2,21%						2,68%
Road 14		0,48%						0,48%
Road 15	0,94%	0,01%						0,95%
Road 16	0,27%	0,14%						0,41%
Road 17	0,73%			1,18%		0,88%		2,79%
Road 18	0,19%							0,19%
Road 19A	0,67%				0,46%			1,13%
Road 19B	0,69%				0,18%			0,87%
Road 20					1,10%			1,10%
Road 21	0,05%				2,32%	1,59%	0,18%	4,14%
Road 22					0,24%			0,24%
Road 23	2,08%				1,18%	0,77%		4,04%
Road 24	0,22%					0,35%		0,56%
Road 25	0,09%					0,81%		0,90%
Road 26	0,38%					0,26%		0,64%
Total surface area O.D.	17,20%	12,53%	2,61%	1,66%	5,47%	4,65%	0,18%	44,31%

Intervention	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partly Forest Cover Other Broadleaves	Barren	Total
Platform W/T01	1,56%	0,17%	0,53%					2,26%
Platform W/T02	1,65%	0,31%						1,96%
Platform W/T03	1,25%	0,71%						1,96%
Platform W/T04	2,63%							2,63%
Platform W/T05	2,43%	0,44%						2,86%
Platform W/T06	1,15%	0,85%						2,01%
Platform W/T07	3,16%							3,16%
Platform W/T08	0,94%	1,60%						2,54%
Platform W/T09	1,97%	0,32%						2,30%
Platform W/T10		2,81%						2,81%
Platform W/T11	0,26%	2,12%						2,38%
Platform W/T12	0,62%	1,80%						2,42%
Platform W/T13	1,25%	0,62%						1,87%
Platform W/T14	0,29%	0,48%	1,23%					2,00%
Platform W/T15	1,95%							1,95%
Platform W/T16	0,21%			2,62%				2,83%
Platform W/T17	2,49%							2,49%
Platform W/T18	2,37%				0,03%			2,40%
Platform W/T19					1,64%	0,24%		1,88%
Platform W/T20					1,66%	0,37%		2,03%
Platform W/T21	0,42%				0,63%	0,89%		1,95%
Platform W/T22	0,29%				1,53%			1,82%
Platform W/T23	1,25%							1,25%
Platform W/T24	1,71%							1,71%
Total platforms	29,86%	12,22%	1,76%	2,62%	5,50%	1,51%		53,46%
Control dwellers	2,23%							2,23%
Total intervention	49,30%	24,75%	4,37%	4,27%	10,97%	6,16%	0,18%	100%

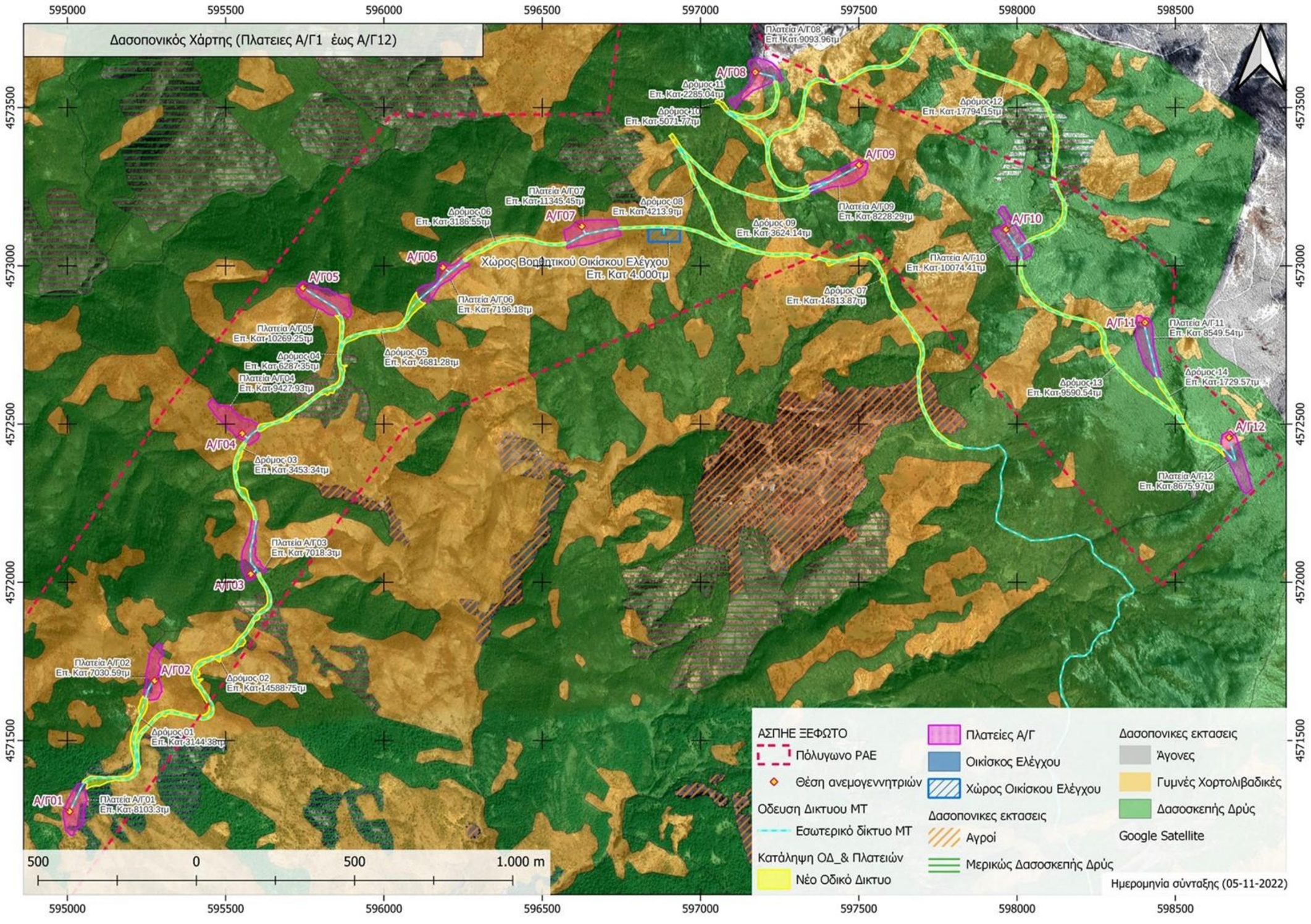
.

All of the ASPHE is located within a deciduous oak zone as depicted on the following maps of vegetation ecological areas and their corresponding forest types. In the subfolder. 5.1.3 a detailed description was provided regarding the occupation of the project in terms of forest - woodland areas. The following maps show the project in relation to the forestry map, in the annex to the study it is shown on a smaller scale.

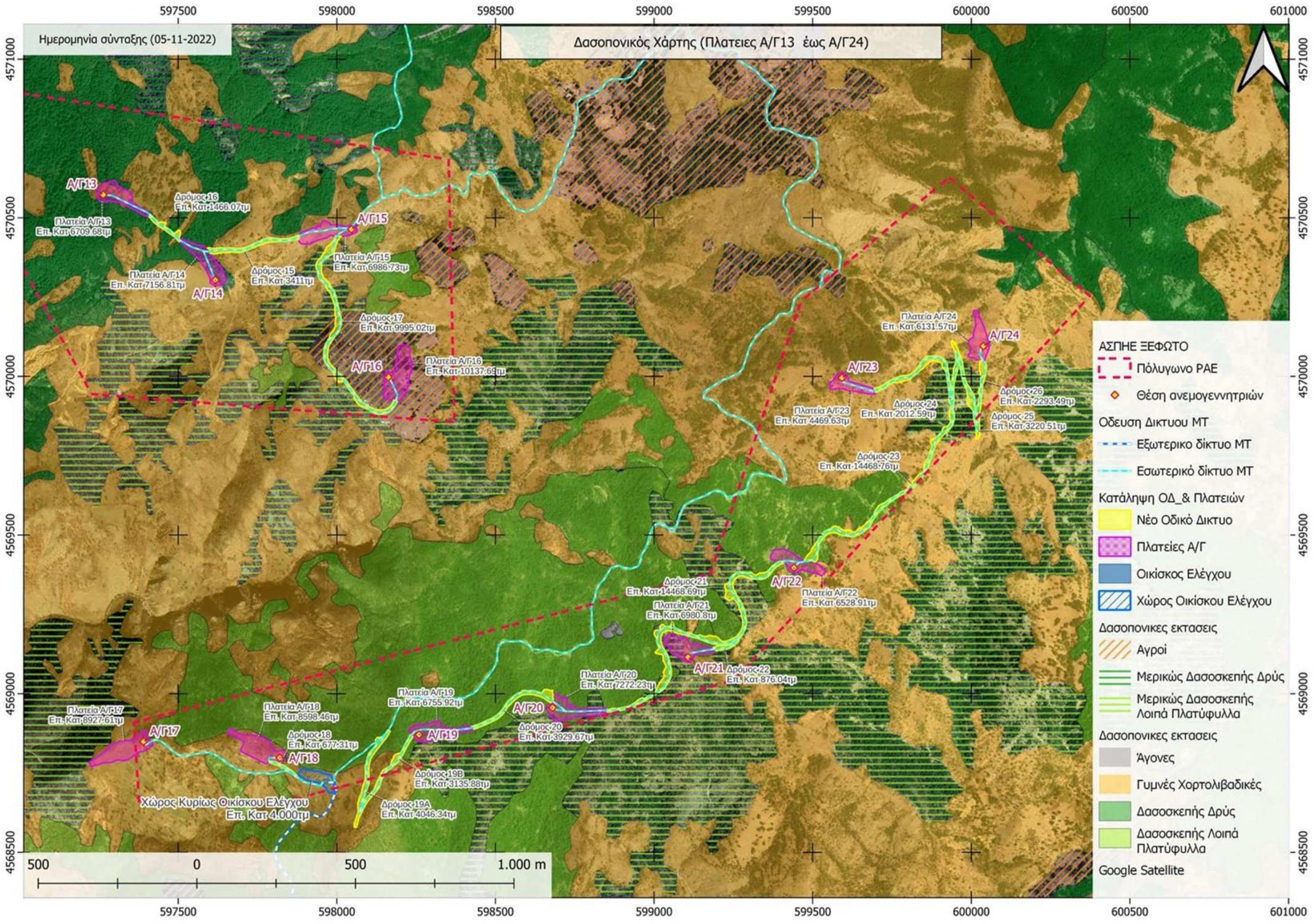
Map 62 Ecological vegetation areas



Map 63 Forest areas in the area of W/T 1 to W/T 12



Map 64 Forest areas in the area of W/T 13 to W/T 24



8.5.4 Other important natural areas

8.5.4.1 Land and inland water areas

The project under consideration is located outside the boundaries of any other protected or "important natural areas".

8.5.4.2 Sea areas

The activity in question is located on land and the distance from the sea is more than 25 km, so there is no object of study.

8.6 Anthropogenic environment

For the analysis of this chapter, data from the wider project area has been used and the focus will be on the area of direct influence. It is noted that the site of the W/F is located within the boundaries of the Municipality of Myki.

8.6.1 Spatial planning - land use

There are no established land uses in the project area other than the directions:

- of the General Framework for Spatial Planning and Sustainable Development (Government Gazette 128/A/03-07-2008).
- of the Special Framework for Spatial Planning and Sustainable Development for RES (Government Gazette 2464B/03.12.2008).
- of the Regional Spatial Planning Framework & Sustainable Development of the Region of A.M.-Th. as revised.

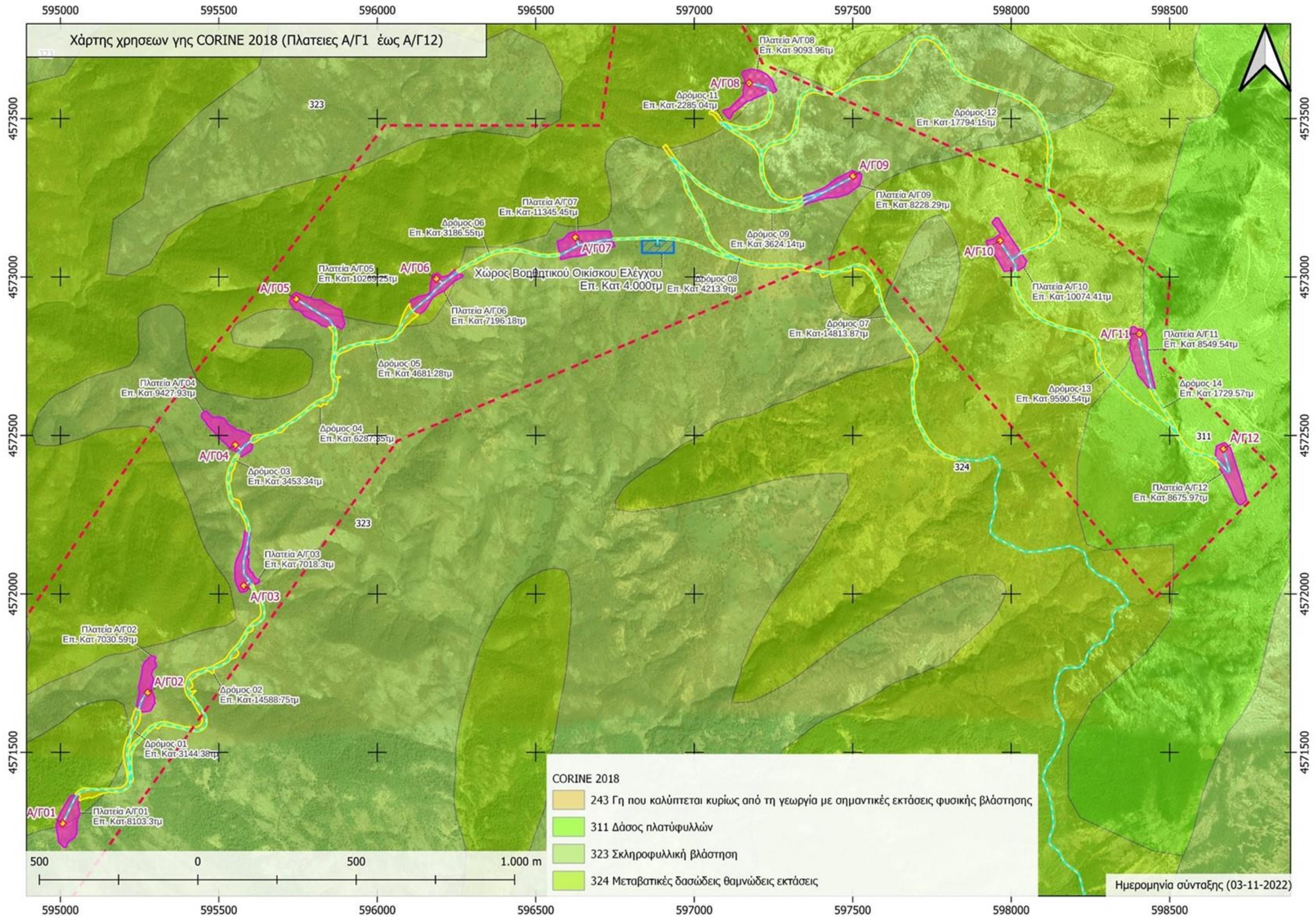
The above were analysed and related to the project under study in subsection. 5.2 of this document) and in general no other general or specific regulation for the study area (G.P.S., S.H.O.O.A.P., Z.O.E., etc.) has been identified. It is, after all, a mountainous and rugged area.

According to the Special Spatial Planning and Sustainable Development Framework for Renewable Energy Sources, the study area falls within a Wind Suitability Area (WSA).

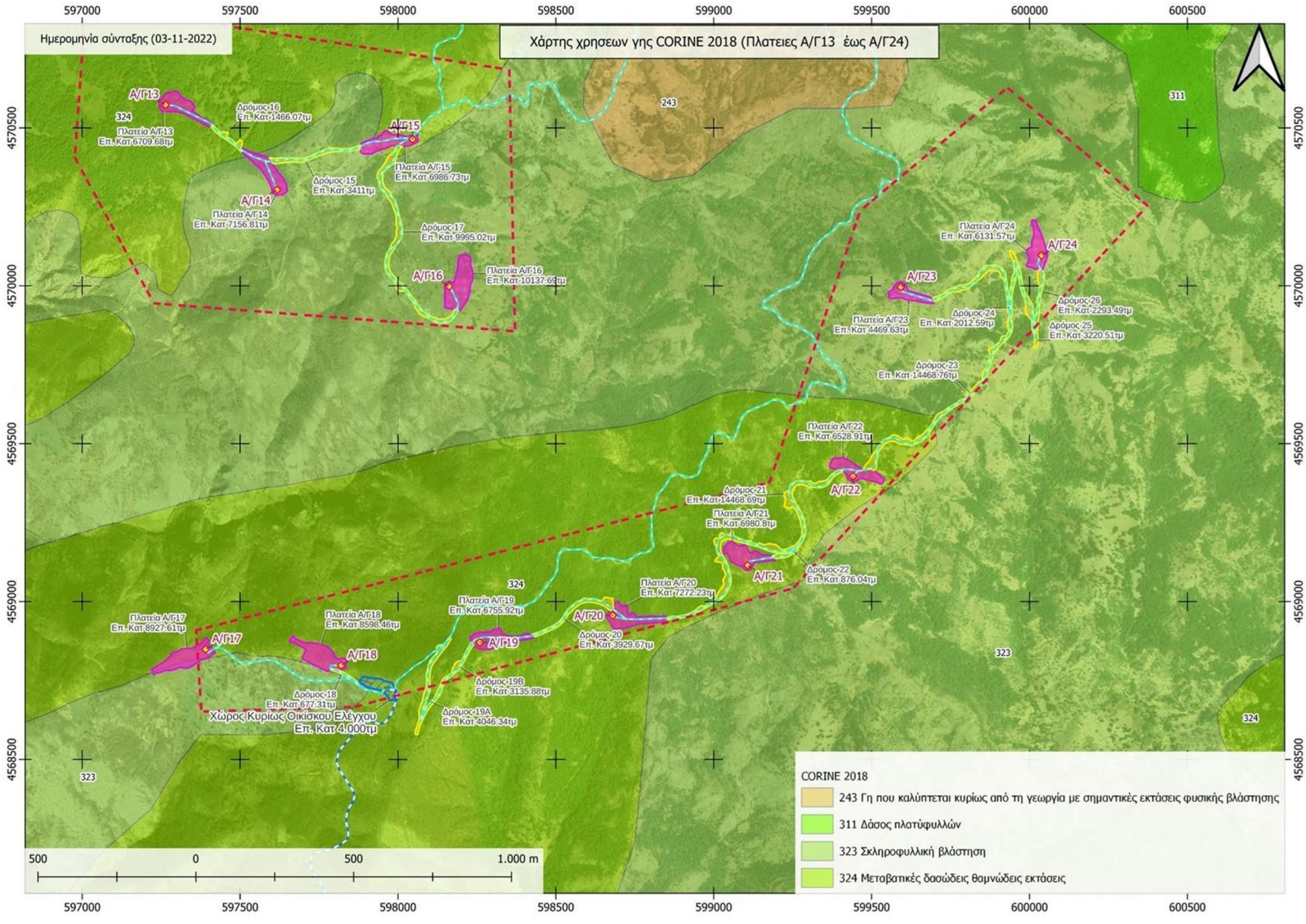
For the area the conditions for off-plan building apply as defined in the Decree of 24/31-05-1985 (Government Gazette 270/D/1985) and Decree 6/17-10-1978 (Government Gazette 538/D/1978).

Below is a relevant Land Use Map (Corine 2018) which is provided in full size in the relevant map appendix of this document.

Map 65: Land Use (Corine 2018) area W/T1 to W/T 12.

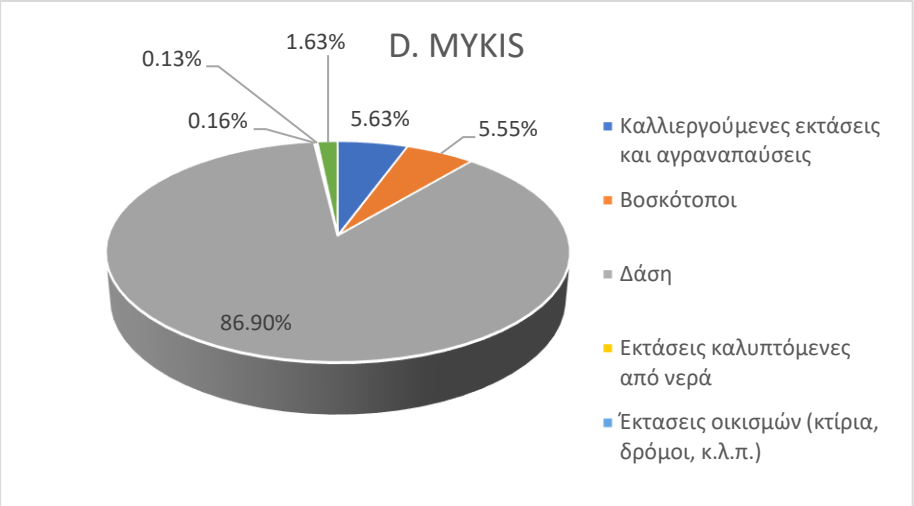


Map 66: Land Use (Corine 2018) area W/T 13 to W/T 24.



The study area is mountainous and rugged with significant areas occupied by forests (86.9%). Smaller areas are occupied by crops (5.63%), pastures (5.55%) and settlements (0.13%) (Source ESYE, 2001).

Chart 5 Land use in the wider study area (ESYE 2001)



The occupancy rate by land use is shown in the table below:

Table 49: Percentage of occupancy by use of (General)

Corine 2018	Uses			Total
	311	323	324	
Percentage of occupancy per use	5,98%	51,64%	42,39%	100,0%

311 Broadleaf forest
323 Hardwood vegetation
324 Transitional wooded scrubland
Below is a detailed table of occupancy by type and use.

Table 50: Areas and occupancy rate by use (Detailed)

	Area in sqm				*Percentage %*		
Kind of	311	323	324	Total	*311*	*323*	*324*
Road 01	-	2.822	323	3.144		*89,74%*	*10,26%*
Road 02	-	12.339	2.250	14.589		*84,58%*	*15,42%*
Road 03	-	3.453	-	3.453		*100%*	
Road 04	-	6.287	-	6.287		*100%*	
Road 05	-	2.773	1.908	4.681		*59,24%*	*40,76%*
Road 06	-	3.153	33	3.187		*98,95%*	*1,05%*
Road 07	-	8.313	6.501	14.814		*56,12%*	*43,88%*
Road 08	-	4.079	135	4.214		*96,80%*	*3,20%*
Road 09	-	3.624	-	3.624		*100%*	
Road 10	-	4.248	824	5.072		*83,76%*	*16,24%*

	Area in sqm				*Percentage %*		
Kind of	311	323	324	Total	*311*	*323*	*324*
Road 11	-	2.256	29	2.285		*98,73%*	*1,27%*
Road 12	-	12.706	5.088	17.794		*71,40%*	*28,60%*
Road 13	4.233	-	5.357	9.591	*44,14%*		*55,86%*
Road 14	1.730	-	-	1.730	*100%*		
Road 15	-	3.411	-	3.411		*100%*	
Road 16	-	-	1.466	1.466			*100%*
Road 17	-	9.423	572	9.995		*94,28%*	*5,72%*
Road 18	-	266	412	677		*39,21%*	*60,79%*
Road 19A	-	-	4.046	4.046			*100%*
Road 19B	-	-	3.136	3.136			*100%*
Road 20	-	-	3.930	3.930			*100%*
Road 21	-	-	14.839	14.839			*100%*
Road 22	-	-	876	876			*100%*
Road 23	-	9.820	4.648	14.469		*67,87%*	*32,13%*
Road 24	-	2.013	-	2.013		*100%*	
Road 25	-	3.221	-	3.221		*100%*	
Road 26	-	2.293	-	2.293		*100%*	
Total roads	5.963	96.501	56.372	158.836	*5,34%*	*60,77%*	*33,89%*
Platform W/T01	-	3.787	4.316	8.103		*46,74%*	*53,26%*
Platform W/T02	-	7.031	-	7.031		*100%*	
Platform W/T03	-	7.018	-	7.018		*100%*	
Platform W/T04	-	9.428	-	9.428		*100%*	
Platform W/T05	-	4.223	6.047	10.269		*41,12%*	*58,88%*
Platform W/T06	-	292	6.904	7.196		*4,05%*	*95,95%*
Platform W/T07	-	11.345	-	11.345		*100%*	
Platform W/T08	-	1.384	7.710	9.094		*15,21%*	*84,79%*
Platform W/T09	-	8.228	-	8.228		*100%*	
Platform W/T10	-	-	10.074	10.074			*100%*
Platform W/T11	6.785	-	1.765	8.550	*79,36%*		*20,64%*
Platform W/T12	8.676	-	-	8.676	*100%*		
Platform W/T13	-	-	6.710	6.710			*100%*
Platform W/T14	-	6.517	640	7.157		*91,06%*	*8,94%*
Platform W/T15	-	1.976	5.011	6.987		*28,28%*	*71,72%*
Platform W/T16	-	10.138	-	10.138		*100%*	
Platform W/T17	-	2.152	6.776	8.928		*24,10%*	*75,90%*
Platform W/T18	-	51	8.547	8.598		*0,60%*	*99,40%*
Platform W/T19	-	-	6.756	6.756			*100%*
Platform W/T20	-	-	7.272	7.272			*100%*
Platform W/T21	-	-	6.981	6.981			*100%*
Platform W/T22	-	-	6.529	6.529			*100%*
Platform W/T23	-	4.470	-	4.470		*100%*	
Platform W/T24	-	6.132	-	6.132		*100%*	

	Area in sqm				*Percentage %*		
Kind of	311	323	324	Total	*311*	*323*	*324*
Total number of platforms	15.461	84.171	92.038	191.669	*8,07%*	*43,91%*	*48,02%*
Central Control Cradle area		454	3.546	4.000		*11,35%*	*88,66%*
Auxiliary Control Cradle Area		4.000		4.000		*100%*	
Total IP	-	4.454	3.546	8.000		*55,67%*	*44,33%*
Total intervention	21.424	185.126	151.956	358.505	*5,98%*	*51,64%*	*42,39%*

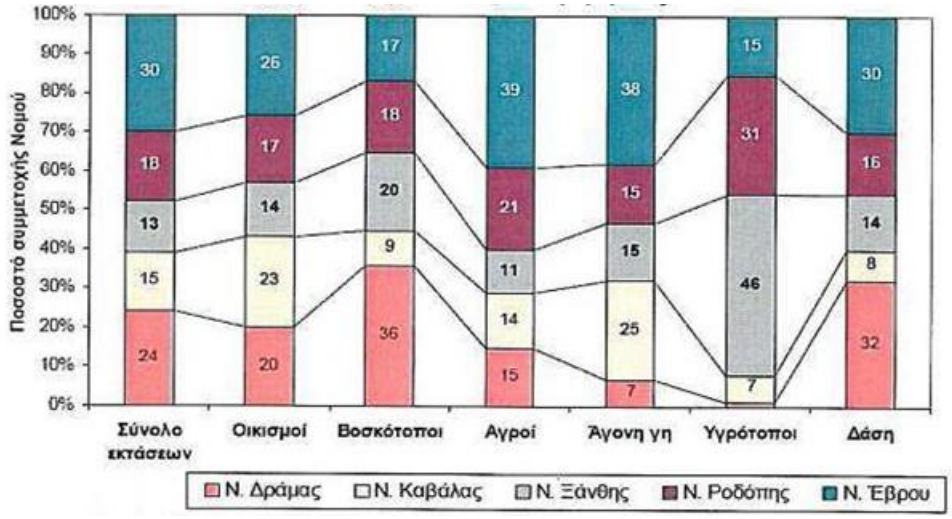
As illustrated above, the calculated occupation areas include portions of the occupation surfaces of existing roads used for the access roads to the W/T plazas.

The majority of the land in the area where the W/F is located is occupied by oak forests. Pastures and crops are scattered throughout the area. In the wider lowlands, cultivated land dominates in terms of land use.

The MT network passes through an existing road network up to the existing Iasmos Voltage Booster Station.

The following diagram shows the main categories of land, in percentage terms, in the whole of the Region of A.M.Th.

Chart 6: Percentage distribution of land area by basic land use categories per prefecture in the Region of An. (source: Ministry of Agriculture, DG Forestry - Mapping 1995).



According to the above data, the Prefecture of Xanthi has the highest percentage of wetlands. Barren land occupies the most mountainous parts while the largest part of the irrigated crops is occupied by crops ploughed in the lowland areas of the P.E.

8.6.2 Agricultural ecosystems and highly productive land

Both in the study area and more widely, there are scattered grazing areas but no high productivity land or primary sector facilities and uses, receptors of industrial, craft or business facilities as well

as individual units, development incentive areas or economic and urban incentive zones. No specific provisions for the area are identified in any of the statutory schemes.

8.6.3 Structure and functions of the man-made environment

8.6.3.1 Structure and main characteristics of the settlements of the study area

The Municipality of Mykis, which was established by the Kallikrates Programme, is part of the Prefecture of Xanthi and by extension of the Region of Eastern Macedonia and Thrace. It is a border, mountainous municipality, especially the study area is located next to the northern border of Greece with Bulgaria and the eastern border with the Regional Unit of Rodopi.

The Municipality of Mykis was formed by the merger of the pre-existing municipalities of Mykis, Kotyli, Thermi and Satra. The area of the municipality is 633,3 sq.km and the population is 15.540 inhabitants according to the 2011 census. The municipality has its seat in Sminthis, while the municipalities of the municipality are Echinos, Kentauros and Melivoia. The Pomaks, who are the main population group of the wider area, were traditionally and almost exclusively settled in the Rhodope mountain range and are located on either side of the Greek-Bulgarian border (Lalenis et al., 2012).

The study area is mainly covered by forest areas and in terms of anthropogenic activities, grazing is developed while there are some scattered agricultural areas.

Very small - to small scale commercial activities are observed in the Municipality and no land use conflict issues are created. In general, no secondary and tertiary sector establishments are located outside the urban area and therefore no spill-over effects are created in the municipality.

Within the Municipal Unit of Satra all the settlements that are developed are less than 2.000 inhabitants. The settlement network is mainly organised along the wider river or stream banks but also scattered in the mountains.

8.6.3.2 Settlements or parts of settlements protected

In the Municipality of Myki there are no designated protected settlements.

In the Municipality of Satra there are no defined settlement boundaries.

8.6.3.3 Main functions of urban and extra-urban space

In addition to the above, efforts are being made to develop an alternative tourism model for the wider area.

8.6.4 Cultural heritage

There are no declared archaeological sites, historical monuments or other sites of historical and cultural interest in the study area, so there are no zoning and activity restrictions. In subsect. 5.1.5 a map is provided.

According to the Permanent List of Declared Archaeological Sites and Monuments of the Ministry of Culture, the nearest archaeological site is:

- The Papiko Mountain as defined in the H.A. with no. ΥΠΠΟ/ΑΡΧ/Β1/Φ37/15352/389 π.ε. (Government Gazette 364/Β/2-6-1986) "*Characterization of the Papikio Mountain, part of the Rhodope.*" και ΥΠΠΟ/ΑΡΧ/Β1/Φ37/15352389π.ε. (Government Gazette 284/Β΄/9-6-1987) '*Characterisation of the Papikios mountain, part of the Rhodope region*'. at a distance of 2,34 km south-east of the location of W/T 21.

In the wider area and at greater distances from the proposed ESDP, the following sites are also identified:

Table 51: Declared archaeological sites.

Name	Declaration Decision	Nearest W/T and distance
Bridge, Akraios Satron, Xanthi (Newer Monument)	SUBPAIΘ/ΓΔΑΜΤΕ/ ΔΠΑΝΣΜ/106494 79863/1306 FEK: 90/Α.Α.Π./2015-05-18	W/T1 at 7,57 km
Bridge at the exit from the village of Satres (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 8,2 km
Stone Bridge of Medusa (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T6 at 8,54 km
Bridge, upper Machalas of Satron, Xanthi (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 8,99 km
Bridge at the entrance to the village of Satres (Newer Monument)	MR.U.S. CV/DIOLAP/C/21220/42297 FEK: 799/B/1995-09-14	W/T1 at 9,57 km
Fortress enclosure, Thermon's Pound (archaeological site)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T6 at 13,14 km
Thermes of Xanthi (archaeological site)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T4 at 13,19 km
Relief of Mithra Tauroktonou, Thermes (ancient monument)	UA SUB-PARAGRAPH A1/F19/17176/696 REF: 731/B/1979-08-30	W/T4 at 13,8 km

There are also the stone bridges of Tsalapeteinos and Xiropotamos that have not been classified as archaeological sites, but in any case they are located at a great distance from the location of the proposed ASPEE and specifically at a distance of 1.86km west of W/T 1 (bridge of Tsalapeteinos) and 6.28km west of W/T 4 (bridge of Xiropotamos).

It should also be noted that no archaeological sites have been identified within the Bulgarian territory and within a radius of at least 2 km from each of the proposed ASPEC's W/T.

8.7 Socio-economic environment

The data in this chapter were obtained from various internet sources including ELSTAT.

8.7.1 Demographic situation - Trends

The study area, as it has been said, is located within the boundaries of the Municipality of Myki and in particular the Municipality of Satra. In terms of population characteristics, the area follows, with some variations, the trends of population development and settlement in the country. According to these, the population is moving from mountainous to lowland areas, from inland to coastal areas and from rural settlements to urban centres.

The table below shows the population distribution and the change between 2001 and 2011 in the Municipality of Myki and the Municipal Unit of Satra:

Table 52: Permanent population and its variation for the years 2001 and 2011.

Municipality of Myki, DE Satra	PERMANENT POPULATION		Change
	2001	2011	2001-2011
D. MYKIS	11.393	15.540	+26,29%
D.E. SATRON	779	483	-38%

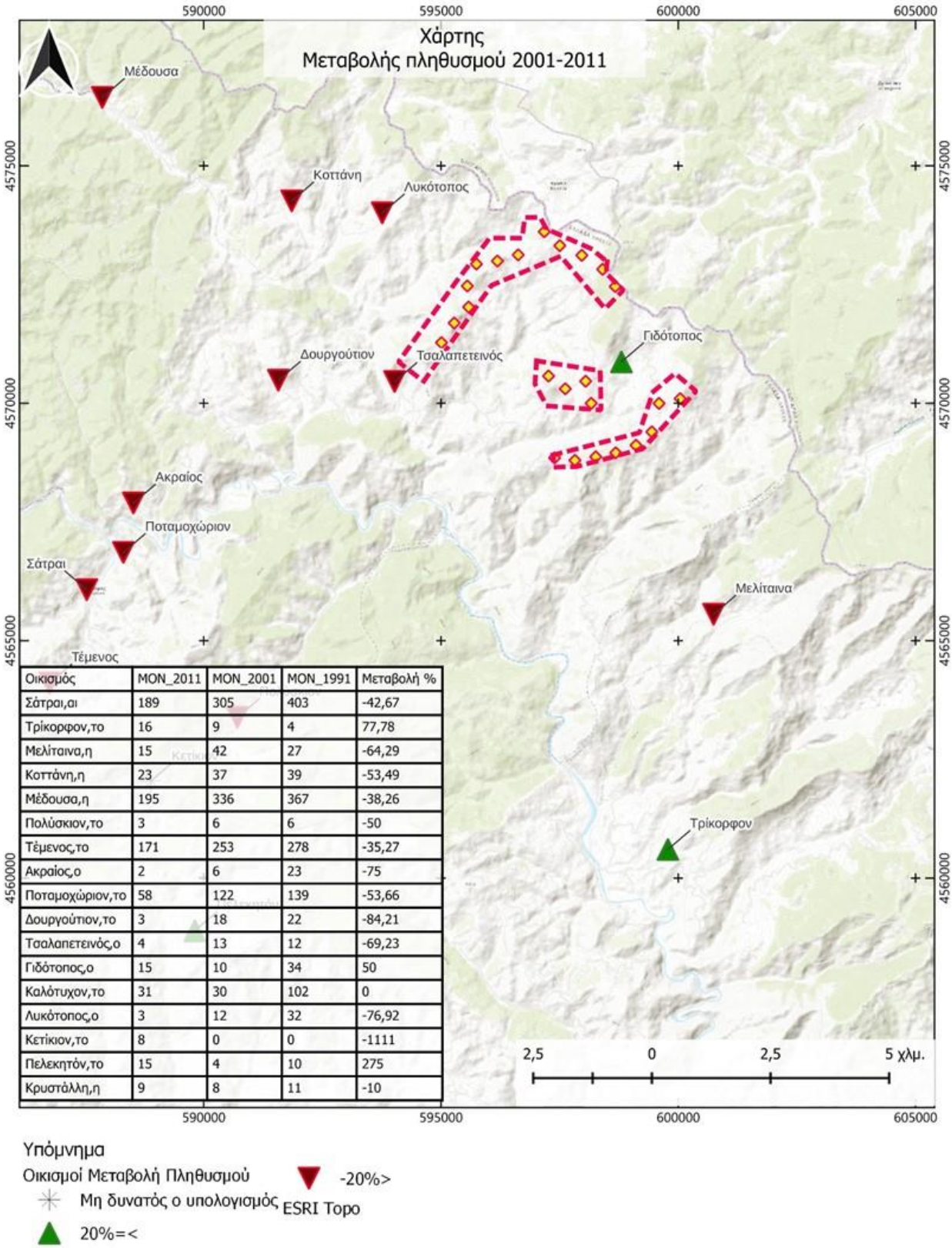
As it was said the Municipality of Myki came from the merger of the former Municipalities of Myki, Kotyli, Thermon and Satra. The Municipality of Satra includes 12 settlements.

1. the Satres [300]
2. the Extreme [8]
3. the Genotype [10]
4. the Dourgoution [19]
5. the Kalotycho [30]
6. Koundouros [7]
7. The Wolfsden [13]
8. the Polyski [6]
9. Potamochori [123]
10. the River [9]
11. the Mosque [241]
12. The Chatterbox [13]

The Municipality of Mykis shows an increase in the youth population compared to the other municipalities of the Regional Unit of Xanthi (Angelidis M., Foufri D., Tsigas E., 2018). Younger people are moving to the units of Myki and Kotyli where there is better access to the capital of the P.E. Xanthi and more services. On the other hand, in the units of Satra and Thermo the population follows a steadily decreasing trend and consequently an increase in the ageing rate.

In general, in the P.E. of Xanthi, there is a tendency for the active population to move from the mountainous, semi-mountainous and border zones to the urban centre of Xanthi.
Below is a map.

Map 67: Map of population change in the greater ASPHE area (source: ELSTAT census 1991, 2001, 2011)



Οικισμός	MON_2011	MON_2001	MON_1991	Μεταβολή %
Σάτραι,αι	189	305	403	-42,67
Τρίκορφον,το	16	9	4	77,78
Μελίταινα,η	15	42	27	-64,29
Κοττάνη,η	23	37	39	-53,49
Μέδουσα,η	195	336	367	-38,26
Πολύσκιον,το	3	6	6	-50
Τέμενος,το	171	253	278	-35,27
Ακραίος,ο	2	6	23	-75
Ποταμοχώριον,το	58	122	139	-53,66
Δουργούτιον,το	3	18	22	-84,21
Τσαλαπετεινός,ο	4	13	12	-69,23
Γιδότοπος,ο	15	10	34	50
Καλότυχον,το	31	30	102	0
Λυκότοπος,ο	3	12	32	-76,92
Κετίκιον,το	8	0	0	-1111
Πελεκητόν,το	15	4	10	275
Κρυστάλλη,η	9	8	11	-10

It is noted that the study area and its wider area is not a tourist area in relation to the coast of Xanthi, so there is no mention of population changes during peak periods.

8.7.2 Productive structure of the local economy

8.7.2.1 Main indicators of the three production sectors

In the Municipality of Satra (and in the Municipality of Myki in general), the primary sector and specifically agriculture, mainly tobacco cultivation, but also livestock farming, plays a dominant role in the economic life of the Pomaks. Apart from the traditional cultivation of the famous Xanthi tobacco, other crops are very limited and tend to disappear. There is also limited woodcutting, either in the artificial pine forests or in the natural oak forests.

In general, non-urban facilities, at least as far as secondary sector activities are concerned, are non-existent in the study area and beyond, a consequence of both the rural character of the area and the existence of virgin forests.

Agriculture is the main occupation of the inhabitants. Tobacco is grown in local varieties renowned for their aroma and quality. Cultivation is mostly primitive and small-scale. It is based on small family plots on hillsides and mountainsides, which do not allow the use of large agricultural machinery.

Livestock farming is the second most important occupation of the inhabitants. Small animals (sheep and goats) are mainly reared, mainly in the areas of Orai, Myki and Thermon - Diasparto. There are also a few herds of cattle of a local small breed. Grazing is intensive along the valley of the river Echino.

According to the latest statistical data (2011 census), the number of residents in the community of Satra is 483 people. All these people are active in an area surrounded by woodland and their main occupation is agriculture (with any problems that may arise in this occupation, since the agricultural land extends along the 'Xeropotamos' stream from the height of the settlement of Ano Thermes to the village of Medousa in the forest of Thermes and around the village of Satres and the settlement of Temenos in the corresponding forest of Satra, there is however a significant number of farms scattered throughout the forest with each farm limited to an area of 200 to 1.000 m2 , with limited irrigation possibilities and difficult access to them), with tobacco as the main crop and potatoes as a secondary crop, and livestock farming with the main livestock being sheep and goats. About 10 % of the active population is engaged in forestry work, which is of course a significant proportion and could be increased if forestry work were extended to the entire forest area.

8.7.2.2 Main effects of the above structure on the environment of the study area

Taking into account the characteristics of the immediate study area and the wider region, it can be said that the structure of the local economy has no impact on environmental parameters. However, non-point sources of pollution are identified, mainly of agricultural origin (livestock farming), but also point sources of pollution from run-off of pollutant loads from settlements (urban waste water) and from livestock farms.

However, according to the existing data, the effects of anthropogenic origin in the wider area of the project area are due to livestock activity.

8.7.3 Employment, with data on the main indicators by productive sector and their evolution trends

First of all, the financial data of the Municipality of Myki are presented according to the ELSTAT data. More specifically, the economically active and non-active population in the whole of Greece, in the Region of Eastern Macedonia & Thrace, in P.E. Xanthi and in the Municipality of Mykes. At the bottom of the table are the percentages for each value of the total.

Table 53: Economic data (Source: ELSTAT)

Description of place of permanent residence	Total permanent population	Economically active population	Economically inactive population
TOTAL COUNTRY	10.816.286	4.586.636	6.229.650
NORTHERN GREECE	3.110.835	1.243.998	1.866.837
DECENTRALISED ADMINISTRATION OF MACEDONIA - THRACE	2.490.290	1.006.192	1.484.098
REGION OF EASTERN MACEDONIA AND THRACE	608.182	234.579	373.603
REGIONAL UNIT OF XANTHI	111.222	43.259	67.963
MUNICIPALITY OF MYKIS	15.540	5.395	10.145
PERCENTAGES (%)			
DECENTRALISED ADMINISTRATION OF MACEDONIA - THRACE	100%	42,4%	57,6%
REGION OF EASTERN MACEDONIA AND THRACE	100%	40,0%	60,0%
REGIONAL UNIT OF XANTHI	100%	38,89%	61,11%
MUNICIPALITY OF MUKIS	100%	34,72%	65,28%

Based on the above table (2011 census), the percentage of the economically active population of the Municipality of Mykes is slightly below the levels of the Prefecture of Xanthi in general and also lower than those of the Region and the country. However, the unemployment rate is much higher than the average of the Region and the national average.

According to 2011 data, the economically active and inactive population is as follows:

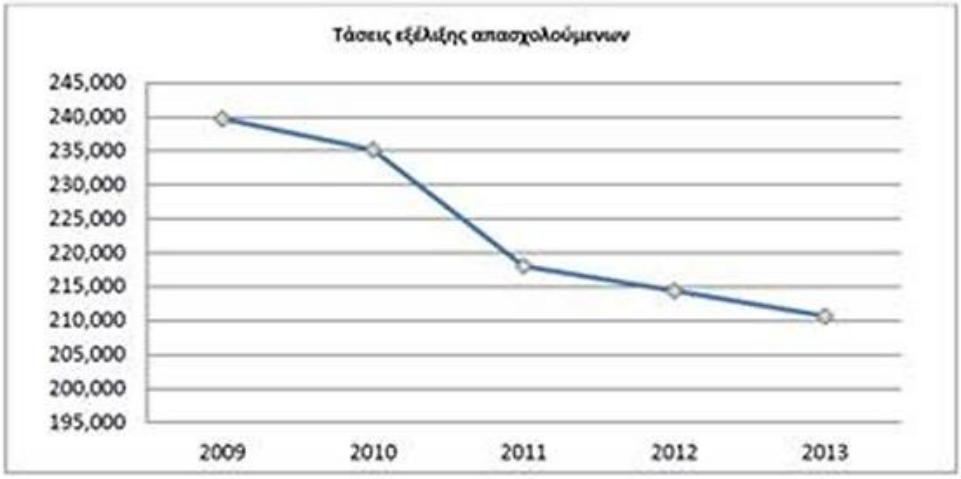
Table 54: Economically active and inactive population, employed by sector of economic activity in the Municipality of Orestiada.

Total	Financially active				Households not active
	Total economically active	Employed			10.145
		Primary Sector	Secondary Sector	Tertiary Sector	

15.540	5.395	4.754	344	297	

The following is a chart of trends in the evolution of the employed persons, which concerns the whole of the Region of A.M.-Th.

Chart 7Trends in the evolution of the number of employed persons in the Region of A.M.-Th. (reference period 2009 - 2013).



8.7.4 Per capita income (living standard) based on ELSTAT indicators.

In the period 2000-2010, the per capita GNI of the Region of An. Macedonia and Thrace has not managed to exceed 75% of the EU average, despite a small but temporary improvement, from 63% in 2000 to 70% in 2009, which is rather due to the fall of the EU average due to the accession of countries with a lower level of growth, than to a real growth of the regional economy. According to the most recent data, the per capita GNI of the Region from 2011 to 2013 amounts to about 12,400 € and equals 57% of the EU-28 average: Regional Operational Programme for Eastern Macedonia-Thrace 2014-2020, Komotini December 2014).

Table 55: Gross domestic product by region and EA (Source: ELSTAT).

Regions and Counties	Year 2016	Year 2017	Year 2018
Greece	174.237	177.152	179.727
Northern Greece	38.740	39.054	39.521
Eastern Macedonia, Thrace	6.795	6.813	6.873
Evros	1.782	1.782	1.791
Xanthi	1.065	1.070	1.085
Rhodope	1.173	1.168	1.155
Drama	1.009	983	1.001

Table 56: Poverty risk threshold (Source: ELSTAT).

Type of household	Currency	2019
One-person households	Euro	4.917
Households with two adults and two dependent children under 14 years of age	Euro	10.326

In the Mykis district the average tax-family income is around 12.000 €.

8.8 Technical infrastructure

8.8.1 Land, sea, air infrastructure

In general, in the wider study area the main transport infrastructures are:

- the road network, with Egnatia Odos playing a central role as the transport infrastructure of the wider area of the Xanthi region. The study area, as mentioned in subsection. 5.1.4, the study area is connected by road to the capital of the Municipality of Myki (Sminthis) through the existing rural and/or forest roads and then through the Provincial Road of Echinou - Sminthis - Xanthi.
- The Thessaloniki - Ormenio railway network which passes through the east of the city of Xanthi and runs south of it but in any case far away from the study area.
- The transport of residents from the region of the P.E. Xanthi to Xanthi is also supported by the Xanthi Bus Company. In the study area the nearest settlements served by the bus service are Sminthis, Echinos, Satres, Temenos, Thermes and Medousa.

Moreover, as stated in subparts. 3 and 6 of this document, the existing road network will be used for the approach and transport of the equipment of the W/T (blades, pylon, hub, etc.) of the ASPEE under study.
The nearest freight - passenger port, as mentioned, is Kavala and more widely Alexandroupolis or Thessaloniki where the corresponding air transport infrastructure is located. The distances in relation to the project under study exceed 60 km for these infrastructures.

8.8.2 Environmental infrastructure systems

No environmental infrastructure systems were identified in the study area.

The storage of mixed waste is done in public areas and then transferred to transfer points (waste bins and open-type containers of the Waste Management Association of Xanthi Prefecture). It is planned to install press containers at five points in the Mykis district so that the waste can be compacted and taken to the Xanthi landfill site.

No Wastewater Treatment Plant (WWTP) is located in the study area.

8.8.3 Water supply, sewerage, electricity, gas and telecommunications networks

PAMTH has met the obligations related to the operation of sewerage networks and WWTPs in urban centres of more than 10,000 inhabitants and Priority B settlements under Directive 91/271 (discharge to a sensitive receptor). In addition, a significant number, but not all, of Priority C agglomerations are covered. Overall, according to the Waste Treatment Plant Operation

Monitoring Database maintained by ΕΓΥ/ΥΡΕΚΑ, the waste management infrastructure in operation is:

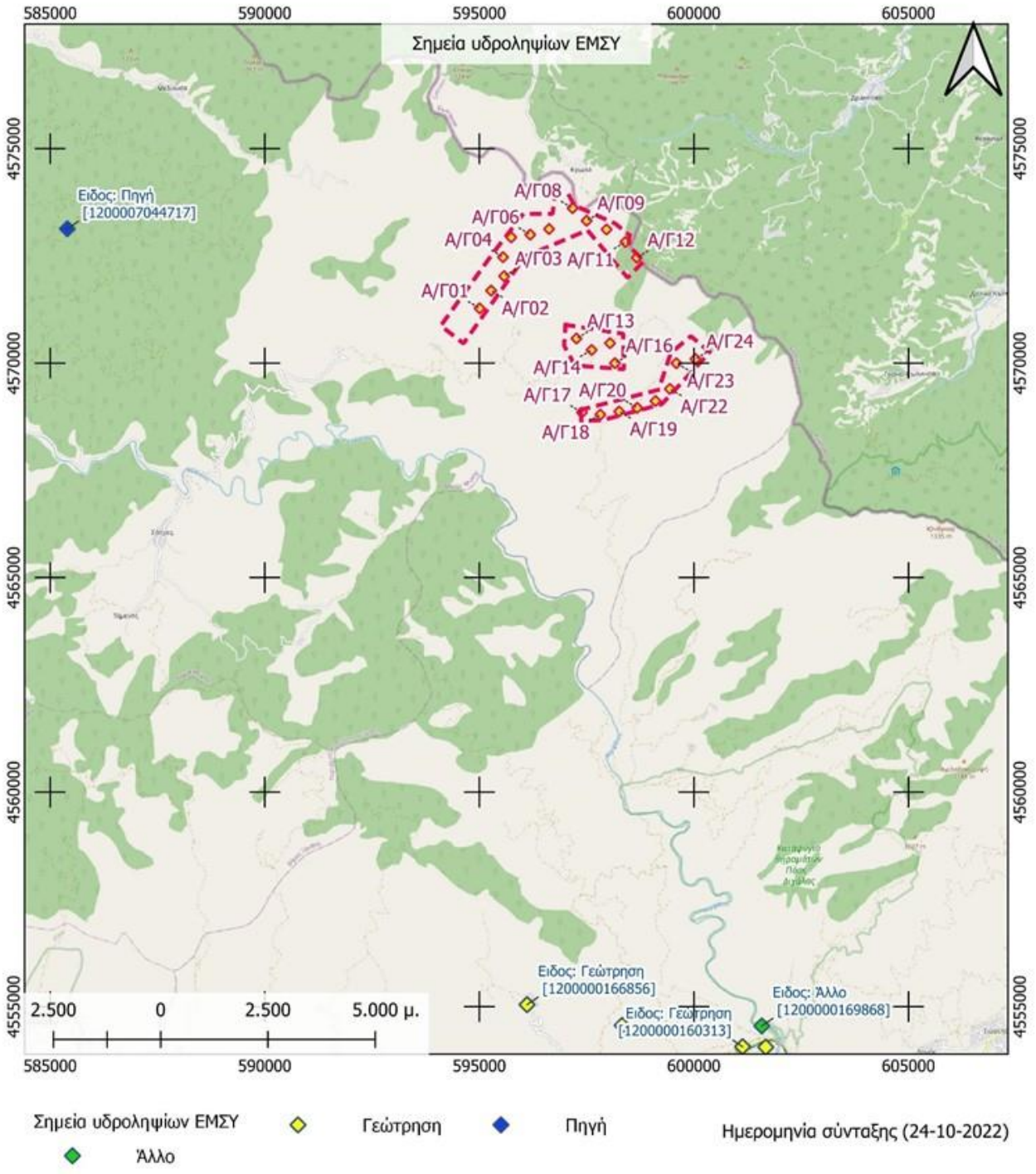
Alexandroupolis, Didymoteicho, Komotini, Soufli, Feron, Orestiada, Xanthi, Paleo Tsifliki, Filippoi, Kavala, Drama, Nea Peramos, Prosotsani, Doxato, Patamia, Thassos, Thassos, Chrysoupolis, while at the same time, projects are under construction in the settlements: Makris, Tycherou, Fanario, Sapes, Avdira, Prinos, Potos - Limenario, Paralia Ofriniou, Keramoti, Choristi.

In none of the settlements of the Municipality of Satra there is no sewerage system for sewage or rainwater. Due to its nature, the construction and operation of the ASWTP cannot affect wastewater treatment infrastructure.

On the other hand, the water supply needs of the Municipality of Myki are currently satisfied by a large number of springs, distributed throughout the mountainous area of the Municipality and by a small number of dynamic wells. However, within the study area and according to the data provided in the NMS, it was observed that there are no recorded water abstraction points within a radius of at least 5 km. Water supply to the settlements near the project is usually achieved through water tanks or water trucks.

A map showing the nearest water intake points is provided.

Map 68: Map of population change in the greater ASPHE area (source: ELSTAT census 1991, 2001, 2011)



The wider area is served by the existing electricity distribution network of the DEDDIE, while in terms of telecommunications, the study area is covered by the mobile telephony companies operating in the country. This network is constantly evolving to meet modern needs in communications and internet services. Due to its nature, the project under consideration will not affect telecommunication facilities.

8.9 Anthropogenic pressures on the environment

8.9.1 Existing sources of pollution or other pressures on the environment

The study area is characterised by a very low level of pollution. The limited anthropogenic activities mean that no significant point or non-point sources of pollution can be identified in the study area.

Furthermore, according to the 1η Revision of the Approved River Basin Management Plan of the Thrace River Basin Management Plan for the Groundwater Systems of the study area [WUA "River System - Stavroupolis" (EL120B090) and "Drosiniou" (EL120B100)] both their quantitative and qualitative status is reported as "*good*". The surface water bodies in the area are 'Xiropotamos' (EL1208R0000060070N) and Komsatos (EL1208R0000040083N), both of which are in '*good*' ecological and chemical status. Relevant information is provided in subsection 8.13.2 of this report.

In general, the natural environment in the wider study area is considered to be in excellent condition.

8.9.2 Exploitation of natural resources

In the immediate study area, even if the study radius is tripled, no form of exploitation (quarries, sand extraction) is found.

Regarding water use, as already mentioned, it is currently satisfied by a large number of springs, distributed throughout the mountainous area of the Municipality, and by a small number of dynamic wells.

No water abstraction for crop irrigation and livestock production was identified in the study area and there is no water resource exploitation for industry. Relevant water information is provided in subsection 8.13 herein.
Other types of farms involving natural resources are not found in the study area.

8.10 Atmospheric environment - Air quality

In our country there are legal limits and targets for the pollutants sulphur dioxide, particulate matter (PM_{10} and $PM_{2,5}$), nitrogen dioxide, ozone, carbon monoxide, benzene, lead, arsenic, cadmium, nickel and benzo(a)pyrene in accordance with those established in the European Union. These limits or objectives refer to both the protection of human health and the protection of ecosystems and are given in Annex IV.

The directives relating to air quality are:

- Directive 2008/50/EC on ambient air quality and cleaner air for Europe (EIA 14122/549/E103, Government Gazette 488B/30.3.11).
- Directive 2004/107/EC on arsenic, cadmium, mercury, nickel and polycyclic hydrocarbons in ambient air (HH 22306/1075/E103, Government Gazette 920B/8.6.07).
- Directive 2015/1480/EC amending certain annexes to Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council laying down rules on reference methods, data validation and the location of sampling points for the assessment of ambient air quality (KYA 174505/607, Government Gazette 1311B/13.4.17).

Response to air pollution incidents:

K.Y.A. 11824 (Government Gazette 369B/24.5.93) establishes an action plan for dealing with air pollution incidents and sets "limits of emergency measures" for the limitation of pollution in cases where, mainly due to extremely unfavourable meteorological conditions for the diffusion of pollution, an increase in pollution levels is expected.

Measures are taken when the measured values exceed or approach the emergency (alert) thresholds and at the same time there is a forecast of meteorological conditions that favour the maintenance or increase of pollution levels for the following day or the day after.

With the repeal of the above K.Y.A., the limit values for taking emergency measures were replaced with the new limit values listed in Annex XII of Directive 2008/50/EC (KYA HP 14122/549/E103, Government Gazette 488B/30.3.11).

The emergency action thresholds for dealing with air pollution are set out below.

Table 57: Limits of emergency measures

Tube	Time base	Alarm limit:
Nitrogen dioxide (NO_2)	1 hour	400 μg/m³ exceeded for 3 consecutive hours
Sulphur dioxide (SO_2)	1 hour	500 μg/m³ exceeds this value for 3 consecutive hours
Ozone (O_3)	1 hour	240 μg/m³ exceeded for 3 consecutive hours for implementation of action plans

8.10.1 Main sources of air pollutants

Air pollution is the presence in the atmosphere of any substance, in concentration or duration, which may cause adverse effects on health, living organisms and ecosystems and generally render the environment unsuitable for its intended uses. Under certain conditions, air pollution may reach levels which may create undesirable living conditions. In this case, it has become common to say that we have a "Cloud".

Main air pollutants: description, sources and effects:

Ozone:

Colourless, colourless, odourless gas, the main component of the photochemical cloud on the Earth's surface (troposphere). However, in the upper atmosphere (stratosphere), ozone has a beneficial role in absorbing the sun's harmful ultraviolet radiation.

Sources in the environment

Ozone is formed in the lower atmosphere (troposphere) as a result of a chain of chemical reactions between oxygen, volatile organic compounds (VOCs), and nitrogen oxides under conditions of intense solar radiation and high temperatures. Sources of the pollutants that contribute to ozone formation include vehicles, factories, landfills, chemical solvents, and many other small sources such as gas stations, farm equipment, etc.

Effects

Ozone in high concentrations causes significant problems for human health and the environment in which we live. It causes irritation of the respiratory tract, impaired respiratory function, dryness in the throat, chest pain, coughing, asthma, inflammation of the lungs, possible susceptibility to respiratory infections and irritation of the eyes. Ozone is also the pollutant with the most adverse effects on plants, reducing production in agricultural crops and damaging forest vegetation.

Carbon monoxide:

Odourless and colourless gas is emitted from the exhaust of petrol engines of motor vehicles and all types of engines when incomplete combustion of the fuel takes place.

Sources in the environment

Mostly petrol cars. High concentrations can be found in enclosed places such as car parks, poorly ventilated underpasses, or along roads during peak traffic periods.

Effects

It reduces the ability of the blood to carry oxygen to key tissues in the body, mainly affecting the cardiovascular and nervous systems. Low concentrations adversely affect people with heart problems and reduce physical performance in young and healthy individuals. Higher concentrations cause symptoms such as dizziness, headaches and fatigue.

Nitrogen dioxide:

It is a brownish-yellow gas with a peculiar odour. In high concentrations it gives the sky its characteristic colour in urban areas.

Sources in the environment

The use of fuels mainly in cars but also in industrial burners or power stations produces nitrogen monoxide. This is converted into nitrogen dioxide by various chemical reactions enhanced by the presence of solar radiation.

Effects

Important pollutant for acid rain generation. In high concentrations it harms people and vegetation. In children it can cause respiratory diseases. In asthmatics it causes breathing difficulties.

Suspended Particles:

Materials in solid or liquid phase that can be suspended in the atmosphere for long periods of time. Capable at high levels of changing the blue colour of the sky, due to scattering, to white or grey. Originating in deserts (Sahara, Sahelian zone), they are reddish-brown in colour.

Sources in the environment

Natural sources: volcanic activity, sea, dust from stripped soil, pollen.

Anthropogenic sources: industrial activities, cement and gypsum production, ore smelters, cars (mainly diesel vehicles and two-wheelers), fires, biomass burning, agricultural activities, construction. The contribution of cars is due to fuel combustion, wear and tear of tyres, braking

and road surface materials and re-surfacing. Smaller particles (secondary particles) are created in the atmosphere by reactions of gaseous pollutants. Secondary particulate matter can be divided into inorganic (ammonium, nitrate and sulphate having ammonia, nitrogen oxides and sulphur oxides as precursors) and organic (having volatile hydrocarbons as precursors). A series of reactions can produce organic substances that either aggregate to produce new particles or condense on existing particles. Ozone production is associated with the production of secondary particles.

Effects

The health effects depend very much on the size of the particles and their composition. The smaller the size of the particles, the deeper they penetrate the human respiratory system. In general, particles larger than 10 μm do not penetrate the respiratory system. Particles smaller than 10μm affect breathing and cause respiratory diseases. Elderly people, children and people with asthma are at high risk. They also cause damage to materials and reduce visibility. Particulate matter affects the electrical properties of the atmosphere by contributing to the formation of clouds as a condensation nucleus and affects the climate by altering the radiation balance in the atmosphere.

Sulphur dioxide:

Colourless, gaseous, odourless at low concentrations but with a strong irritating odour at very high concentrations.

Sources in the environment

Power plants, industries, central heating, oil refineries, chemical industries, paper mills.

Effects

It affects people with respiratory problems alone or in synergy with particles and causes changes in vegetation and metals. Reduces visibility and increases the acidity of lakes and rivers.

Lead, Arsenic, Cadmium and Nickel:

They are metals that are found in the atmosphere mainly in particles either in elemental form or in the form of compounds (oxides, sulphates or sulphides).

Sources in the environment

Natural resources: Lead, found in the soil as a result of rock weathering, volcanic activity, forest fires, etc. Arsenic is found in abundance in the mountainous regions of Europe in the form of sulphur compounds. Other natural sources of arsenic are volcanic activity, from which it is emitted in the form of sulphur salts or oxides. Cadmium is found in nature in small quantities mainly in minerals containing sulphur compounds of zinc, lead and copper. It also comes from vegetation, forest fires and volcanoes. Nickel, found in great abundance in meteorites, in the earth's core and to a lesser extent on the earth's surface. It is mainly found in the form of sulphur salts or oxides.

Anthropogenic sources: Lead, emitted mainly from its production processes, from the discharge of lead-containing products into the environment and from the combustion of liquid fuels and wood. Arsenic is emitted mainly as oxides, from arsenic foundries and from fuel combustion. In the past, the use of herbicides was another source of pollution. Cadmium is emitted from the

production processes of lead, zinc, copper, copper, iron or steel in the form of sulphur or sulphate salts. Also from fuel combustion in the form of oxides or in elemental form and from waste incineration in the form of chloride salts. Nickel is emitted from the combustion of fuels, from metallurgical operations for the production of nickel or steel. Nickel from these processes is emitted as sulphate or as oxides. It is widely used in industry as a catalyst.

Effects

Lead mainly causes anaemia. Arsenic mainly affects the upper respiratory and cardiovascular systems and also causes an increase in blood pressure. It is also likely to cause lung cancer. Cadmium mainly affects the kidneys. It is also classified as a carcinogen (causes lung cancer). Nickel is not considered a carcinogen. It is likely to cause skin diseases.

It should be stressed that these metals affect health mainly through the food chain if contaminated and less so through inhalation.

Polycyclic Aromatic Hydrocarbons (PAHs):

They are organic chemical compounds containing carbon and hydrogen. They consist of three or more condensed benzene rings and are found mainly in the form of vapours or particles. The most typical compound of this category is benzo(a)pyrene.

Sources in the environment

Natural sources include fires and volcanic activity. Anthropogenic sources include industry (coke, aluminium and wood processing), domestic heating when wood and coal are used and vehicles, especially those using oil as a fuel.

Effects

Some of the Polycyclic Aromatic Hydrocarbons, notably benzo(a)pyrene, have been classified as carcinogenic compounds.

Benzene:

A chemical compound in liquid form consisting of carbon and hydrogen with a characteristic odour. In the atmosphere it is present in the form of vapours because its boiling point is low.

Sources in the environment

Benzene is emitted into the atmosphere mainly from anthropogenic activities. The main source is petrol-driven vehicles, while other sources are industry (refineries, chemical industry), fuel handling and domestic heating (biomass combustion).

Effects

Benzene causes blood diseases and is classified as a carcinogenic compound.

Atmosphere quality limits:

Table 58: Limit values for sulphur dioxide

	Limit value

Average hourly value, not to be exceeded more than 24 times a year	350μg/m^3
Average daily value, not to be exceeded more than 3 times a year	125μg/m^3

Alarm limit	Hourly value greater than 500 μg/m^3 for three consecutive hours

Table 59: Limit values for PM particulate matter$_{10}$

	Limit value
Average daily value, not to be exceeded more than 35 times a year	50μg/m^3
Average annual price	40μg/m^3

Concentration levels	51-75, 76-100, 101-150, >150μg/m^3 24-hour average

Table 60: Limit values for particulate matter $PM_{2,5}$

	Limit value
Average annual price	25μg/m^3

Table 61: Limit values for nitrogen dioxide

		Limit value
Average hourly value, not to be exceeded more than 18 times a year		200μg/m^3
Average annual price		40μg/m^3
Alarm limit	Hourly value greater than 400μg/m^3 for three consecutive hours	

Table 62: Limit values for lead

	Limit value
Average annual price	0.5μg/m^3

Table 63: Limit values for ozone

		Limit value
Update limit	Average hourly price	180μg/m^3
Alarm limit	Average hourly price	240μg/m^3

Price - goal for the protection of human health	Maximum daily 8-hour average, which must not be exceeded more than 25 times per year, averaged over a period of 3 years	120μg/m^3

Table 64: Limit values for carbon monoxide

	Limit value
Maximum daily eight-hour value	10mg/m^3

Table 65: Limit values for benzene

	Limit value
Average annual price	5μg/m^3

Table 66: Target values for arsenic, cadmium, nickel and benzo(a)pyrene

	Limit value			
	male	cadmium	nickel	benzo(a)pyrene
Average annual price	6μg/m^3	5μg/m^3	20μg/m^3	1μg/m^3

8.10.2 Existing ambient air quality

In addition to the air quality assessment based on the National Air Pollution Monitoring Network, an assessment of air quality for the whole country was carried out in the framework of the project "Updating the cartographic representation of air pollution through the recording of air emissions from sources and development of an appropriate computer tool" within the Operational Programme Environment & Sustainable Development of the NSRF. This was based on indicative measurements at sites beyond the fixed measurements of the EDPR and for additional pollutants than those measured at EDPR sites. The assessment was extended to the rest of the country using simulation techniques.

The values of the emissions of various pollutants are presented below. The emissions were calculated using 2012 data. The tables colour-code the air quality in relation to the limit values (LV) and upper and lower assessment thresholds (UAT, LAT) established by the relevant legislation. Where LV for ozone, metals and benzo(a)pyrene represents the target value. The tables show concentrations that are photochemical model results and are available in GIS format (http://mapsportal.ypen.gr/).

Table 67: Annual average of pollutant concentrations

Tube	Limit value	W/T (1, 2,….,24)
Benzene (Benzene) - Annual average price	<2 μg/m^3 (LAT) 2 μg/m^3 (LAT) -3.5 μg/m^3 (UAT)	0,057

	3.5 μg/m³ (UAT) -5 μg/m³ (LV) >5 μg/m³ (LV)	
Benzo(a)pyrene (BaP) - Annual average value	<0.4 ng/m³ (LAT) 0.4 ng/m³ (LAT) - 0.6 ng/m³ (UAT) 0.6 ng/m³ (UAT) - 1 ng/m³ (LV) >1 ng/m³ (LV)	0,18
Cadmium (Cd) - Annual average value	<2 ng/m³ (LAT) 2 ng/m³ (LAT) - 3 ng/m³ (UAT) 3 ng/m³ (UAT) - 5 ng/m³ (LV) >5 ng/m³ (LV)	0,005
Lead (Pb) - Annual average value	<0.25 μg/m³ (LAT) 0.25 μg/m³ (LAT) - 0.35 μg/m³ (UAT) 0.35 μg/m³ (UAT) - 0.50 μg/m³ (LV) >0.50 μg/m³ (LV)	0,000013
Nickel (Ni) - Annual average price	<10 ng/m³ (LAT) 10 ng/m³ (LAT) - 14 ng/m³ (UAT) 14 ng/m³ (UAT) - 20 ng/m³ (LV) >20 ng/m³ (LV)	0,06
Arsenic (As) - Annual average value	<2.4 ng/m³ (LAT) 2.4 ng/m³ (LAT) - 3.6 ng/m³ (UAT) 3.6 ng/m³ (UAT) - 6 ng/m³ (LV) >6 ng/m³ (LV)	0,0011
Particulate matter 10 (PM_{10}) - Annual average	<20 μg/m³ (LAT) 20 μg/m³ (LAT) -28 μg/m³ (UAT) 28 μg/m³ (UAT) - 40 μg/m³ (LV) >40 μg/m³ (LV)	19,9
Particulate matter 2.5 ($PM_{2,5}$) - Annual average	<12 μg/m³ (LAT) 12 μg/m³ (LAT) -17 μg/m³ (UAT) 17 μg/m³ (UAT) - 25 μg/m³ (LV) >25 μg/m³ (LV)	18,5
Nitrogen dioxide (NO_2) - Annual average value	<26 μg/m³ (LAT) 26 μg/m³ (LAT) -32 μg/m³ (UAT) 32 μg/m³ (UAT) - 40 μg/m³ (LV) >40 μg/m³ (LV)	08
Carbon monoxide (CO) - Maximum annual value of maximum daily 8-hour maximum	<5 μg/m³ (LAT) 5 μg/m³ (LAT) -7 μg/m³ (UAT) 7 μg/m³ (UAT) - 10 μg/m³ (LV) >10 μg/m³ (LV)	0,211

Colour gradation	Within limits	Off limits

The table below shows the number of exceedances of the daily limit value of air pollutants and is the result of the photochemical model.

Table 68: Number of exceedances of the daily limit value for air pollutants

Tube	Day limit	Days of excess
Sulphur dioxide (SO_2) - Daily limit value of 125 μg/m^3 exceeded	3 days	0
Sulphur dioxide (SO_2) - Exceedances of hourly limit value 350 μg/m^3	24 days	0
Particulate matter 10 (PM_{10}) - Daily limit value of 50 μg/m^3 exceeded	35 days	18
Ozone (O_3) - Maximum daily 8-hour value - Limit value exceeded 120 μg/m^3	25 days	81
Nitrogen dioxide (NO_2) - Exceedances of the hourly limit value of 200 μg/m^3	18 days	0

Colour gradation	Within limits		Off limits

From the above, it can be concluded that there are no exceedances of the annual mean values in the study area.

Finally, for Ozone (O_3) there were exceedances of the limit value of 120 μg/m^3 (maximum daily 8-hour value). The exceedance is observed in the whole country.

At this point it should be noted that the activity under study, due to its nature, cannot have a negative impact on the atmospheric environment of the area. It should be noted that the RESIDUES do not produce any type of pollutant during their operation. On the contrary, the energy produced from RES substitutes part of the electricity produced from fossil fuels and therefore has an indirect, positive effect on the quality of the air environment both in the immediate area and in the country as a whole.

In addition to the air quality assessment based on measurements carried out by the National Air Pollution Monitoring Network (NAPN), an air quality assessment has been carried out for the whole country. In particular, an inventory of air pollutant emissions from all sources has been carried out for the whole country at a 2km x 2km resolution. Based on the emissions, using simulation techniques (CAMx), a calculation of air pollutant concentrations has been carried out using the same spatial resolution. The simulation results of air pollutants from Central Heating are presented in the table below, while in the region there are no simulation results from Agricultural Activities / Biomass Combustion, Agricultural Activities / Fertilizer Use, Industries, Road Transport and along National Roads due to the significant distance from such activities.

Table 69: Air emission values in the project area by activity .

Type of pollutant	MM	from Central Heating
Emissions of Particulate Matter 10 (PM)$_{10}$	kg/y	418
Emissions of Particulate Matter 2.5 (PM)$_{2,5}$	kg/y	406
Arsenic emissions (As)	kg/y	
Benzo(a)pyrene (BaP) emissions	kg/y	
Cadmium (Cd) emissions	kg/y	
Lead (Pb) emissions	kg/y	
Carbon monoxide (CO) emissions	kg/y	2197
Nickel (Ni) emissions	kg/y	
Emissions of Nitrogen Oxides (NOx)	kg/y	89,4
Mercury emissions (Hg)	kg/y	
Sulphur dioxide emissions (SO)$_2$	kg/y	35,8
Non-Methane Volatile Organic Compound Emissions (NMVOC)	kg/y	329,2

Colour grading according to the charge from the smallest to the largest					

8.10.3 Changes and trends over time

No change in the air quality data in the study area is apparent given the absence of polluting activities, since, as stated in subsection 8.7.3 of this report, engagement in primary sector activities is a key wealth generating factor for local residents. At the same time, it is estimated that the fleet of vehicles used for transport and travel will continue to be renewed in the future and replaced by new, less polluting vehicles.

The activity under study is not likely to cause changes in the atmospheric characteristics of the area, as it is not a source of air pollutants. On the contrary, the operation of the project under consideration will lead to a reduction in emissions from polluting power plants (e.g. steam power plants) and therefore it can be said that its presence will have a rather positive effect on the evolutionary course of air pollutant concentrations in the atmosphere.

The Regional Plan, as has been said, provides for the strengthening of the primary sector. The absence of secondary sector activities in the wider study area and similarly the absence of tourism development planning in the wider study area (despite the potential) are indicators of the maintenance of existing conditions and the scenario of dramatic changes in air quality is removed.

8.11 Acoustic environment and vibration

8.11.1 Indication of the main sources of environmental noise or vibration in the study area

The sources of noise emissions in the study area are very limited as no significant anthropogenic activities are identified.

In the wider area sources of noise emission are the usual activities of residents (agricultural activities, various works), noise from transport - movement (passing vehicles, trucks transporting products - raw materials, etc.). No other sources of noise are identified in the area.

In addition, no vibration sources are identified in the study area.

8.11.2 Assessment and evaluation of the existing quality of the acoustic environment in the study area, based on either available data or measurements around the project site

First of all, it is noted that there are no noise measurements available for the area under study, but in this case, taking into account the nature of the area and the absence of significant anthropogenic activities, it is estimated that the acoustic environment can be described as far from being polluted. The accidental sources of nuisance to the acoustic environment are almost exclusively due to vehicle traffic on forest roads and the rural road network. The project under consideration cannot affect the acoustic environment of the area in any way, as it is located far from settlements and produces very low noise levels, as shown by the isothermal curve map (see subsection 4.4).

8.11.3 Changes and trends over time

Existing noise levels are not expected to change substantially in the near future. Also, no population growth is expected in the surrounding area to cause any major changes in the acoustic environment. The operation of the project under consideration is unlikely to affect future trends in the acoustic environment in the area beyond the duration of the project. Any anthropogenic activity developed in the study area is expected to respect the established noise limits as derived from the Greek legislation.

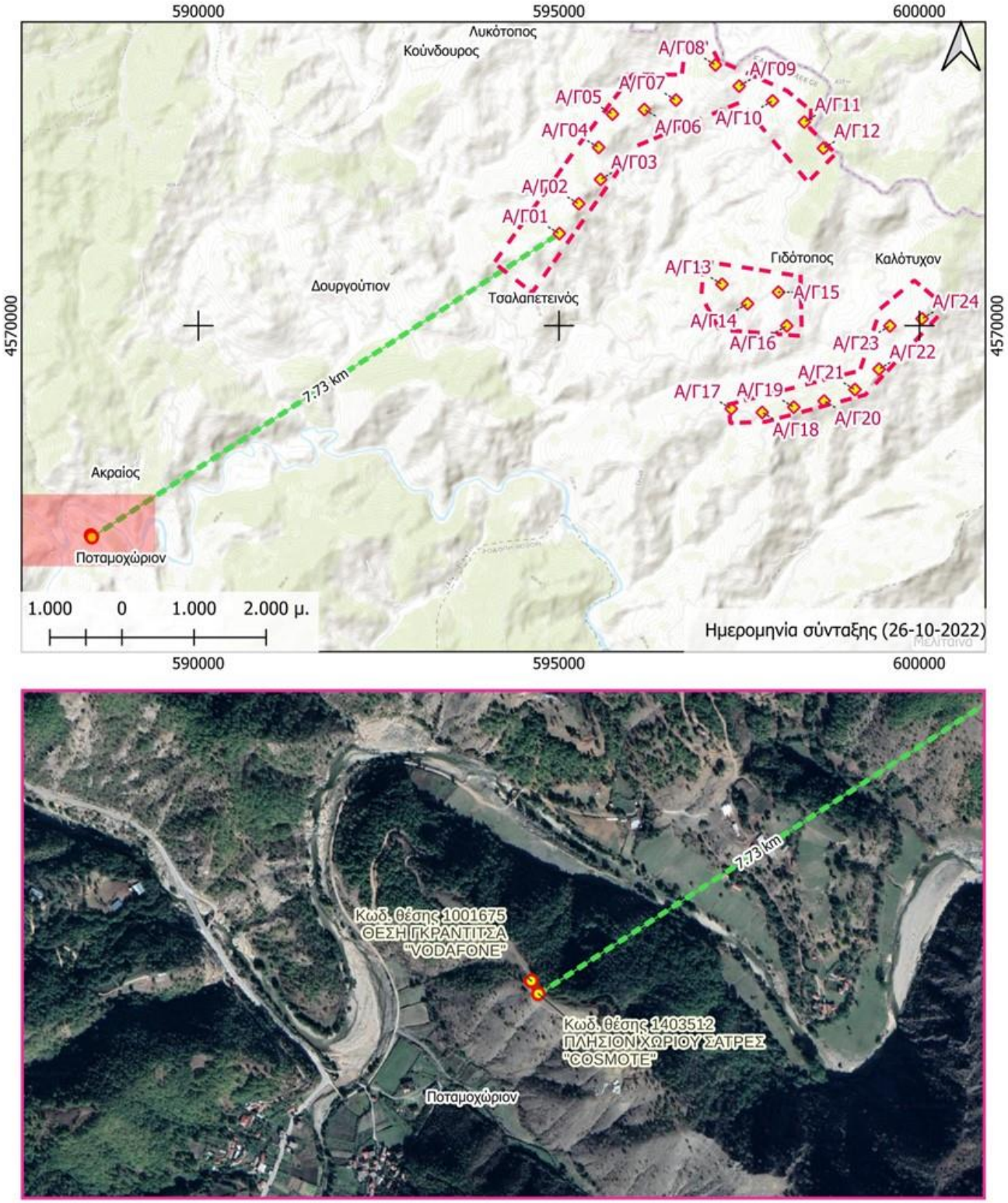
8.12 Electromagnetic fields

8.12.1 Main sources of electromagnetic radiation in the study area and in the vicinity of the project area

According to the data of the Greek Atomic Energy Commission (EEAE) and the National Telecommunications Commission (NTC), the Greek Atomic Energy Commission (NAC) Post (EETT) within the boundaries of the study area no mobile phone antennae sites are identified. However, 2 antenna sites are identified further afield at a distance of > 7km as shown on the map below.

Below is this map.

Map 69: Map of the mapping of antennas in the wider area (Source EETT).



Based on the data from the National Observatory of Electromagnetic Fields (https://eeae.gr/) and the nearest measuring station, which is located in Orestiada, the indicative average values for measurements in January 2020 to 16-09-2022 are presented below in the following table.

Table 70: Weekly data and measurements of electromagnetic radiation from the Xanthi fire station (https://eeae.gr/).

Electric Field Intensity (recording date 30/10/22)			
Frequency sub-range (MHz)	Stricter Subarea Exposure Limit (V/m)*	Average Value (V/m)	Maximum Value (V/m)
Broadband Area	21,7	1,38	1,41
EGSM-900	31,8	0,32	0,35
EGSM-1800	45,1	0,6	0,63
UMTS	47,2	0,27	0,28
Station Information			
Address	Hydra 12		
City of	Xanthi		
County	Xanthi		

In addition to the above and according to the data of on-site measurements by EEAE at the antennas closest to the study area, no exceedances of the above exposure limits were found.

Also the interconnection lines with the network of DEDDIE and ADMIE emit electromagnetic radiation. However, underground lines drastically reduce the intensity of electromagnetic fields compared to overhead lines. Medium voltage overhead transmission lines emit low frequency electromagnetic radiation.

As far as the project under consideration is concerned, from a radiation point of view, the only subsystems emitting low-level electromagnetic radiation are the generator, the M/S and the Medium Voltage incoming energy collection panel. The electromagnetic field from the generator is extremely weak and is confined to the engine shell which in this case is located 135m above the ground. Also the M/S is located inside the tower of the genset. In general, the emitted electromagnetic radiations are very low and certainly negligible in places where access is free.

8.12.2 Assessment and evaluation of the existing electromagnetic background situation

Taking into account the published measurements by EEAE and the measurement data of the stations in Xanthi, no exceedances of the limits are detected:

- of the electric field intensity (V/m),
- the magnetic field strength (A/m) and
- the power density (W/m).^{2}

With regard to the project under consideration, taking into account its nature, no substantial change in the existing electromagnetic background situation is expected.

8.13 Water

8.13.1 Management plans

8.13.1.1 Water Management Plan

For the water district of Thrace (WR 12 - GR 12), a River Basin Management Plan was approved on 31-07-2013 by the Special Secretariat for Water, while on 29-12-2017 the 1η revision of this Management Plan was issued (Decision no. οικ. 900 - Government Gazette 4680/B/29-12-2017).

In the SWMP, a programme of basic and complementary measures has been established to achieve the objectives of rational management, protection and "good status" of the water resources of the Thrace Water Region.

The basic measures are divided into two subgroups of measures:

- the first (Group I) concerns measures needed to implement Community legislation on water protection (bathing water, drinking water, protection against nitrate pollution, urban waste water treatment, etc.).
- the second (Group II) concerns measures resulting from the obligation to implement Directive 2000/60/EC and includes the upgrading of the organisational function of the Water Improvement Organisations and Municipal Water Supply and Sewerage Enterprises, education and training actions for operators, drafting/updating of general water supply plans, etc.

Complementary measures may include, legislative and regulatory measures, economic or fiscal measures, negotiated environmental agreements, emission controls, codes of good practice, restoration and rehabilitation of wetland areas, control of abstractions, in particular to address over-pumping, etc.

The above mentioned measures are presented in detail in Tables 9-1 & 9-2 of subchapter 9.2 "*PROGRAMME OF BASIC AND ADDITIONAL MEASURES*" of the Management Plan (Government Gazette 4680/B/29-12-2017).

In addition, according to the Water Management Plan, a Register of Protected Areas (PPA) was created. This register includes all the water bodies identified by Annex V of Decree 51/2007.

The Register of Protected Areas includes, in accordance with Annex V of PD 51/2007, all the following types of areas:

Table 71: Areas included in the MPA

Types of areas	Inclusion of the study area in the MPA	
	YES	NO
α) Areas intended for the abstraction of water for human consumption, in accordance with Article 7 of PD 51/2007 (Article 7 of Directive 2000/60/EC),	☐	☒
(b) Areas designated for the protection of aquatic species of economic importance,	☐	☒
(c) Water bodies designated as recreational waters, including areas designated as bathing waters,	☐	☒
(d) Areas sensitive to the presence of nutrients, including areas identified as vulnerable zones, and areas identified as sensitive, (Project Section)	☐	☒
(e) areas designated for the protection of habitats or species, where the maintenance or improvement of water status is important for their protection, including the relevant sites of the NATURA 2000 programme - Project Section (Line YT)	☒	☐

Therefore, the project site falls within the MPA as it is located in an area designated for the protection of habitats or species (SPA & Natura 2000).

(see map in subchapter 5.2.3).

8.13.1.2 Compatibility check

The implementation of the project under study will not affect in any way the environmental objectives set in the SWMP for surface and groundwater, especially for the Xanthi - Xiroremma river basin and the "Stavroupolis River System" and "Drosinio" water bodies where the entire project is located. In this respect, the operation of the project does not conflict with the SWMP.

8.13.1.3 Flood Risk Management Plan

First of all, it is noted that for the Thrace Region, a River Basin Flood Risk Management Plan (RBMP) was approved by the Resolution no. YPEN/GREGY/41394/334 (Government Gazette 2688/B΄/06-07-2018) and also a special SWMP has been approved for the Evros River Basin (No. YPEN/GREGY/41402/337 - Government Gazette 2639/B΄/05-07-2018).

The Flood Risk Management Plans (FRMPs) of the respective RS include:

(a) the key objectives for flood risk management,

(b) the measures and priorities necessary to achieve these objectives; and

c) the findings of the Preliminary Flood Risk Assessment with the Potentially High Flood Hazard Zones (PRFZs) and the Flood Hazard Maps and Flood Risk Maps. These maps were prepared for 2 main scenarios: a) inland flooding (river flows and lake level rise) and b) sea flooding (considered

in the SSSs where the mean sea level rise is estimated to be greater than 1.0 m). The flood risk maps show the zones that could be flooded under the above scenarios for the considered return periods (T=50, 100, 1000 years), while the flood risk maps describe the potential negative impacts associated with low/medium/high probability floods and the corresponding negative impacts on the population, economic activities, the environment and cultural heritage within the inundation zones, as derived from the hydraulic analysis again for return periods of 50, 100 and 1000 years respectively.

The study area is located outside the ZFZ EL12APSFR001 "*Xanthi-Komotini Plain (low zones of the rivers Nestos, Kosynthos, Komsatos, Aspropotamos, Bosbozi, Filiouri and the riparian areas of Lake Vistonida*".

According to the Management Plan in the EL12RAK0001 WFD the main causes of flooding are river overflows and flooding due to local storms and sea level rise. However, the predominant flooding mechanisms in the RPA are natural overflow and flow obstruction.

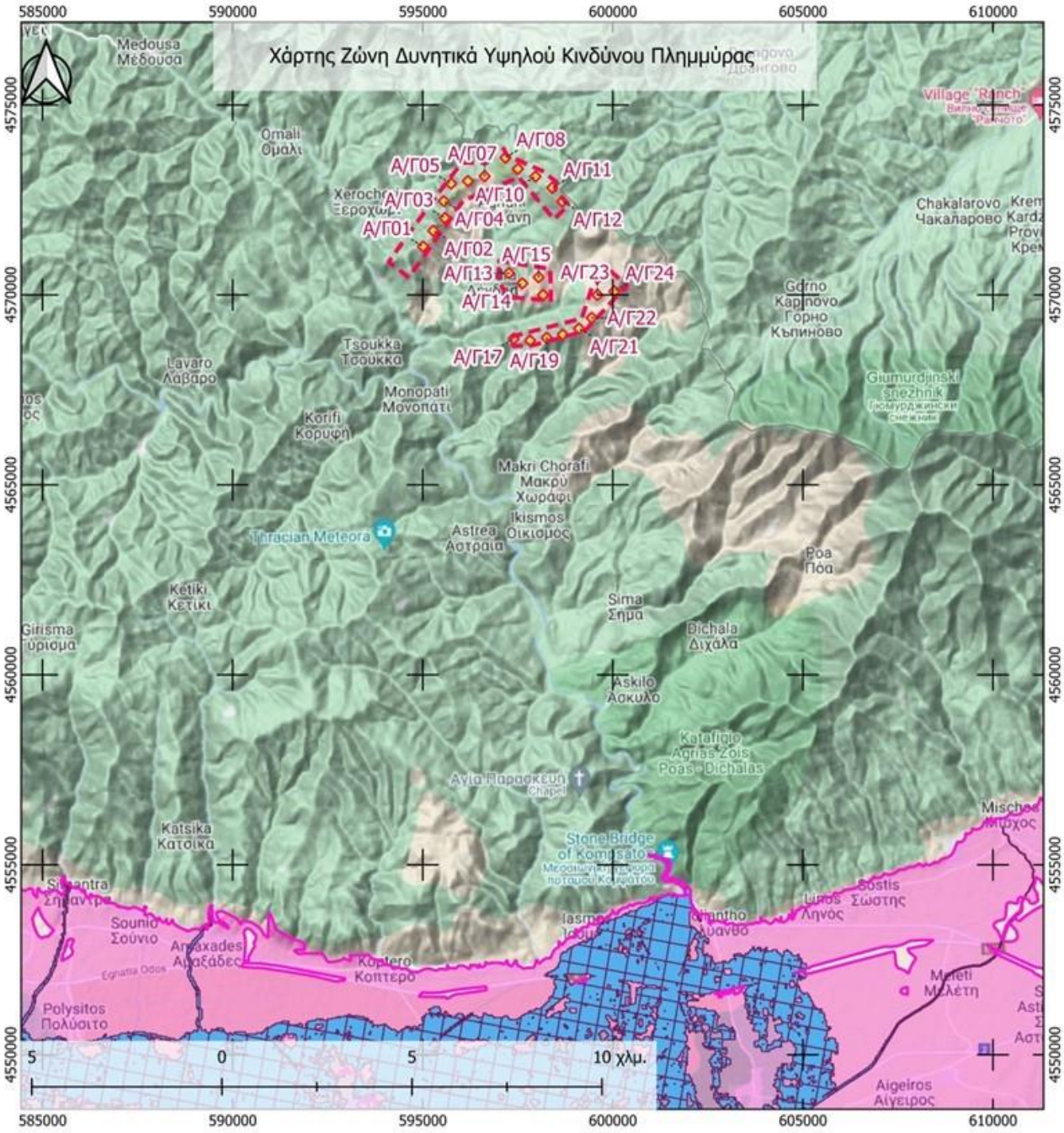
What is of particular importance is that the area where the proposed installation of this ESDP is located is outside of the inundation areas for the considered return periods T = 50, 100 or 1000 years, as depicted in the Flood Risk Maps accompanying the SWMP. It is noted that the study area is not at risk of flooding from the sea.

Compatibility check:

As described in the Flood Risk Management Plan and the data presented in the Flood Risk Maps, no flooding events occur in the study area and no flood risk is apparent.

A new map is attached.

Map 70 Siting of the ESDP in relation to the WFD.



Ζώνη Δυνητικά Υψηλού Κινδύνου Πλημμύρας Αναθεώρηση

Πεδιάδα Ξάνθης - Κομοτηνής (χαμηλές ζώνες ποταμών Νέστου, Κόσυνθου, Κομψάτου, Απροποτάμου, Μποσμπόζη, Φιλιουρή και παρόχθιες εκτάσεις λίμν
EL12APSFR001
GR12RAK0001

Χάρτες Κινδύνου Πλημμύρας WFS

ΥΔ12 – Πλημμυρική Ζώνη περιόδου επαναφοράς Τ=50 ετών

8.13.2 Surface water

8.13.2.1 Description of the natural or artificial surface hydrographic network in the study area

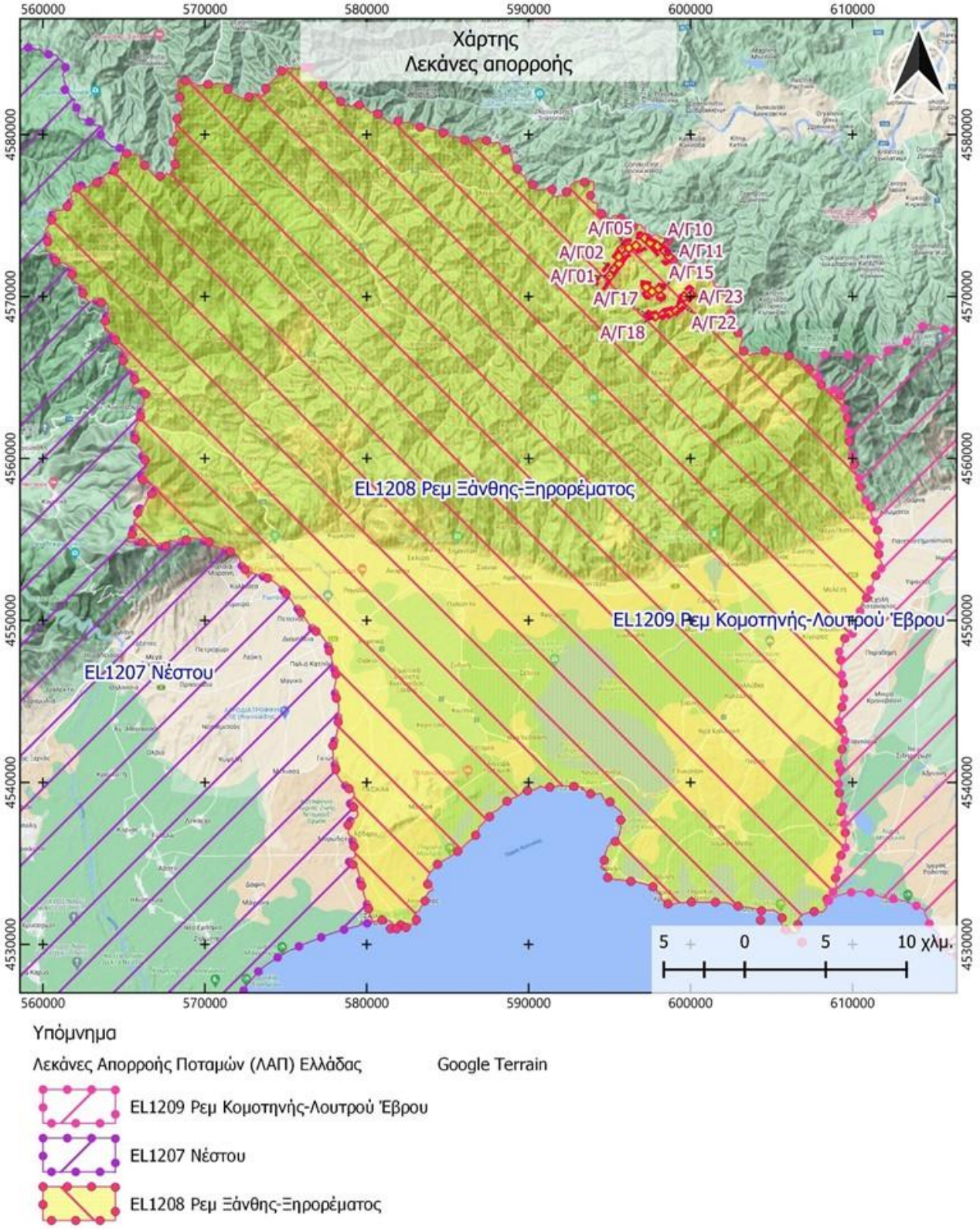
The WR 12 consists of five (5) river basins. These basins and their physical characteristics are presented in the following table, as well as the geographical area of the basins of the Thrace WFD.

Table 72: River basins of the Thrace WR [GR12]

Code	Name of the basin	Land area (km)^2	Altitudes (m)		
			Medium	Maximum	Minimum
EL 1207	DESTOU	2.975,5	606	2200	0
EL 1208	P. XANTHI - XEROREMMA	1.662,6	363	1822	0
EL 1209	R. COMOTINI - BATH OF EVROS	1.958,3	289	1459	0
EL 1210	EVRU	4.080,8	175	1202	0
EL 1242	THASOS - SAMOTHRACE	562,8	347	1600	0
EL 12	TOTAL S.D. 12	11 240			
Coastal PS.		731			

In this case we focus on the catchment area R. XANTHIS - XIROREMATOS El 1208.

Map 71: Extract from the map of the LAP of the Thrace region



The Xanthi River - Xerorema LAP (EL1208) consists mainly of the sub-basins of the Kosynthos and Komsatos rivers (where the study area is located), as well as the rest of the Xanthi R.E. which drain through small streams directly to the sea. It also includes the sub-basin of the Vistonida River and the surrounding coastal transitional water bodies.

The nearest surface water system is the river Xeropotamos (EL1208R0000060070N) which belongs to the category of Natural Water Bodies (NHB) and a branch of it is located in the northern polygon (where the W/T 1 to 12 are located) and in particular in the south-southwest of W/T 1 at a distance of > 1.2 km. and another branch between the northern and central polygon (W/T 13 to 15) at a distance of about 780 m from W/T 13. In the southern polygon (W/T 17 to 24) and at a distance of > 1.2 km southeast of W/T 21, the river Komsatos (EL1208R0000040083N) is located, which also belongs to the category of Natural Water Bodies (NHB).

According to the data from the installed measuring stations of the National Water Monitoring Network, both water bodies are in "*good*" ecological and "*good*" chemical status.

The following is an extract from Table 4.3 "*River water bodies and new typology, according to the European Decision 2013/480/EC and MED GIG, per River Basin Management Plan (RBMP) of the Thrace WFD (EL12)*" from the 1st Revision of the River Basin Management Plan of the Thrace WFD (EL12).

Table 73: River water bodies of the Thrace WFD EL12.

a/a	Name of PS	HS code	Cat.	Length (m)	Direct catchment area (km)^2	Athletic catchment area (km)^2	Average annual discharge (h m)^3	Press
68	DRY.	EL1208R0000040083N	PHYS	6,41	16,25	16,3	5,4	R-M1
69	KOMPSATOS	EL1208R0000040083N	PHYS	13,92	46,76	133,3	44,27	R-M1

8.13.2.2 Description of existing uses

For the above surface water bodies and within the study area no water abstractions were identified, but more widely in a branch of the Komsato river with code EL1208R0000010067N water abstractions for water supply purposes amounting to 1.8 million m^3 year.

8.13.2.3 Presentation of available quantitative and qualitative data on the main flows and waters affected by the project or activity

In the examined LAP Xanthi - Xerorema (EL1208), the total annual loads resulting from the sum of the individual point pressures are 356.9 tn/year BOD, 84.8 tn/year N and 26.1 tn/year P, while the corresponding diffuse loads are 1.736.5 tn/year BOD, 704.3 tn/year N and 30.7 tn/year P. The point pressures of BOD and N and P loads are mainly from sewerage networks and to a lesser extent from livestock farming. Correspondingly, diffuse pressures are mainly from pastoral farming and much less from urban wastewater and agricultural activity.

In the study area, as mentioned above, the surface water bodies Komsatos and Xeropotamos are located, whose quantitative and qualitative characteristics are not affected in any way by the operation of the project under study. Moreover, the qualitative and chemical status of the two water bodies is classified as '*good*'.

The operation of the project does not affect and does not contradict the provisions and measures of the water management plan and clearly does not increase the existing pressures on the Arda

River (pumping for irrigation, hydrological modification, etc.). This paragraph is therefore not developed further.

8.13.2.4 Available temporal variations and trends in the evolution of surface water quality and quantity

The project under study is not expected to affect any surface water bodies subject to the conditions and restrictions that will also be imposed by the EIS. Therefore, it is considered that no further analysis of this subchapter is required.

However, it is reported that the river basin water bodies of the EVRU River Basin are not at risk (*NR) of* not achieving the objectives set by the RBMP at a rate of more than 78.6% (RBMP Table 5-30 Risk assessment statistics). In all other respects, the provisions of the Water Management Plan apply.

8.13.3 Groundwater

8.13.3.1 Description of the hydrogeological characteristics of the area

The study area is located between the Groundwater System (GSS) "River System - Stavroupolis" (EL120B090) and "Drosinio" (EL120B100). Both GSS are in good quantitative and good chemical status. The total area of the "Stavroupolis River System" is 2.426,54 km^2 and of the "Drosinio" 1.807,04 km^2 .

Very small-scale point sources of pollution from urban wastewater and from livestock and quarrying activities and small-scale diffuse sources of pollution from urban wastewater are found in the WFDs.

No quality parameters were found to exceed the quality standards - Maximum Acceptable Prices (MAPs).

8.13.3.2 Description of the existing uses, institutional and actual, of groundwater resources

The groundwater of the WSS in terms of annual supply and abstraction is as follows:

Table 74: Annual supply and withdrawals from the EL120B100

GIS code	EL120B100
Name of the GIS	Drosinium system
Average annual supply (10 m)[63]	~96
Average annual withdrawals (10 m)[63]	~43,72
Water supply (10 m)[63]	~10,1
Irrigation (10 m)[63]	~33
Livestock (10 m)[63]	~0,62
Industry (10 m)[63]	-

No relevant data are recorded in the RIS River System - Stavroupolis" (EL120B090) but it is estimated that the average annual supply amounts to 192x10^6 m^3 while the annual withdrawable

quantities of water for the coverage of water supply, irrigation and livestock needs amount to $12.34x10^6$ m^3.

In any case, both water bodies maintain a positive water balance (supply - discharge ratio) and the project under study will not affect in any way their qualitative and quantitative characteristics.

8.13.3.3 Presentation of available quantitative and qualitative data on the main groundwater aquifers and those affected by the project or activity

As stated, the qualitative and quantitative situation of both SSSs is characterised as "*good*" with a surplus balance.

On the other hand, there is no apparent risk of pollution of the groundwater body from the operation of the project.

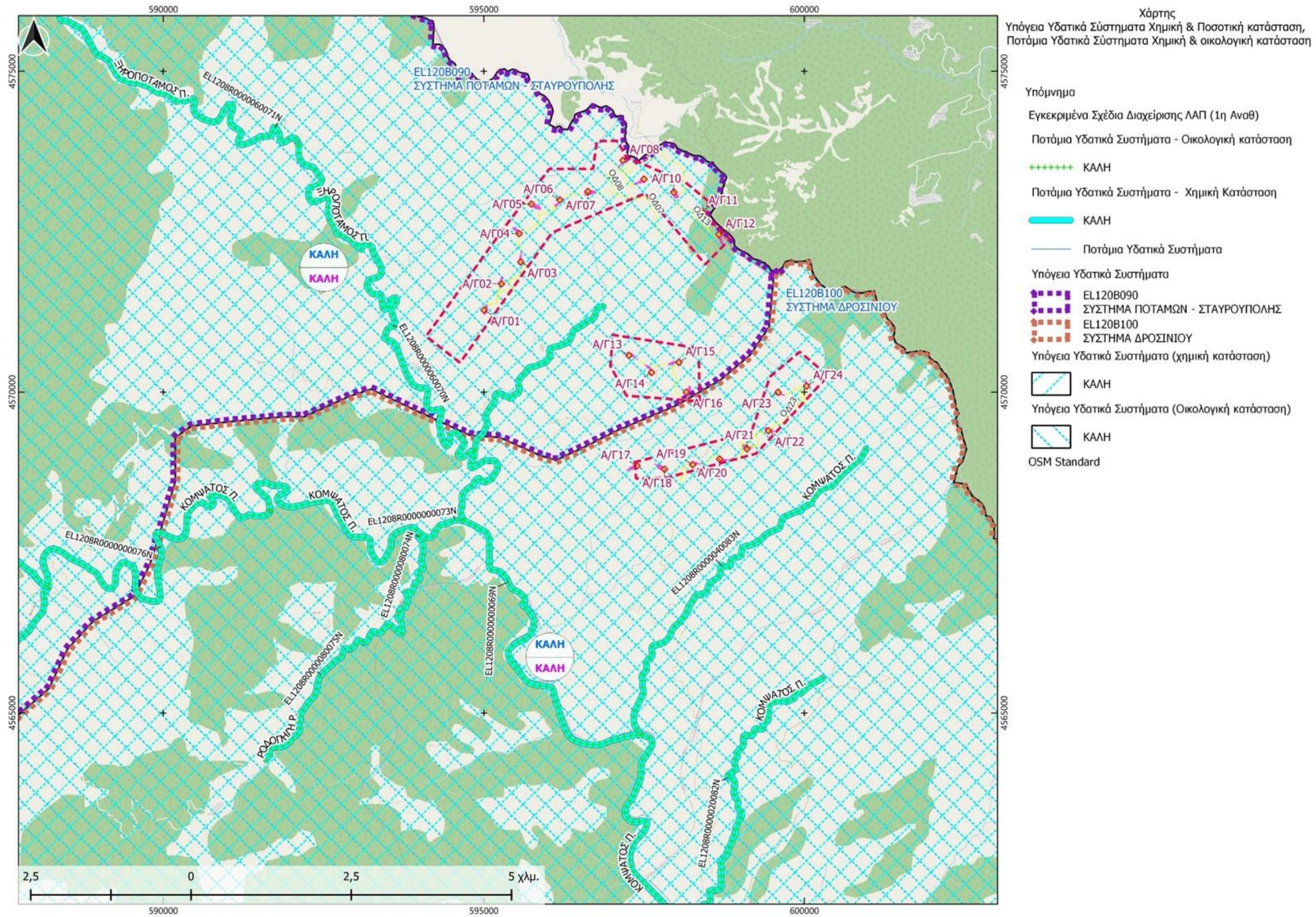
8.13.3.4 Available temporal variations and trends in groundwater quality and quantity

For all the WSS, there is no trend towards water degradation. It is noted that during the period between the first adoption of the SWMP for the Thrace WFD (year 2013) and its 1η revision (year 2017) no changes in the quantitative and qualitative data of these WFDs occurred.

Apart from those mentioned in the approved Water Management Plan, no other reliable data, to be presented, have been identified concerning the changes and trends in groundwater quality and quantity over time. In any case, the activity under study does not affect the quantitative and qualitative characteristics of groundwater and therefore this subchapter is not developed further.

A map showing both surface water bodies and WFDs with corresponding labels for ecological and chemical status and quantitative and qualitative status follows.

Map 72: Groundwater and surface water bodies - Status.



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

In any area, disasters and/or accidents may occur or occur due to either natural or technological/man-made causes.

Natural disasters are mainly defined as Severe Storms/Winds, Extreme Temperatures, Fires, Water Scarcity, Drought, Floods, Avalanches, Landslides, Earthquakes, Volcanoes and Tsunamis.

The impact of natural disasters is mainly in terms of economic losses, human casualties and ecosystem degradation.

Regarding the risk of storms/floods and winds, as with any other meteorological phenomenon, it depends on the specific local conditions of the area and is related to factors such as gas mass transport, humidity, temperature changes, etc. Floods and storms are the most important natural hazards in Europe in terms of economic losses. The factors that contribute to the intensity of their impact on the affected area are related to the intensity, duration, surface conditions, morphology and slope of the catchment area. In particular, with regard to the study area, the area does not belong to the Flood Zone (T=50, T=100 T=1000), according to the River Basin Flood Risk Management Plan of the Thrace River Basin Management Area EL12. The topography of the area of the planned works has sufficient slopes and orientation to favour the smooth drainage of surface water. On the other hand, as regards the wind potential of the area, it is precisely this parameter that led to the proposal to install this wind farm.

Wildfires, especially forest fires, are the main threats to natural ecosystems, property and human lives in Greece. The main causes include agricultural activities such as the burning of dry grass, the dumping of burnt cigarettes, the dumping of waste in forests and woodlands and the burning of such waste as a management method, malicious acts (arson), accidents (traffic, industrial, mechanical equipment breakdowns, etc.). The wider study area has potential vulnerability to fire but clearly fire is not expected to be caused by the operation of the ASPHE.

Droughts are classified as extreme climatic phenomena of a place, occurring when precipitation falls to levels significantly below the regional average or below a critical value that determines the onset of drought. As a consequence, water scarcity, i.e. a shortage or insufficiency of water, occurs. Water scarcity also occurs due to the non-rational use of water resources, but also due to a sharp increase in water demand. In the study area, as in Thrace in general, no particular problems of this phenomenon can be identified.

Significant risk of avalanches and landslides is not expected in the study area, as the given morphology of the terrain, vegetation and the geology present reduce the likelihood of occurrence. Landslide events may however occur in areas with steep slopes, but their extent is not expected to result in general assessable impacts on the man-made and natural environment.

Regarding the risks that may arise from the occurrence of earthquakes, volcanic eruptions or tsunamis, it is noted that the study area, as well as the wider region, belongs to the Greek Arc, the boundary of contact and convergence of the African and Eurasian lithospheric plate, with consequent increased seismic activity. The risk levels from volcanic eruptions or tsunamis in the Greek area are real, but extremely low and cannot be assessed in the present context. With regard

to seismic activity, it is characteristic that within a radius of 50 km from the project no earthquakes of more than 5 Richter scale degrees have taken place in the last 50 years, while in the same period and within the same radius only 4 earthquakes of more than 4 Richter scale degrees have been recorded (source Geodynamic Institute). However, a strong earthquake excitation can have an impact on both the technical infrastructure of a region and human lives.

The occurrence of a disaster or accident may also have negative consequences for sites of archaeological interest if they are located within the respective zone of influence. With regard to the study area, as already mentioned in paragraph 8.6.3, no declared archaeological sites or monuments are identified. It is considered that the vulnerability of these features to physical or technological hazard is not assessable.

In addition to the above, risk may arise in an area from accidents caused by human activity (technological hazards). Technological accidents are mainly industrial accidents (e.g. explosion, oil spill), with potentially significant consequences in terms of loss of human life and pollution of ecosystems. A Major Technological Accident (MTE) is defined as an event, such as a major spill, fire or explosion resulting from uncontrolled developments during the operation of an installation as defined in the European SEVESO III Directive (KYA 172058/2016, Government Gazette 354/B/17-02-2016), which causes serious risks, direct or indirect, to human health or the environment, inside or outside the installation and is related to one or more hazardous substances. Accidents of this kind may cause significant risk, direct or indirect, to human health and safety (death and/or injury of workers and people inside or outside the installation), to the natural environment (combustion, fires, contamination of air, soil, marine and groundwater) and to cultural heritage. Greece, like other European countries) has included in its legislation relevant directives on the prevention and avoidance of large-scale accidents and measures to deal with them should they occur. This is the KYA 172058/2016 (Government Gazette 354/B/17-02-2016), which harmonizes Directive 2012/18/EU, known as Seveso III and concerns the definition of rules, measures and conditions for the response to risks from large-scale accidents in establishments or units, due to the presence of hazardous substances, in accordance with the provisions of Directive 2012/18/EU 'on the control of major-accident hazards involving dangerous substances and amending and subsequently repealing Council Directive 96/82/EC' of the European Parliament and of the Council of 4 July 2012 and replaces Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances and amending and subsequently repealing Council Directive 96/82/EC. 12044/613/2007 (B376), (Seveso II). The above-mentioned EIS defines which are new, existing and other installations and describes the provisions and deadlines for submitting the required documents for each of them. Risk analysis of major industrial accidents, either in the context of the European Directive 2012/18/EU - SEVESO III, or as a separate study, is a powerful tool for identifying risks, determining their probability of occurrence and implementing prevention and consequence mitigation measures.

The project under study does not fall within the scope of the above legal framework. Similarly, the vulnerability of the study area to such accidents does not exist as the area is not adjacent to any other installations or units falling within the scope of major accidents.

Summarizing the above, it is concluded that the project under study, as well as the wider study area, has no assessable vulnerability to risks to human health, cultural heritage and/or the

environment due to accidents or disasters. In order to reduce the potential for small-scale accidents that may occur during the construction and operation phase of the project, appropriate measures are proposed herein, as will be presented in subsequent chapters (10 - 11).

Finally, it is necessary to note that the equipment to be installed is state-of-the-art with high quality standards, thus reducing the risk of structural failures and accidents in general.

8.15 Environmental trends (without the project)

8.15.1 Assessment of evolutionary trends in the environment without the project

For the trends of the environment as it is expected to develop over the next 20 years in the area under consideration, no particular variations are estimated. The practice of livestock farming and partly agriculture will continue to maintain the forest gaps on the ridge tops, while the remaining vegetation cover is expected to remain at the same levels, as the area, due to its morphology and its character mainly as a forest area, is not suitable as an option for the establishment of other projects (e.g. manufacturing activities) or even a change in land use (e.g. development of agriculture beyond the existing one).

On the other hand, and according to what has been presented in this chapter, the settlements of the wider project area show a downward trend in terms of their population characteristics. There are no other infrastructures (environmental, technical, manufacturing, etc.) and no other infrastructures are planned, while the water, both surface and groundwater, is in good condition and there is no apparent risk of degradation, at least from the installation and operation of the project under study.

Moreover, in case the project is not carried out, any environmental benefits resulting from its operation will be lost (see also subsection 4.2 of this document).

In conclusion, it is assumed that the trends for the environment in general in the study area will remain stable. However, the impacts of the project are assessed and analysed in the next chapter.

In any case, the parameters of this subchapter were discussed in detail in subchapter 7.2.4 "Zero solution" of this paper. Therefore, any further reference to trends in the evolution of the environment is considered redundant.

8.15.2 Overall thematic assessment of changes and trends over time

A relevant table of thematic assessment and trends is presented in accordance with the present chapter (Chapter 8), while it is also noted that the conclusions of the chapter were also taken into account in the compilation of the following table. 9 of this report (assessment of the impacts of the construction and operation of the project).

Table 75: Aggregated thematic evaluation.

Sections		Changes	Evolutionary trends
8.1 to 8.4	Climatic and bioclimatic characteristics	The type and size of the project cannot alter the characteristics of these modules either in the short or	Neutral voltage

Sections		Changes	Evolutionary trends
	Morphological and landscape characteristics	long term. There will be a change in the landscape from the ESDP, but the siting criteria are met and no landscape of outstanding natural beauty is identified in the area.	
	Geological, tectonic and soil characteristics		
8.5	Protected areas	No substantial changes are foreseen, especially if all the proposed measures of the IEA are adopted.	Weak negative tendencies - treatable.
	Forests - Forest areas	There will be changes due to zoning on forest land (see following chapters).	Negative trends - partially manageable.
	Other important natural areas	There will be no change due to the location of the project.	Neutral voltage
8.6 to 8.9	Spatial planning - land use	There will be a change but due to the area where the project is located there will be no noticeable changes in land use.	Neutral tendencies.
	Structure and functions of the man-made environment	No change expected	Neutral voltage from the project. The area is mostly on a downward trend in terms of population characteristics.
	Cultural heritage	There will be no change due to the location of the project.	Neutral voltage
	Socio-economic environment	A stable and positive contribution to the economy with new jobs and contribution to the local economy - return benefits.	Positive trend
	Technical Infrastructure	There will only be a change in the development of the road network. However, the road network will also contribute to better access to the area.	Patients negative - short-term - treatable. Positive in terms of access.
	Anthropogenic pressures on the environment	No undue intensification of anthropogenic pressures on the environment is expected.	Neutral trends
8.10 to 8.13	Atmospheric environment - Air quality	Negligible negative changes initially but the project will help prevent CO_2 emissions (from conventional power plants). Primary clean energy savings.	Moderately positive trends - long-term.

Sections		Changes	Evolutionary trends
	Acoustic environment and vibration	Negligible negative changes.	Patients negative - reversible by taking measures
	Electromagnetic fields	No changes expected	Neutral trend.
	Water	There would be no changes from the project with the anticipated prevention measures.	Neutral trend.

9 ENVIRONMENTAL IMPACT ASSESSMENT AND EVALUATION

The identification of project-induced impacts relates to the identification of potential changes, alterations or diversion of a system from its "original state", caused by the implementation of a different use of the resources and/or spaces it encloses.

This chapter presents the overall assessment and evaluation of the project's impacts on people and the environment.

The adoption of Directive 97/11/EC established criteria for assessing the impact of projects and human activities. These criteria are:

- Cumulative effects of the impacts of the project or activity under consideration.
- Environmental sensitivity of the geographical areas likely to be affected by the project under consideration in terms of:

  a) the existing land use,

  (b) the relative wealth, quality and regenerative capacity of the natural resources of the area; and

  (c) the ability to integrate into the environment without damage, with particular emphasis on the following spatial units: wetlands, coastal areas, mountain and forest areas, protected areas and natural parks, areas preserved or protected under national legislation, special protection areas designated by the Member States of the European Union under Directives 79/409/EC and 92/43/EC, areas where environmental quality standards established by Community legislation are already being undermined.

  (d) the extent of the impact (geographical area and size of the affected population), transboundary nature of the impact, its magnitude and complexity, likelihood of occurrence, duration, frequency and reversibility.

The assessment of the impacts identified allows for checking the legality or otherwise of the projects or activities, making choices between possible alternatives and identifying the measures and works required to protect the environment.

Furthermore, the assessment of the effects of a project or activity consists of an evaluation of the changes that will result from the project or activity under consideration on the individual elements of the natural and man-made environment.

Therefore, elements relating to the impacts of not constructing the project or activity are taken into account, the construction and operation of a project or activity is checked to see if there are exceedances of prohibited activities, means or modes of production, emissions in mass or energy that exceed the statutory limits. In this case, further examination of the project or activity shall be excluded and the judgment shall be negative.

9.1 Methodological requirements

The assessment of the potential impacts of the construction and operation of the Wind Farm under consideration, as well as its accompanying projects (road and electrical interconnection projects), is based on the principles of sustainable development, protection of the natural

environment and conservation of natural resources, while taking into account the economic, social and cultural parameters of the immediate area in which the project is located, as well as the wider region. Similarly, the methodology for assessing and addressing the potential impacts of the construction and operation of the project shall take into account all the necessary measures implemented in the respective phases of the project in order to prevent potential impacts and protect the environment.

It is now accepted that, in the context of sustainable development, impact assessment should be based on the environmental dimension and the impact on social capital, and not only on purely economic criteria. Therefore, in order to assess the potential impacts of a project, all environmental parameters are assessed, including, where appropriate, the natural-biotic environment (e.g. soil, water resources, atmospheric environment, etc.), the natural-biotic environment (e.g. ecosystems, flora and fauna), the human environment (social variables, population, employment, etc.), land use, etc. This assessment of potential impacts in an overall and integrated context allows for a more general consideration of the above environmental parameters, each one separately, but also of the way in which they influence and interact with each other.

The assessment and evaluation of the potential impacts of a project must also take into account the fact that all anthropogenic activities cause changes to the natural environment, which may lead to 'disturbances', depending on the type of physical, chemical, biological or other factors that may be altered during the construction and operation of the project. A 'disturbance' is defined as any event or series of events affecting the structure, functions and even the carrying capacity of the environment. Subsequently, disturbances may be transformed into impacts, depending on their type and magnitude and, at the same time, on the capacity of the environment acting as their final recipient to recover. An environmental impact is defined as any change in the environmental conditions of the natural or man-made environment, whether positive or negative, which may be caused by a project. The assessment of potential environmental impacts and their significance is directly related to the scale and nature of the project.

In this EIS, the estimated potential impacts considered are categorized as follows:

- Impact on climatic and bioclimatic characteristics
- Impact on morphological and landscape characteristics
- Impact on geological, tectonic and soil characteristics
- Impact on the natural environment
- Impact on land use planning and land use (man-made environment)
- Impact on the cultural environment
- Impact on the economic and social environment
- Impact on technical infrastructure
- Impact on air quality
- Effects of noise or vibration
- Impacts related to E/M fields
- Impact on water resources

The assessment and evaluation concerns the environmental impacts of the proposed solution, and in accordance with the current legislation focuses mainly on the following characteristics:

- Probability of occurrence.
- Extent, with reference to the geographical area and/or the size of the population affected.
- Intensity, with reference to the magnitude of the change, and its comparison with the relevant limit values.
- Complexity of impacts, with reference to the mechanism of occurrence (direct or indirect impact, description of stages in the latter case), the components of the phenomenon (to distinguish simple from complex impacts), and intensity and magnitude dependencies on non-project factors, if any.
- Characteristic times (time horizon of occurrence of effects, duration, repeatability).
- Opportunities for prevention, avoidance, reversal or minimisation.
- Synergistic or cumulative effects with other impacts from the project itself or from other projects or activities developed or environmentally permitted in the area.
- Transnational character.

In particular:

1. In relation to the type and magnitude (intensity) of the estimated potential impacts, a distinction is made between:

	Powerful	Medium intensity	Patients	Not applicable	Neutral
Positive	+++	++	+	+/O	O
Negative	---	--	-	-/O	

- Positive impact: A positive impact on an environmental medium is defined as an impact that results in favourable changes in the physical condition, and/or environmental value, and/or productive capacity, and/or use of the environmental medium.
- Neutral impact: A neutral impact on an environmental medium is defined as an impact that does not result in changes, positive or negative, to the physical condition, and/or the environmental value, and/or the productive capacity, and/or the use of the environmental medium.
- Negative impact: A negative impact on an environmental medium is defined as an impact that results in unfavourable changes to the physical condition, and/or the environmental value, and/or the productive capacity, and/or the use of the environmental medium.
- Patient: A weak impact on an environmental medium is defined as an impact that causes non-significant, non-measurable and locally limited variations in the physical condition, and/or environmental value, and/or productive capacity, and/or use of the environmental medium. In cases where the weak, non-significant, positive or negative impact on an environmental medium is close to zero, this impact is designated as negligible and is denoted by (a).
- Moderate impact: A moderate impact on an environmental medium, whether positive or negative, is defined as an impact that causes measurable variations in the physical condition, and/or environmental value, and/or production potential, and/or use of the environmental medium, without resulting in substantial changes to the above characteristics.
- Strong or Large or Significant impact: A strong, major or significant impact, positive or

negative, on an environmental medium is defined as an impact that causes measurable changes in the physical condition, and/or environmental value, and/or productive capacity, and/or use of the environmental medium, while causing substantial changes in the above characteristics.

2.In relation to Likelihood of occurrence, potential impacts are ranked on a scale from "1": unlikely to "5": probable.

3.In relation to the extent, reference is made to the geographical area and/or the size of the population under consideration and therefore, depending on the extent of their influence, a distinction is made between:

- Local
- Regional
- National

4.In relation to the complexity of the impacts, a distinction is made between:

- Direct
- Indirect

5. In relation to the time horizon of the occurrence of the effects (typical times), a distinction is made between:

- Current
- Permanent
- Those that show repeatability

6. In relation to the possibility of preventing, avoiding, reversing or minimising impacts, a distinction is made between:

- Totally reversible
- Partially reversible
- Irreversible

In addition, it shall be examined whether the effects are synergistic or transboundary in nature.

The assessment of the potential impacts of the proposed project is based on the existing environmental condition, as described in Chapter 8, and on the size and type of the project under consideration, as described in Chapter 6 of this Environmental Impact Assessment.

The characterisation of the impacts is summarised in tables at the end of the Chapter. These impacts are assessed in accordance with the above methodology, before and after the relevant mitigation measures are taken, as detailed in Chapter 10 of the EIA.

9.2 Impacts related to climatic and bioclimatic characteristics

9.2.1 Construction phase

The installation of the wind turbines, the opening and improvement of the roads and the construction of the interconnection projects with the electricity grid are not expected to have any

impact on any climatic parameters such as temperature, rainfall, hail, snowfall or humidity in the project development area.

For the foundation work and installation of the generators in their positions, for the opening of new roads and for the installation of the underground medium voltage network, construction machinery (cranes, trucks, levellers, excavators, etc.) with diesel engines will be used. The operation of these machines is expected to release a quantity of greenhouse gases as well as particulate matter (PM_{10} , $PM_{2,5}$) into the atmosphere due to the combustion of liquid fuels (diesel, gasoline).

In addition to the absolutely necessary interventions for the construction of the project (such as the foundation areas of the W/T, the areas of the two houses, the construction site), every effort has been made to reduce the interventions and the occupation of additional land and change of use. Thus, the road works have been limited to what is strictly necessary, making full use of the existing roads, while the underground cables will be laid underground following the layout of the roads (existing and new), and the planned UPS utilises the existing "Iasmos" voltage boosting substation and does not differ from the construction practices of the UPS. In conclusion, these interventions are also not expected to have any impact on the climatic or bioclimatic characteristics of the area where the UPSO will be installed.

With regard to greenhouse gas emissions, the construction of the project is not expected to have a significant impact on the climate or bioclimatic characteristics of the area where the CCGT will be installed. Greenhouse gases are defined as water vapour, carbon dioxide, methane and hydrofluorocarbons. Of these gases, only carbon dioxide will be emitted by the construction activities. These quantities of CO_2 will be produced by the construction machinery during the period of construction and then cease to be produced.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above, no significant transboundary impacts are expected during the construction phase on any climatic parameters and on the emission of greenhouse gases.

Overall Assessment

Therefore, the construction of the studied RES is not expected to affect the climatic and bioclimatic characteristics of the area and therefore no transboundary impacts on the territory of the neighbouring country of Bulgaria are expected.

9.2.2 Operating phase

By their nature, wind farms and their accompanying projects do not have any negative impact on the climatic and bioclimatic characteristics of the area in which they are installed. Wind turbines use a small fraction of the kinetic energy of the wind to produce energy without altering its intensity or direction. The operation of the wind turbines does not generate any heat, air or other pollutants that could potentially alter the climatic and bioclimatic characteristics of the area in which they are installed. In addition, the interconnection projects, by their very nature, will not affect the climatic and bioclimatic characteristics of the area. Consequently, during the operational

phase of the 'XEFOTO' wind farm, no impact on the climatic and bioclimatic characteristics of the wider and immediate area of the wind farm is expected.

As regards the production of greenhouse gases, not only will no such gases be produced, but on the contrary, the nature of the project is expected to reduce the production of both greenhouse gases and other harmful pollutants in the atmosphere as it contributes to the reduction of emissions of environmental pollutants associated with the production of energy by conventional means (fossil fuels).

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above, no transboundary impacts are expected during the operation phase on any climatic parameters and on the emission of greenhouse gases.

Overall Assessment

Overall, the project under consideration, by making the best use of the available wind potential, will help to achieve the country's environmental objectives and international obligations, as well as to meet the principles of sustainable development. Furthermore, no cross-border effects of any kind are expected on the territory of the neighbouring country of Bulgaria. Consequently, indirect positive and weak long-term effects are expected during the operational phase

9.3 Impact on morphological and landscape characteristics

9.3.1 Construction phase

During the construction phase of the "XEFOTO" W/F and its accompanying works, significant impacts on the landscape and the aesthetic environment of the construction area are expected due to the visual disturbance caused by the installation of construction sites, temporary disposal sites and the increase in road traffic on the agroforestry roads of the area during the construction phase.

However, this impact affects the immediate area of the works, taking into account the interventions required by the accompanying works of the ESDP, and is in most cases temporary and reversible. The worksites required for the improvement of sections of existing roads and the opening of new road sections, foundations, platforms, installation of the W/T and construction of the infrastructure for the electrical connection are estimated to remain in place for about 12 months in the area.

In more detail, the changes in the topography and morphology of the terrain result first of all from the excavation of the ground for the foundation of the W/T, the excavations for the placement of the M.T. network, the extension of the existing Voltage Booster Station and the opening of the new access roads. These structural works are very simple and do not entail any significant changes to the topography and relief characteristics of the land mass. These projects also, in most cases, present no concern for increased soil erosion from wind or water. The disturbances made to the soil at the site of a wind turbine installation are then restored after the works are completed, except for the platforms around each wind turbine and the road construction.

As regards the interventions of the accompanying works, the opening of new roads with a total length of 14,884 m is foreseen, while the laying of cables within a trench (following the road construction route) of approximately 26,198.90 m for the internal interconnection network and 29,522.92 m of underground MT line for the interconnection of the ASPEE with the existing "IASMOS" voltage boosting substation is foreseen. The 33kV underground M.T. line of the internal network will be placed within a trench of approximately 1.20 m depth and 0.60 m width and the intervention area for the new road construction is included in the interventions calculated for the internal road construction, while the intervention area for existing road construction is estimated at 6,788.94 m^2 .T. 33kV of the external network this has a total length of 29,652.16 m of which 129.24 m will be aerial (crossing of the river Komsatou, and the remaining length of 29,522.92 m will be placed within a ditch of a depth of about 1.20 m and a width of 1.00 m that follows the existing road network of the area, so the intervention area is estimated at 29,522.92 m^2 .

As regards the extent of the interventions, the project design (see Chapter 6) shows that

1) with regard to the platforms of the W/T, the total surface area of the platforms where intervention is foreseen amounts to 191.669,08 m^2 , the major part of which will be restored after the end of the works,
2) as regards the construction sites, only one construction site is planned, but it will be located in the Platform where W/T 7 will be built and the intervention has therefore been taken into account above,
3) as regards the plots of land for the installation of the two Control Cubicles, these will have an area of 4.000,00 m^2 each and therefore a total intervention area of 8.000,00 m^2 , which will be fully restored at the end of the works - except for the area necessary for the operation of the Control Cubicles of the W/F,
4) for roads the total surface of the interventions (new openings) is 158.835,53 m^2 ,

Therefore, at the end of the works, the major part of the areas where there will be interventions will be restored. As far as the site area is concerned, it will be fully restored, except for the area necessary for the operation of W/T 7, while for the control house areas there will also be full restoration except for the areas necessary for the operation of the control houses (area of buildings 280 & 120 m^2). In particular, the road works and the trenches for the installation of the underground medium voltage cables (constructed within the roads) are not expected to create aesthetic degradation of the landscape of the area as the cross-sectional width of the roads is similar to that of the existing forest roads and the interventions are limited to the absolutely necessary, the road surface is earthen and the traffic load is minimal, while the ditches of the M.T. (internal and external) will be located within the roads and will be fully restored. In addition, the final form of the new roads will be similar to the existing roads in the area and naturally compatible with the immediate natural environment. Regarding the Voltage Booster Station, the extension of the existing "IASMOS" station has been chosen and not the construction of a new station, thus eliminating the impacts.

In any case, the execution of all the works required as well as those for the opening of the required roads and therefore accompanying works will be carried out with the minimum possible impact on the environment and the aesthetics of the landscape, after consultation with the competent Forestry Department, which sets specific restrictions and conditions.

Impacts of a temporary nature on the landscape are also expected from the existence of the necessary mechanical equipment for the implementation of the ASPEE with the main disturbance coming from the site of the ASPEE, where the installation and operation of temporary site offices and catering facilities, storage areas, sanitary facilities, first aid station and the storage of equipment, but also the storage of the concrete silo. Local impacts of a temporary nature are also expected on the site where the mobile crusher will operate.

The W/Ts do not pose any risk of exposing people or property to geological disasters, given their remote location from settlements in the ESDP area and the simple form of the installation.

Cross-border effects

As it follows from the design of the project, all the interventions will be carried out within the Greek Territory, moreover, due to the morphology of the area and the location of the interventions, only limited visibility of small areas of the interventions for the construction of the ESDP is possible from border areas and the nearest settlement within the Bulgarian territory (Kusla). Therefore, the cross-border impacts during the construction phase on the morphological and landscape features in the territory of the neighbouring Bulgarian state are considered to be negligible.

Overall Assessment

In conclusion, it could be stated that the impacts on the landscape during the construction phase of the project could be characterised as significant, mostly short term but in parts long term, which will be largely reversible after the completion of the construction phase, subject to the restoration of the affected areas and the implementation of appropriate landscaping, if required. Finally, there are expected cross-border impacts of negligible intensity concerning the territory of the neighbouring Bulgarian State.

9.3.2 Operating phase

The main impact of a project on the landscape is the way in which it is visually integrated into the natural environment. The degree of alteration of a landscape depends in principle on its degree of sensitivity and vulnerability. The more aesthetically interesting a landscape is, the more sensitive it is to alterations - interventions.

The impact of the installation of AGVs on the landscape of an area is an issue that has been widely discussed by the public and needs to be thoroughly investigated. The visual disturbance that a wind turbine may cause depends on a number of factors, both objective and subjective:

1. Objective Factors
    - the geometrical characteristics of the W/T (pylon height, rotor diameter),
    - the number and arrangement of the gensets within the ESDP,
    - the character and value of the landscape,
    - the density of the local population within the zone of visual influence of the ESDP,
    - the distance of the W/T from the observer,
    - the number of visitors to the surrounding area,
    - the weather conditions and the local topography (land formations).
2. Subjective Factors

- people's attitudes towards landscape and natural beauty,
- people's perception of their current level of visual acuity,
- the attitudes of individuals towards wind energy,
- each individual's weighing of the local impact against the wider local interest.

Modern wind turbines are characterized by significantly greater visual acceptance potential than those of older technology, since:

a) they are slim and elegant in design, compared to the early models that were bulky or based on trusses,

b) the speed of rotation of their blades is lower, which creates a more pleasant visual effect,

(c) they are placed at greater distances from each other, due to their increased power, thus achieving more sparse distributions, compared to the denser groupings of older RES-EEs.

The process of integrating a wind farm into the environment is based on the dynamic visual coupling of the wind turbines with the particular landscape features of the installation area. These landscape elements can be characterized by:

- The flat character of a lowland area.
- The slightly undulating topography of a hilly area.
- The intense relief of a ridge or mountain range.
- The urban and peri-urban landscape of a town, village or city.
- The highly industrial and strictly regulated profile of an industrial zone.
- Combinations of the above.

The design parameters of a NPPF that are taken into account and which can be changed, often achieving an admittedly strikingly different "aesthetic impact", include, among others:

- The area (size) of the wind farm.
- The way the wind turbines are placed within the wind farm (location and distance between the turbines).
- The height of the wind turbine pylons.
- The interactive relationship of the station with other dominant visual elements of the environment (natural or artificial).

On the basis of the above parameters, the desired visual coupling of the landscape and the wind farm can be achieved through the application of aesthetic rules based on ensuring harmony in the relationships between lines and/or volumes. This is achieved through the use of the techniques of integration, harmony or counterpoint with existing dominant landscape features, so that, despite the intervention, the observer's eye is not disturbed or confused and the aesthetic result is visually acceptable.

Due to the topography of Greece, most of the time the scale of the EIS is compatible with the scale of the landscape dominated by large mountain ranges, as in the case of the EIS under consideration.

In order to get an idea of the impact of a NPP on the landscape, the figures below show the relative size of the image of a NPP in relation to the field of view of the human eye, from distances of 500, 1,000, 2,000, 5,000, 10,000 and 20,000 metres from the base of the NPP.

Figure 1: Relative size of an W/T figurine in relation to the field of view of the human eye at a distance of 500m (occupies 76.47% of the reference height)

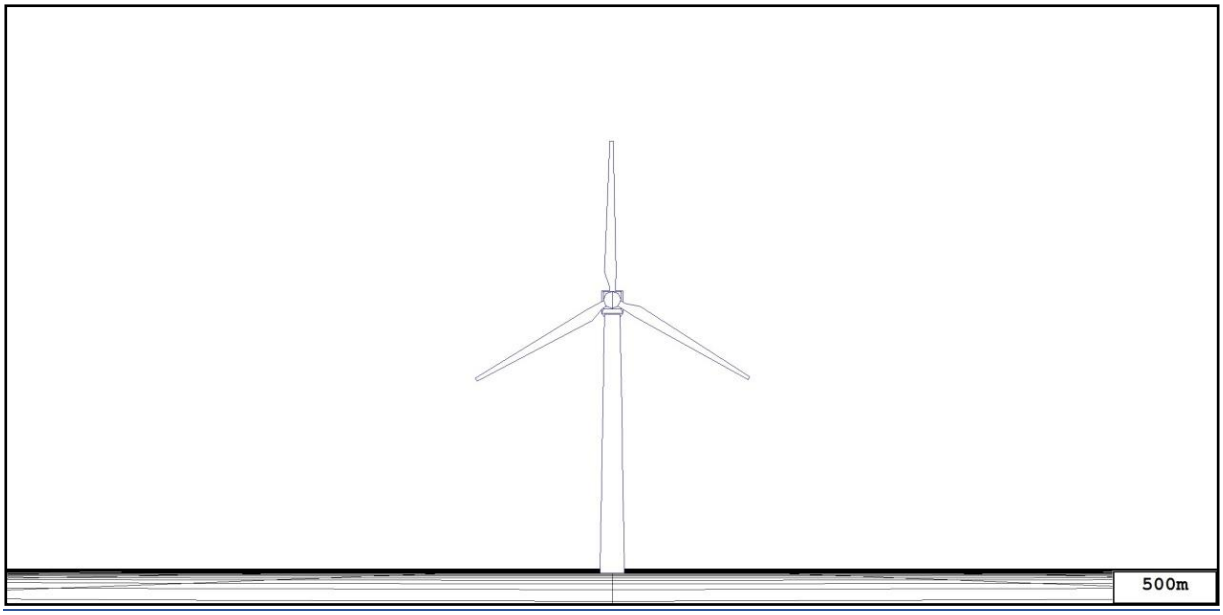


Figure 2: Relative size of an W/T figurine in relation to the field of view of the human eye at a distance of 1,000m (occupies 38.24% of the reference height)

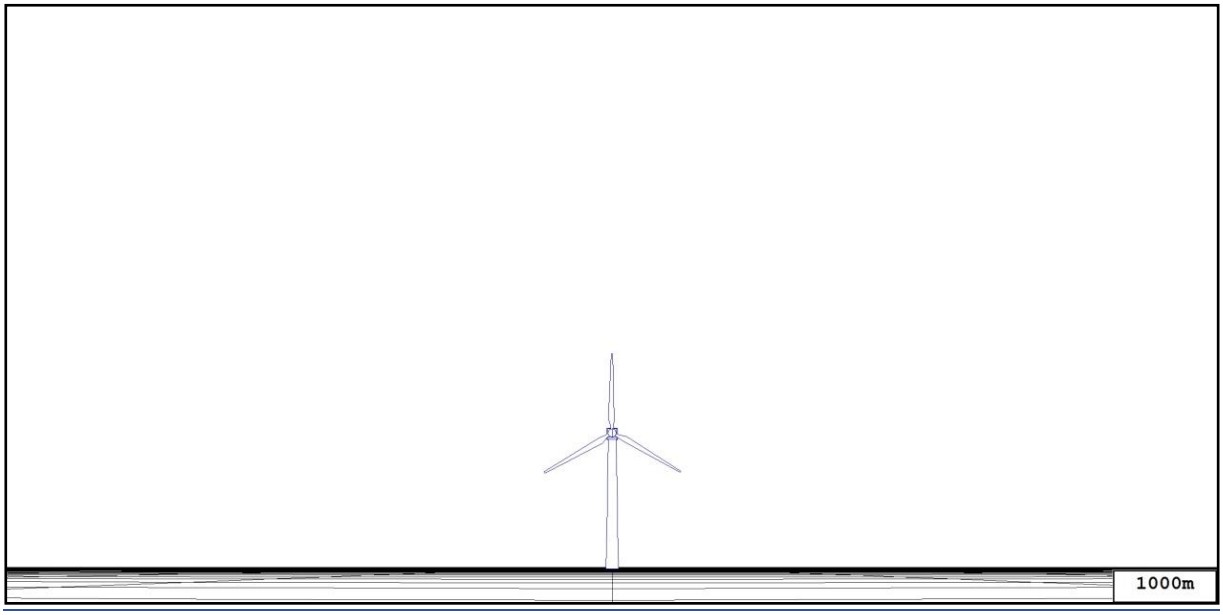


Figure 3: Relative size of an W/T figurine in relation to the field of view of the human eye at a distance of 2,500m (occupies 14.71% of the reference height)

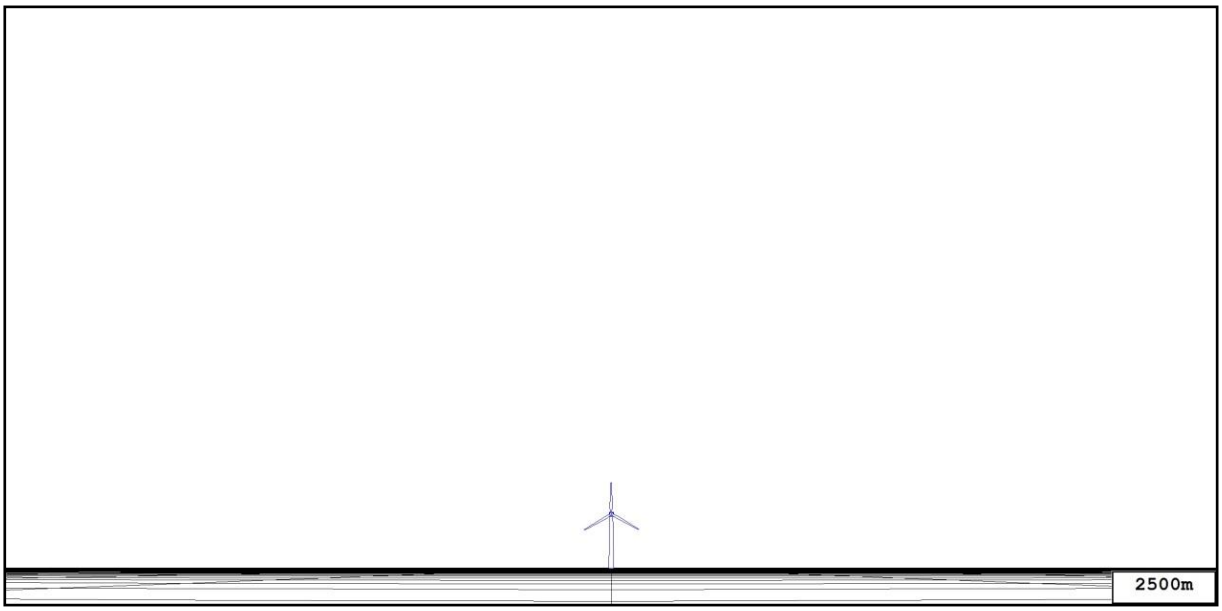


Figure 4: Relative size of an W/T figurine in relation to the field of view of the human eye at a distance of 5,000m (occupies 7.35% of the reference height)

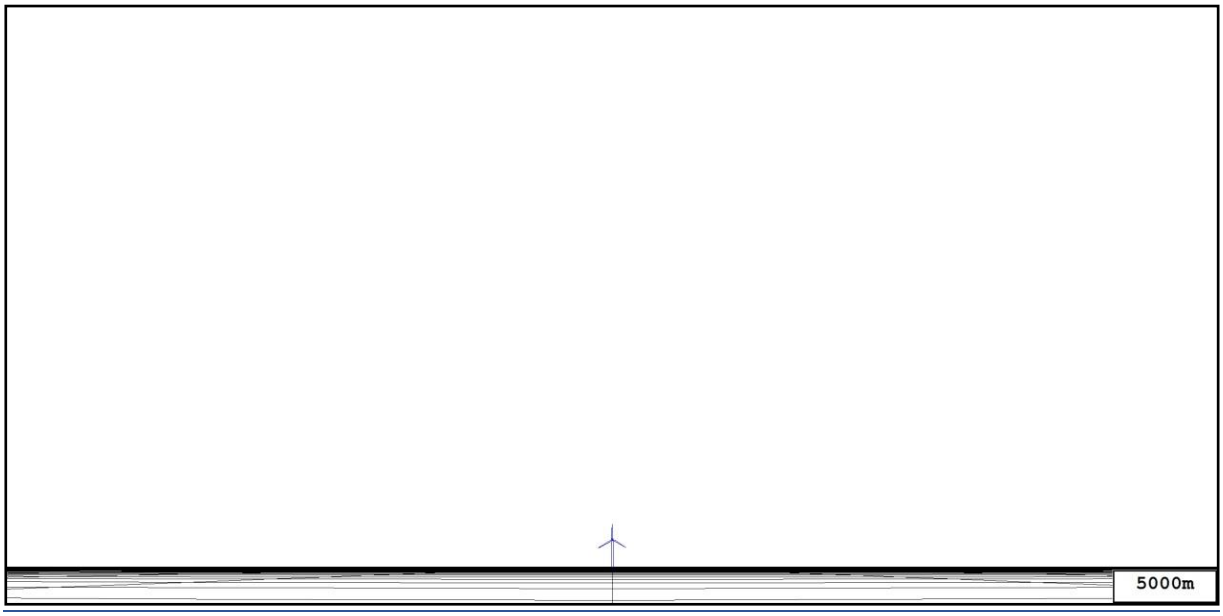


Figure 5: Relative size of an W/T figurine in relation to the field of view of the human eye at a distance of 7,500m (occupies 5.88% of the reference height)

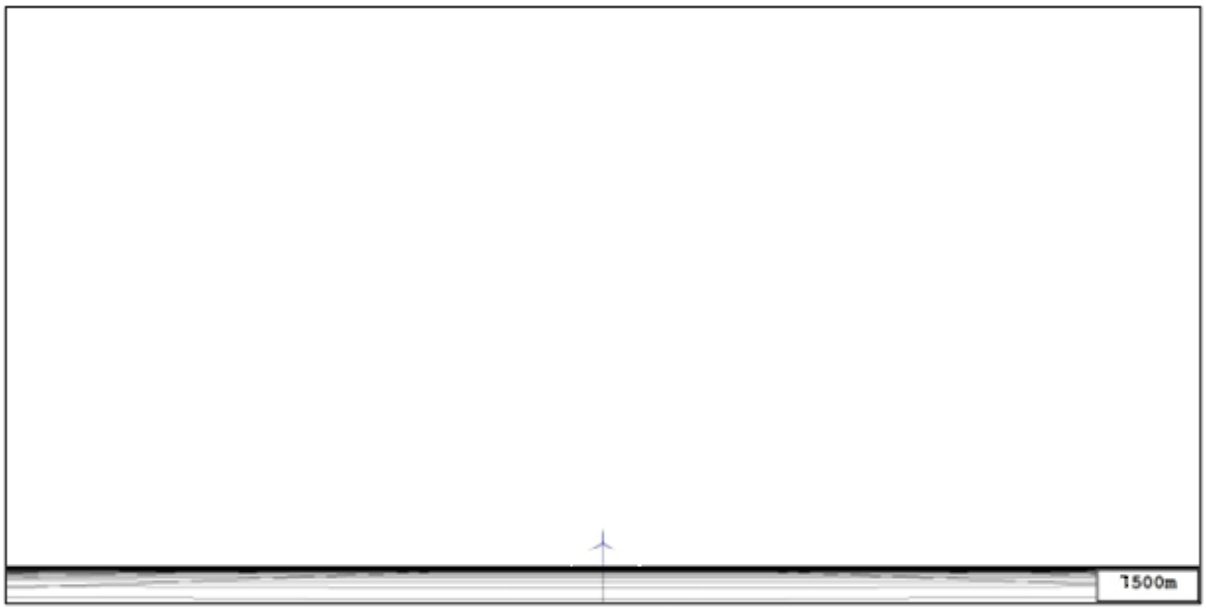
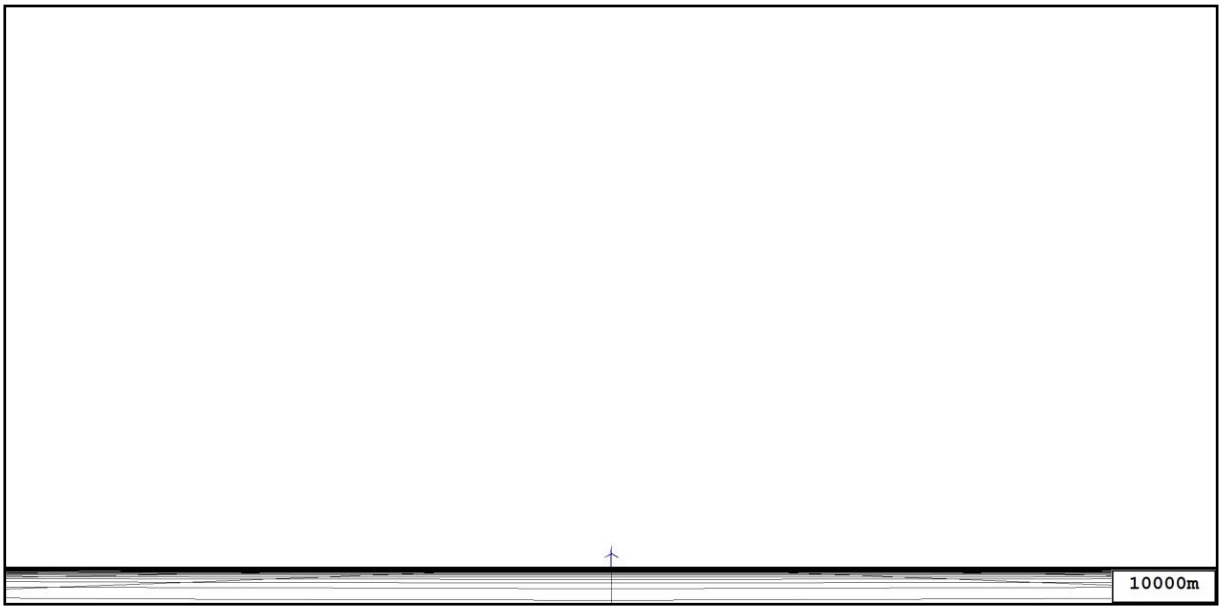


Figure 6: Relative size of an W/T mirror in relation to the field of view of the human eye at a distance of 10,000m (occupies 2.94% of the reference height)



From the above figures, it is clear that even from the points where a relatively large number of W/Ts can be seen but are at a considerable distance from them, any visual disturbance is non-existent, since the size of the idol is indistinguishable.

Finally, when the A/Vs rotate, the human eye finds them useful and as a result they are more easily accepted visually, as they seem to serve a purpose. Conversely, when a significant number of W/Ts are not operating while winds are blowing, the observer's expectation of Wind Turbine utility is violated. For this reason, it is considered appropriate to keep the rotors spinning for as long as possible. In the APSO, the wind turbines should be regularly maintained and any damaged parts should be replaced as soon as possible to increase the public acceptance of their installations.

In addition, the three-bladed W/Ts give an aesthetically more harmonious result, while the colouring of the support towers and blades plays an essential role in the smooth integration of the machines in the surrounding area, with white as the predominant choice and grey as an alternative.

It should be noted that during the design of the project, special care was taken by the project promoter to ensure that the visual contact with it is relatively limited. In particular, the project was designed to be partially or completely 'masked' by mountainous or hilly outcrops located between the siting area and most of the residential areas in the wider study area. Furthermore, the proposed siting ensures a significant distance from areas of significant anthropogenic activities in the wider study area, resulting in a diminution of the intensity of the visual impression on the human eye. In the same context, the choice of the specific W/Ts, which has contributed decisively to reducing the number of W/Ts to be installed, contributes decisively through its sparse layout to the diffusion of the visual impression to a large extent. The nearest settlement in the area of the W/F is Kalotycho, which is 633 m from the nearest W/T site (W/T 23), while the nearest is Kusla Slatoikrad, in the Bulgarian territory, which is 780 m from the nearest W/T site (W/T 8). Within a radius of 2 km there are two other settlements, namely the settlements of Gidotopos (800 m from A/P 15) and Tsalapeteinos (1,28 km from A/P 1). Aforementioned settlements are on the whole all small-urban settlements, as discussed in the 4^{o} chapter of this paper, while the larger settlements are located at significantly greater distances. Thus, the nearest settlement with a population > 2,000 inhabitants is that of Echinos (with a permanent population: 2,486 inhabitants according to the 2011 census) and is located at a distance of 13.5 km from the ASPHE and specifically from W/T01.

For a better assessment of the impacts on the landscape, a simulation of the view of the W/T of the studied ASPEE was carried out, in particular an assessment of the visual effect of the W/T in the neighbouring areas was carried out. This study aims to calculate and map the number of GACs visible from different points of view from the proposed CCGT.

For this purpose, digital data were used to determine the topography of the area. The data taken into account are the exact positioning of the A/Vs on the digitised grid of 20-metre level curves and the geometric characteristics of the type of A/V to be used.

The calculation was performed with a resolution of 20×20 m on the digitized hemp and an observer height of 1.8 m. Essentially, the number of W/T or parts thereof, which are visible to a person of 1.8 m height in an area of 20x20 m, is calculated and mapped. It should be clarified that a wind turbine is considered visible if even a very small part of it is visible (e.g. the tip of its blades) and that the visibility calculations do not take into account any obstruction to visibility caused by trees or buildings or other obstacles, but only by the topography of the area. A study radius of 10 km was taken into account for the calculation.

The results are presented in the W/T view map, which is incorporated in the relevant annex to the EIA and is presented below for illustrative purposes only and at a relative scale to enable its incorporation into the text.

From the following map and in relation to the settlements of the wider area of the installation area of the studied ESPO, located in the Greek territory, it is evident that:

- In the settlement of Kalotychos, which is the closest to the W/Ts under installation, twenty

(20) W/Ts of the ASPIE under study are visible. This settlement is 0.63 km from the nearest wind turbine (W/T 23) and therefore the visual impact due to the size of the idol is considered to be particularly significant. The distance is such that no shading problem will arise, and the paint on the wind turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will be generated.

- In the settlement of Gidotopos, which is also a short distance from the W/Ts being installed, twenty (20) W/Ts of the ASPHE under study are visible. This settlement is 0.80 km from the nearest wind turbine (W/T 15) and therefore the visual impact due to the size of the idol is considered to be very significant. The distance is such that no shading problem will arise, and the paint on the wind turbines (pylon and rotor) will be 'absorbent' and therefore no reflections of incident light will be generated.
- From the settlement of Tsalapeteinos it is possible to see up to nine (9) W/T of the ASPEE under study. This settlement is 1.28 km away from the nearest wind turbine (W/T 1) and therefore the visual impact is considered moderate due to the size of the viewpoint. The distance is such that no shading problem will arise, and the wind turbine paint (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will be generated.
- From the settlement of Lykotopos it is possible to see nineteen (19) W/T of the under study W/F. This settlement is 2.14 km from the nearest wind turbine (W/T 5) and therefore any visual impact is small due to the size of the viewpoint. The distance is such that no shading problem will arise, and the paint on the wind turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will occur.
- At a distance of 2.9 to 3.9 km from the nearest A/V the settlements Koundouros (>2.9 km from A/V 4), Durgoution (>3.0 km from A/V 1) and Kottani (>3.9 km from A/V 5) are visible 14, 15 and 14 A/V respectively and therefore any visual impact is particularly small due to the size of the idol. The distance is such that no shading problem is created and the paint of the wind turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will be created.
- Also, from the settlement of Melitaina, which is > 3.5 km away from W/T 21, it will not be possible to see the W/T of the ASPHE under study.

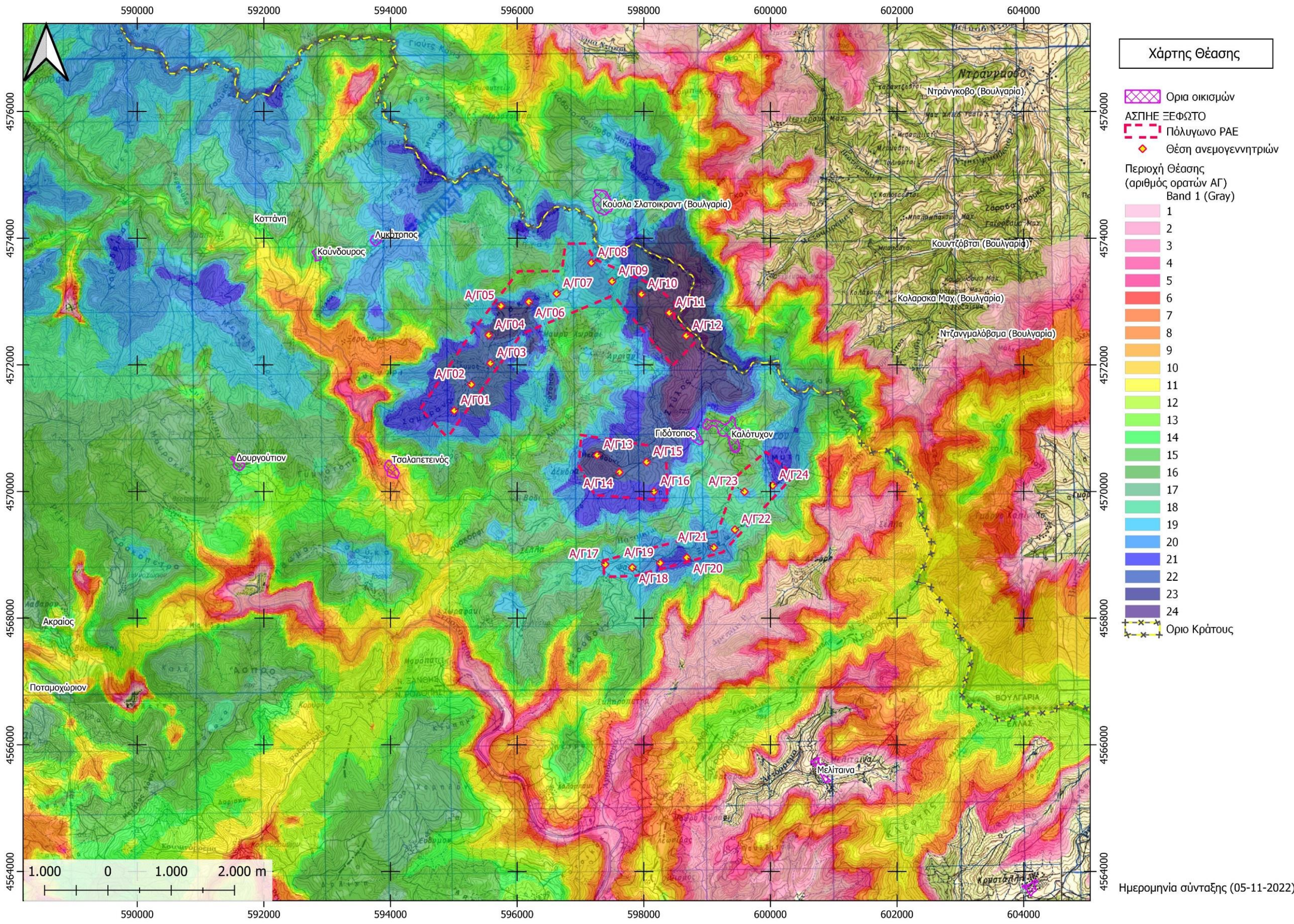
The other settlements within the Greek territory are more than 7 km away from the nearest W/T and therefore the impact due to the size of the W/T idol is considered negligible to neutral (depending on the number of W/T visible from each settlement) as the W/T idol is no longer discernible. The distance is such that there is no problem of shading and the paint on the wind turbines (pillar and rotor) will be 'absorbent' and therefore no reflection of incident light will occur.

It should be noted that the proposed A/Es are visible in the immediate study area where there are no other settlements, other than those mentioned above, which are on the whole small rural settlements, or other significant anthropogenic activities. It should also be noted that the sparse, in terms of spacing, siting of the W/Ts minimises visual disturbance, further limiting the estimated impacts.

As it follows from the above, the application of the landscape integration criteria is required for the settlements of Kalotycho, Gidotopos and Tsalapeteinos, as mentioned in detail in chapter 5 of this report. In the same chapter (5) it is concluded that the under consideration ASPHE "Xefoto"

meets criterion 1 of maximum density of W/T and is included in the landscape harmonized with the quantitative criteria of the EIAAP.

Map 73 Visibility of W/T from the nearest settlements



Regarding the accompanying works of the ASPEE under study, the widening of the new roads is expected to cause a permanent change in the existing landscape, but their form will be similar to that of the wider road network of the ASPEE installation area. The length of the new road openings (14,884.0 m) is negligible and therefore the visual disturbance is expected to be moderate as it will be local in nature. Also with regard to the internal network connecting the W/Ts this will be entirely underground to be placed alongside existing roads and the new openings with a trench length of 26,198.90 m. As for the external Medium Voltage (MV) network this will be underground for a length of 29,522.92 m which will also be placed alongside existing roads, while it will be overhead for a length of only 129.24 m to pass through the Komsato River. The connection of the ASPHE to the Transmission System will be made through the existing "IASMOS" Voltage Raising Substation. As regards the aerial part of the external PT network, it is noted that the transmission line does not create a visual barrier, taking into account the very short length of the aerial part.

Cross-border effects

From the above Map and in relation to the settlements in the wider area of the area of the installation of the ESDP project under study, which are located in the territory of the neighbouring state of Bulgaria, it can be seen that:

- In the settlement "Kushla" (Kushla) which is the closest to the installed Gensets, eighteen (18) Gensets of the under-study ASPHE are visible. This settlement is 0.78 km away from the nearest wind turbine (W/T 8) and therefore the visual impact due to the size of the idol is considered to be very significant. The distance is such that no shading problem will arise, and the paint on the wind turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will be generated.
- Of the remaining 6 settlements located at a distance of up to 10 km from the ESPO "XEFOTO" only one (1) A/V is visible in the settlements of Dzanggalovsma (in part of the settlement) and Gorski Izvor; these settlements are approximately 4 km from the nearest A/V and therefore any visual impact is particularly small due to the size of the idol. The distance is such that there will be no shading problem, and the paint on the turbines (pylon and rotor) will be "absorbent" and therefore no reflections of incident light will occur.

It should also be noted that the sparse, in terms of distance between them, location of the W/Ts, limits the visual disturbance to a minimum, significantly reducing the estimated impacts on the territory of the neighbouring state of Bulgaria.

As regards the accompanying works of the W/F, these will be carried out in their entirety within the Greek territory and due to the morphology of the area and the area where they are implemented, they cannot be seen from the nearest settlements within the Bulgarian territory and therefore no impacts are expected.

Overall Assessment

In summary, the aesthetics of a wind farm is a purely subjective factor, which depends, as relevant studies show, not so much on the image of the wind farm itself, but on the general image that the observer has formed about its use. Therefore, from all of the above, and following site visits to the area and an assessment of the situation from various viewing points, it can be concluded that the wind turbine under consideration is not expected to constitute a particularly significant

visual intervention in the characteristics and physiognomy of the immediate or wider area, given its good potential for integration into the landscape.

Impacts of a transboundary nature are expected as it will be possible to view the W/T of the considered EIS under consideration as mentioned above from settlements within the territory of the neighbouring state of Bulgaria, but no impacts are expected from the accompanying EIS projects.

In conclusion, the impacts of the GISP during its operation phase on the landscape and morphological characteristics of the area can be considered as moderate negative, long term and partially reversible as after the end of the operation of the GISP the only interventions that will remain will be the foundations of the 24 gensets, the two houses and the underground cabling of the electrical interconnection with the substation of the lift station that will be located in the ground. As for the road construction, this can be used by the users of the site for their access to the wider area.

9.4 Impacts related to geological, tectonic and soil characteristics

The project under study includes:

- Opening of new roads with a length of 14,884.00 m for access to the 24 gensets of the ASPHE under study.
- Interventions for the landscaping of the installation sites of the 24 gensets (landscaping of the surrounding area - slopes for the assembly and erection of the gensets).
- The landscaping of the construction site falls within the above interventions and in particular those of the Platform of W/T 7.
- The configuration of the two fields of the respective control houses of the W/F.
- Excavation of foundations of W/T foundations.
- Construction of foundations for W/T.
- Opening of medium voltage, telecommunication and earthing cabling channels for the interconnection of the W/F with the Voltage Booster Station which include the opening of underground channels for the passage of the power transmission lines.
- The construction of the 129.24 m long aerial section of the external PT network for the crossing of the river Komsato.

9.4.1 Construction phase

The installation polygons of the considered APSIE are depicted on the drawings attached hereto in Annex I of this study). Installation polygons are defined as the polygons formed on paper only and surrounding the W/Ts and having no relation to the intervention areas where the projects, main or accompanying, are implemented. These polygons are not marked on the ground, are not enclosed and have no sense of delimitation or intervention in the field. Any interventions for the construction of the studied wind turbines are located in only a small percentage of the area of the installation polygon, which mainly concerns the locations around the wind turbines for their foundation and erection.

For the access to the site of the W/F Gensets will be used, it is foreseen the opening of new roads with a total length of 14.884 m in total, as shown in the respective drawings of the present file.

Also, for the installation of the 24 wind turbines of the ASPEE under consideration, a "working Platform" is required at the installation site of each wind turbine, for the purpose of depositing the machinery to be erected (wind turbine sections), as well as the installation of lifting equipment (cranes) and their safe operation. The dimensions and shape of these are based on the technical specifications of the manufacturer of the proposed wind turbine, for the best and safest installation of the wind turbines and the placement of all assembly materials.

More specifically, at each wind turbine erection point, a leveled plateau will be formed for the placement of the pylon, the chamber and the assembly of the blades on the ground on the hub, before their final erection and installation in the final position.

For the construction of the foundations (pedestals) of the wind turbines, a structural foundation study will be prepared initially and submitted to the competent Planning Authority for the required building permit. On the basis of this study, the final design of the wind turbine foundations will be carried out.

All work will be carried out by mechanical means. The excavation of the foundations will be carried out in accordance with the relevant specifications, using the appropriate mechanical means in compliance with all safety regulations provided for by the relevant legislation.

The construction of the foundation of each wind turbine, briefly includes the following tasks in order:

1. Base excavation.
2. Installation of fundamental grounding.
3. Placement of concrete.
4. Construction of the foundation formwork.
5. Placement of the reinforcement of the pelmet and placement / alignment of the anchoring materials.
6. Installation of pipes for the passage of the M.T. cables.
7. Concreting of the apron
8. Backfilling.

After the completion of the foundations of the wind turbines and the cable ducts, the foundations will be backfilled, as foreseen in the relevant preliminary studies, and then the general landscaping of the surrounding area will be completed.

Priority will be given to the reuse of the soil resulting from the excavation work. As indicated in the detailed description of the project (see Chapter 6), the balance of the spoil is expected to be significantly surplus, although priority will be given to the reuse of the spoil in the project itself. Specifically, the total volume of excavation for the construction of the ASPE (including associated works) amounts to 751,917.07 m^3 while the total volume of embankments amounts to 310,314.50 m^3 , resulting in a surplus of 441 volume of landfill.^{3}602.57 m^3 of which, based on the design of the ASPE under study, 93,204.44 m^3 is planned to be reused for the needs of the project itself (rehabilitation and layering works).

The interventions for the placement of the Gensets and the construction of the ASPEE (with its accompanying works) were described in detail in the description of the project under study (Chapter 6) of this study. The effects of these interventions on the ground are generally negative in nature, varying in magnitude (intensity) and duration, partially or fully manageable and localised in terms of their geographical scope, without any changes in the geological and tectonic characteristics of the study area.

After the completion of the foundation of the W/T, the cable ducts etc., the required backfill will be done as planned and then the general landscaping of the surrounding area will be completed. Particular emphasis will be placed on restoring the site to its original natural state in order to minimise visual disturbance from excavation or backfilling. At the same time, the same effort will be made during the excavation stage to limit the excavations to the minimum technically required, which will ensure the smooth and safe operation of crews and machinery. The main objective is the complete restoration of the site, so that the only interference with nature is limited to the locations of the W/T platforms, the two control houses and the necessary roadworks, the paving of which will be carried out by screening excavation products, limiting to a minimum any disturbance of the site.

There will be an impact during the construction phase due to the presence on site of the construction equipment (including the crusher and concrete silo), the transport, assembly and installation of the W/T and the construction of the accompanying works. This impact will be partially manageable in the short term and fully reversible upon completion of the works.

Cross-border effects

As it follows from the design of the project, all the interventions will be carried out within the Greek territory and therefore no cross-border impacts are expected during the construction phase on the geological, tectonic and soil characteristics of the territory of the neighbouring country of Bulgaria.

Overall Assessment

It follows from the above that the necessary installation of the GERD and the accompanying works will have a moderate negative impact on the geological and soil characteristics. Overall, these impacts are considered to be of a local nature and will in no way alter the general topography of the area. They will not cause unstable ground conditions or changes in the geological arrangement of the rocks, as no deep excavation is required.

These impacts are classified as partially reversible, since after the end of the construction phase, all types of site facilities (offices, workshops, warehouses, etc.) will have to be removed and the site areas will be fully restored and regenerated. Finally, no transboundary impacts are expected on the territory of the neighbouring state of Bulgaria.

9.4.2 Operating phase

The project under study is not expected to cause any impact on the soil and morphology of the study area during its operational phase, as it is not associated with the existence of liquid effluents from the production process, nor does it pose any risk of thermal pollution of neighbouring surface or groundwater bodies, as no cooling water is used.

During the operational phase of the project, small amounts of solid waste is also expected to be generated, which will come from the packaging of materials/maintenance of the facilities and from the cleaning and hygiene materials of the staff.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above mentioned, no cross-border impacts are expected during the operational phase in the territory of the neighbouring country of Bulgaria.

Overall Assessment

Therefore, no further impacts on the soil during the operational phase are expected from the proposed project beyond those assessed and evaluated during the construction phase and are therefore considered neutral and therefore no transboundary impacts on the territory of the neighbouring state of Bulgaria are expected.

9.5 Impact on the natural environment

The project under consideration exploits wind energy, which is a clean form of energy since the operation of the RES-E generators does not result in the release of gases, liquids or solid wastes that would in any way pollute the air, soil or water table of the area. Nor is any other conventional form of energy used. The following subsections summarise the impact of the proposed projects on the natural environment.

As mentioned in the Special Ecological Assessment Study entitled "SPECIAL ECOLOGICAL EVALUATION FOR THE PROTECTED FEATURES OF THE SPECIAL PROTECTION ZONE WITH CODE GR1130012 AND NAME "KOMPSATOU SOCIETY" AND OF THE AREA OF IMPORTANCE FOR THE BIRDS OF GREECE WITH CODE GR009 AND NAME "KOMPSATOU CAVE" prepared for the ESDP project under study and incorporated in the corresponding annex to this study, the wind farm installation polygons are located within the Natura 2000 network and within the Important Bird Areas of Greece (S.SPAs) of the wider area.

Specifically, the project under study is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Kompsatou Valley", code GR009.

However, it should be noted that within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SPA) called "Rodopi - Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

The project under study is located outside the boundaries of any other protected areas of Law 3937/2011 (A/60).

9.5.1 Construction phase

9.5.1.1 Flora

The direct impact of the construction of the project on the vegetation categories results from the occupation of part of the land in the area where the technical works for the project are located. The area that will be occupied by the works concerns the roadway, the W/T platforms, the construction site and the installation areas of the two control cabinets.

In the wider area of the W/F installation, there is a diffuse presence of oak forests. In particular, oak trees and evergreen hardwood vegetation predominate in the area of the W/F. Phytosociologically, the area belongs to the dry deciduous forest subzone (Quercion confertae) of the riparian zone (Quercetalia pubescentis).

The study area, and specifically the ASPHE installation area, is dominated by the following Corine Land Cover (2018) land cover types: 3.2.4 (Transitional wooded shrubland), 3.2.3 (Hardwood Forest), 3.1.1 (Broadleaf Forest).

Specifically the platforms of W/T 2, W/T 3, W/T 4, W/T 7, W/T 9, W/T 14, W/T 16, W/T 23 & W/T 24 shall be located entirely in an area of type 3.2.3. The platforms of W/T 6, W/T 8, W/T 10, W/T 13, W/T 18, W/T 19, W/T 20, W/T 21 & W/T 22 shall be located entirely in an area of type 3.2.4; the platforms of W/T 12 shall be located entirely in an area of type 3.1.1 and the Platform of W/T 11 shall be located for the most part in type 3.1.1 and a small part in type 3.2.4; finally, the platforms of W/T 1, W/T 5, W/T 15 & W/T 17 are placed partly in type 3.2.3 and partly in type 3.2.4. The construction site will be located in the Platform of W/T 7 and therefore entirely in type 3.2.3. The control house grounds are placed the northern one entirely in type 3.2.2 and the southern one most of it in type 3.2.4 and the remainder in 3.2.3. Finally, the remaining accompanying works (internal roads) are located on sites of type 3.2.3 as the main type and 3.1.1 and 3.2.4 as the secondary type.

Table of occupation area by character of land according to the letter No. 1031/05-02-2021 (IDA:6T0FOP1Y-1EY).

Project	Total area occupied in public forest land (m2)
Access routes	139.974
Platforms N/A	136.025
Control centres	828,90 (PP)
Construction site [10]	0
Total	276.827,90

[10] It will be installed in the construction square of W/T 7, so it is included in the W/T platforms as a surface area

In relation to the occupation of forests and forest areas and based on the Decision of the Forestry Department of Xanthi (No. 1031/05-02-2021 (IDA: 6T0FOP1Y-1EY) of posting the forest map, the following table shows the percentage of occupation per character of area.

Table 76: Occupied area per character of land according to the document of the Forestry Department of Xanthi (document No. 1031/05-02-2021, IDA:6T0ΦOP1Y-1EY).

	Occupancy rate			
	PP	AD	AA	Total
Percentage (%)	76,82	0,40	22,78	100

According to the above table, the project under consideration is planned to be developed in areas which according to the forestry suspension are generally forest areas.

The table below shows the coverage of the projects of the ESDP in terms of forest species.

	Naked grassland	Forest Oak	Partly Woody Oak	Fields	Forest cover Other broadleaves	Partly Forest Cover Other Broadleaves	Barren	Total
Roads	17,20%	12,53%	2,61%	1,66%	5,47%	4,65%	0,18%	44,31%
Platforms N/A	29,86%	12,22%	1,76%	2,62%	5,50%	1,51%	0,00%	53,46%
Control dwellers	2,23%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	2,23%
Total	49,30%	24,75%	4,37%	4,27%	10,97%	6,16%	0,18%	100,00%

Table 77: Character of the area of the platforms of the W/T.

Platforms	Coverage according to the Forest Map	Range character
Platform W/T 1	The largest part of the Platform is grassland while some parts are covered by oak trees.	PP
Platform W/T 2		ID and part of it in AA.
Platform W/T 3		ID and part of it in AA.
Platform W/T 4	Bare grassland.	In parts in AA, AD and DR areas.
Platform W/T 5	Most of the Platform is bare grassland and part of it is covered by oak trees.	ID and part of it in AA.
Platform W/T 6		PP
Platform W/T 7	Bare grassland.	AA and a part of it in ID.
Platform W/T 8	Most of the Platform is covered by oak trees and part of it by bare grassland.	ID and part of it in AA.

Platforms	Coverage according to the Forest Map	Range character
Platforms N/A 9	Most of the Platform is bare grassland and part of it is covered by oak trees.	PP
Platforms W/T 10	Forest oak.	PP
Platforms W/T 11	The largest part of each Platform is covered by oaks and a part by bare grassland.	PP
Platforms W/T 12		
Platforms W/T 13	Most of the Platform is bare grassland and part of it is covered by oak trees.	PP
Platforms W/T 14	Most of the Platform is covered by oak trees and a small part of it by bare grassland.	
Platform W/T 15	Bare grassland.	ID and part of it in AA.
Platform W/T 16	The largest part of the Platform is a field and a small part is grassland.	AA
Platform W/T 17	Bare grassland.	AA and a part of it in ID.
Platform W/T 18	Most of the Platform is bare grassland and a small part of it is covered by oak trees.	AA and a part of it in ID.
Platform W/T 19	Total oaks (forested and partially forested area)	ID and part of it in AA.
Platform W/T 20		PP
Platform W/T 21	Mostly oak trees with a small section of bare grassland.	PP
Platform W/T 22	Most of the Platform is covered by oak trees and a small part of it by bare grassland.	PP
Platform W/T 23	Bare grassland.	PP
Platform W/T 24		PP
Central Control Cottage area	Bare grassland.	AA and a part of it in ID.
Auxiliary Control Cradle Area	Bare grassland.	AA and a small part of it in ID.

The internal road network of the ASPHE is mostly located in a forest area (FR) and passes between areas characterized by oak forest rotations (forested and partially forested oak areas) and bare grassland areas. A part of the OD 17 branch and up to its termination at the Platform of A/D 16 passes through a field.

As shown above, the majority of the areas where interventions are foreseen are forest areas and specifically classified as oak forest, thus increasing the intensity of the impact in terms of loss of flora, but almost half of the affected area is classified as barren. It should be noted that the installation of the M.T. line was intended to make the best possible use of the existing road network in order to reduce as far as possible the encroachment of ecosystems or other uses.

The construction of these projects will locally alter the natural state of the habitats on which they are developed, as they will require the clearing and shaping of the land within their occupation zone. Thus, the direct impact of the construction of the project under consideration can be described as locally adverse for the ecosystems and vegetation of the wider area and permanent for the permanently occupied (from the operational phase) areas, but locally limited to the immediate area of occupation of the proposed works.

Regarding the extent of the interventions, the project design (see Chapter 6) shows that:

1) with regard to the platforms of the W/T, the total surface area of the platforms where intervention is foreseen amounts to 191.669,08 m^2 , the major part of which will be restored after the end of the works.
2) as regards the installation areas of the two control posts, the two plots of land will be 4.000,00 m^2 each, i.e. 8.000,00 m^2 in total, of which only the necessary area for the two control posts will be permanently occupied (buildings of 280 & 120 m^2 and a pavement around them with a width of 0,80 m, thus a total area of approximately 510 m),^{2}
3) as regards the site of the construction site, the land will be that of W/T 7 and therefore there will be no additional intervention - site occupation,
4) for roads the total surface of the interventions (new openings) is 158.835,53 m^2 ,
5) as regards the cables for the interconnection of the gensets with the control houses of the W/F as well as the M.T. line for the interconnection of the W/F with the existing "IASMOS" Voltage Booster Station, these will be placed in trenches and will follow the existing road network as the road network will be formed for the needs of the W/F under consideration and therefore will not occupy additional land,

More specifically, the construction of the projects under study is associated with the following impacts on the vegetation and flora of the area:

- Clearing of vegetation. During the construction phase of the proposed projects, land with the cover detailed above will be cleared. It is noted that all the routes of the underground PT cables follow the road network. However, based on the data collected, the clearing of natural vegetation is not expected to cause the loss of any significant, i.e. endangered, rare, protected or endemic plant species.
- Impacts from earthworks. Earthworks will cause the release of dust, which, when applied to the leaves of cultivated plants for long periods of time, can cause a reduction in photosynthesis and productivity. These effects can be reduced by taking preventive measures to retain the dust at source. In any case, these operations will take place for a

limited period of time.

- Emissions of air pollutants from site machinery. These emissions are not assessed as significant as appropriate measures will be taken to limit the emission of air pollutants. Therefore, emissions of gaseous pollutants are not expected to adversely affect the flora of the area.
- Discharge or spillage of liquid toxic waste. Any widespread dumping or uncontrolled spillage of toxic oils and fuels from the construction site and construction equipment may cause soil and water pollution with adverse effects on vegetation. For this reason, the necessary equipment/materials should be available on site to deal with spills (use of adsorbent materials such as sand, wood shavings or special geotextiles).

The construction of the works under consideration is expected to have an overall significant adverse impact on vegetation and flora in the immediate area of the works and negligible for the wider area of the works. However, these impacts of project construction on vegetation types can be considered partially manageable through natural recolonization and through the provision of appropriate post-construction restoration measures and the implementation of measures discussed in the next section. The project surfaces where natural or artificial restoration may be carried out are mainly the slopes of the access roads and internal roads and part of the Platform required for the installation of the wind turbines and the construction site and the two fields for the installation of the control panels.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above, no significant transboundary impacts on flora are expected during the construction phase. Only impacts from earthworks (dust) or air pollutant emissions from the construction site machinery are likely to occur. However, even if they do occur, they are not expected to be significant as they can essentially only affect a narrow zone around the work area and, as mentioned, their intensity decreases significantly with distance.

Overall assessment - Flora

Overall, the construction of the projects under study is expected to have significant negative impacts on the vegetation and flora of the area where the projects will be located, which are partly manageable with the adoption of appropriate measures, partly reversible and in the wider area short- and locally long-term.

It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions. Nor is it likely to affect the degree of conservation of their habitats or fragment them.

Finally, no cross-border effects are expected on the territory of the neighbouring state of Bulgaria.

9.5.1.2 Fauna -excluding avifauna

In order to assess and evaluate the impacts on fauna species, the ecology of each species, their protection status, their presence in the immediate study area, and the extent of the occupation zone of the W/F *were examined in order to assess whether their habitats are affected.*

The impacts are related to the disturbance of the habitats of reptile and mammal species, mainly due to the earthworks and the assembly and installation of the W/Ts, the opening of roads and the construction of other electromechanical infrastructure (wiring channels, etc.). The characteristics of these works (point interventions on the site of the GIS and the linear nature of the road works - power transmission lines) are not expected to have a significant impact on the existing habitats of amphibians, reptiles and mammals.

As already mentioned, the occupation of land for the construction of the ASPEE is *foreseen, but a significant part of which will be restored after the completion of the works (W/T platforms, control house grounds, etc.). With regard to habitats, as the project is* expected to have minor impacts due to habitat loss from the project in relation to the extent of habitat in the study area.

The impacts on fauna species other than avifauna are related to the disturbance of the habitat of species such as reptiles and mammals during the installation phase of the W/T installation works. The point interventions at the W/T installation site are not expected to significantly affect the existing habitats in the study area, while the interventions for the new road widening will also result in moderate habitat disturbance.

During the construction phase of a NPP*, due to site preparation and construction work on the wind turbines, noise levels in the area increase, although not significantly. As presented in the corresponding noise section later in this chapter, at the local level and during the construction phase there will be a rearrangement of existing fauna species in the area with their temporary removal from the project area due to disturbance from noise and human presence, with no further impacts. However, appropriate measures should be taken to reduce noise levels from construction machinery to reduce disturbance to the fauna around the project.*

According to the MEOA, *with regard to the mammal species observed and recorded in the survey area, it is judged that the construction of the park cannot cause significant or permanent disturbance or adverse impact. The mammal species recorded in the project area are mostly species with high adaptability to anthropogenic impacts and it is considered certain that their activity or vital habitat would not be disturbed or lost to the extent that there would be an impact on their presence, the population they maintain in the area or the integrity of their habitats. These species are observed in most parts of Greece and are species with satisfactory (e.g. hare) or particularly large populations (e.g. fox). In particular for Canis lupus, although it is not possible to link the presence of this important mammal directly to the* MEIA *field survey area, it is indicated that mitigation measures will be proposed to further reduce any small possibility of negative impact. With regard to the wolf the main impact that can be identified is not directly related to the MPA projects themselves but to the possibility of increased anthropogenic mortality due to the possibility of increased access to the area due to the new roads. It is also clear from the* MEIA *that with regard to handrails from their records in the* MEIA *survey area it is evident that the area is not significantly used by them. Although they were observed in a significant number of species, they do not appear to be very active in the area (low rate of records per hour of recording). However, measures are also proposed by the MEA and in the section on additional mitigation measures to address potential impacts, measures are also proposed for the handicap species to further reduce any small potential for negative impacts to occur.*

As for the other fauna species (except for avifauna), no impacts on amphibians are expected from the MEA*, while for reptiles it is stated that even the unlikely, accidental loss of reptiles, which may occur during the installation and construction process of the ESDP, will be negligible compared to the losses suffered by these species from other anthropogenic activities such as the traffic of cars on all the roads of the national network in the area and the whole of their range. It is not considered by the MEOA that the installation and operation of the project and associated works may affect the existing presence of these species of turtles and reptiles in general to the extent that they may cause problems. However, from the same study and in the additional mitigation measures section of the potential impacts, measures are also proposed for the worst-case scenarios to further reduce any minor potential for adverse impacts to occur.*

With regard to invertebrate species, it is considered that the construction and operation of the AISIEC cannot cause any impact on their populations or conservation status.

The temporary disturbance is considered to be fully reversible and temporary in nature and in no case leading to habitat fragmentation. Once the works have been completed, natural colonisation of the temporarily disturbed areas will be possible.

Cross-border effects

The accompanying SEA has examined, in addition to the Natura network sites belonging to the Greek territory, the adjacent Natura 2000 network site BG0001032, called "Rodopi - Iztochni", which is classified as a Special Area of Conservation (SAC). Thus, the Study Area of the MEA was defined as the wider area of the installation of the ASPE XEFOTO with the description and characteristics mentioned referring to all the protected features of the SPA GR1130012 and SPA GR009, while the protected features of the nearest SPA GR11300010 and the neighbouring Bulgarian SPA BG0001032 were also taken into account.

The emphasis in the examination of the neighbouring Bulgarian EEZ BG0001032 was given to those species of other fauna that, due to the distances they can travel during their daily movements (and the very short distance of the project site from the boundaries of the above mentioned EEZ), may be affected by the project. Those species of other fauna in the above mentioned EEZ.D, which were selected for examination, consist of 12 species of arthropods *(Barbastellus barbastellus barbastellus, Mioniopterus schreibersii, Myotis Bechsteinii, Myotis blythii, Myotis capaccinii, Myotis emarginatus, Myotis myotis, Rhinolophus blasii, Rhinolophus Euryale, Rhinolophus ferrumequinum, Rhinolophus hipposideros, Rhinolophus mehelyi),* because of the distances they can travel to meet their daily needs, five species of mammals (other than carnivores) (*Canis lupus, Ursus arctos, Myomimus roachi, Spermophilus citellus, Vormela peregusna*) and three species of reptiles (*Testudo graeca, Testudo hermanni, Elaphe sauromates*), which are either species with a large area of endemism (e.g.e.g. *Canis lupus, Ursus arctos*), or which may be affected by the project under consideration due to the proximity of the site of the project to the boundaries of the SPA.

As for the chiral moths of interest, they have been recorded in locations greater than 10 km from the boundaries of the production license blocks of the project under study, with a shorter distance recorded for the species Rhinolophus hipposideros (13 km), and although according to the IUCN red list the species is classified as threatened (NT: Endangered), according to the Bulgarian Red List it is not classified as threatened, as mentioned above, the species (together with Rhinolophus ferrumequinum) is the most abundant in the country (273 sites).

Finally, for the final assessment of the impacts, a field survey was carried out within the framework of the MEIA, which included field recordings, which were naturally carried out within the Greek territory.

The field surveys and according to the MEOA revealed the presence in the area of seven species of chiral species belonging to Annex II of Directive 92/43/EEC (barbastelle, footed myotis, trannomyotis, winged bat, mesrinolophus, microrhinolophus, trannolinolophus), while the species of dragonfly, mountain bat, Alcathus myotis, Daubenton's myotis, Daubenton's myotis, great night-owl bat, small night-owl bat, night-owl bat, white bat, Nathusius's bat, nanon bat, micro bat, brown oton bat, Mediterranean oton bat, parsnip bat, belong to the corresponding Appendix IV. Of all the other mammals recorded (except chimaeras), none belong to Annex II of the above Directive, while the bobcat is a species of Annex IV and the wolf is a species of Annex V of the Directive. Of all the reptile species, two turtle species (gray turtle and Mediterranean turtle) are species listed in Annex II to the Directive, while of all the species, the gray turtle, Mediterranean

turtle, green lizard, wall lizard, viper and starry-eyed viper are species listed in Annex IV to the Directive. The water snake does not belong to any of the above Annexes. As regards amphibians, only the species *Bufo viridis* (green toad), which belongs to Annex IV of the above Directive, was observed during the fieldwork. It is worth noting that throughout the fieldwork, the presence of horses was recorded in the study area, which, although referred to as wild horses, are in fact natural populations of individuals of the species that were abandoned in the area decades ago by their owners, who used them for agricultural and livestock work, managed to survive and reproduce in the natural environment, maintaining natural populations in the study area, and

Regarding the transboundary impacts from the construction of the affected ESDP project on other fauna species (except for avifauna), these are included in the above mentioned ones as it is not possible to distinguish between the Greek and Bulgarian territory for species that have the possibility of movement and that naturally do not know geographical borders.

Overall Assessment - fauna (excluding avifauna)

Therefore, the fauna of the area identified in the area will not be significantly affected by the construction of the works and the impacts of the construction of the ASDP *on the fauna of the area can be considered as weak negative, short term and partially reversible after the end of the works, these impacts are likely to have a transboundary character as the species under consideration have the ability to move and do not know geographical borders.*

9.5.1.3 Birdlife

During the construction phase of the ESDP and due to the increased noise level, increased human presence and the emission of dust and pollutants, as described in detail above, bird species in the immediate vicinity of the project area will be forced to move to adjacent areas, which occupy a large area in the wider region and have similar habitat characteristics. At the end of the construction phase of the project, bird species will return to the W/T area. In terms of other ecological functions, such as foraging and foraging, impacts are not expected to be significant due to the wide availability of suitable habitat in the area. We note that according to the MEIS attached to this study and regarding habitat loss and containment barriers it states that,

- no direct habitat loss is expected to occur as the availability of similar habitats to those existing in the wider area is high in the area of the ESDP site,
- the impact of disturbance and movement barriers is considered negligible as the EIA and the present proposals foresee the cessation of the installation of the ASPE during the breeding season of birds, and the high availability of corresponding habitat types in the area and the small size of the intervention area preclude habitat fragmentation and habitat discontinuity.

The MEOA, while also assessing synergism with the surrounding albeit significantly distant to licensed SSEs, concludes that the estimated habitat losses are minimal as the affected habitats dominate, according to the land cover database and mapping (Corine land cover 2018), covering a total of more than 77% of the area of the synergistic impact study area. Therefore, the intensity of the impact from habitat loss and degradation is low and it is considered that this project would have a very minor impact on habitat loss/ degradation in the study area and the wider area in general. Similarly, and disturbance and barriers to movement of MEOAs concludes that the contribution of the subject LSEA to cumulative/ synergistic impacts is small and it is considered

that this project will have zero impact on disturbance and displacement of important habitats for species of interest in the study area and the wider area in general.

In particular, with regard to specific species that may be affected in the MEA, it is stated that from the activity of each species recorded through the field survey and their sensitivity to disturbance and displacement phenomena, the species that are expected to face minor impacts on the populations operating within the study area, in case all of the licensed SSCEOs are licensed and installed, are large birds of prey - scavengers, as well as other large species such as birds of prey, birds of prey and other large species such as birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of prey, birds of

It is noted that the largest scale impacts are expected during the initial construction phases, and in particular during the earthworks, during which the required vegetation clearance and the shaping of roads and the platforms of the W/T are carried out.

Cross-border effects

As already mentioned, the Natura 2000 network site with the code BG0001032 and the name "Rodopi - Iztochni", is classified as a Special Conservation Area (SCA) and not a SPA and therefore its protection does not include bird species. However, because of the proximity of the territory of the Bulgarian State and the Natura network area in question to the SPA in question and the distances that the bird species found in the project area can travel in order to meet their daily needs, they may also use areas within the territory of Bulgaria. However, as it is clear from the project design that all the interventions will take place within the Greek territory, any impacts during the construction phase will mainly concern the Greek territory and no significant impacts (of a cross-border nature) are expected in the neighbouring country.

Overall Assessment - Avifauna

As the construction phase is a time-limited process, the impacts on avifauna are generally considered to be minor, localised, short-term and reversible. Furthermore, no transboundary impacts on the territory of the neighbouring state of Bulgaria are expected.

9.5.1.4 Overall assessment of the impact on the flora and fauna of the area from the construction of the ASPHE.

As can be seen from all of the above, the construction phase of the "XEFOTO" ASPIO will have overall significant negative direct and indirect (mostly direct) impacts on the ecosystem, ecosystem functions, flora and fauna of the area. However, these impacts as a whole are expected to be local in nature, not fragmenting priority habitats and habitats vital for maintaining ecosystem cohesion. The majority of the impacts are also of a short-term nature (for the duration of the construction of the ASDP), while some of them are of a permanent nature, i.e. the construction of the W/T platforms, the two Control Houses, the interventions on the road network (new road widening), etc. It should be noted that some of the impacts are manageable once measures have been taken. Finally, negative transboundary impacts of a weak nature are expected only for other fauna species (except for avifauna).

9.5.2 Operating phase

9.5.2.1 Flora

During the operational phase of a RES-EPP and its accompanying works, there are no emissions of gaseous, liquid and solid waste that could affect the flora and fauna of the installation site.

The flora of the area of the studied ESDP will not be altered during the operational phase. In parts of the areas encroached upon during the construction works of the ESDP (e.g. the area of control houses, roadside slopes, etc.) there will be a "return" of vegetation, either natural or artificial, through appropriate horticultural interventions - restoration.

Due to the nature of the project, during its operational phase, no aspect of the habitat types and land cover categories of the areas where the proposed ESDP project is proposed to be located will be negatively affected, since as mentioned above, natural resettlement of almost all the affected area in the immediate study areas and not occupied by engineering works will be possible.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. In view of the above, no transboundary impacts on flora are expected during the operational phase.

Overall assessment - flora

Therefore, neutral impacts on flora and habitats are expected during the operational phase of the project. Finally, no transboundary impacts are expected on the territory of the neighbouring state of Bulgaria.

9.5.2.2 Fauna -excluding avifauna

During the operation phase of the project, a small part of the fauna of the surrounding area may be affected by the noise source around the W/Ts and their lighting, for reasons of flight safety, resulting in their removal from the AECS site. Furthermore, the AECS site is not fenced and therefore no isolation or reduced mobility of terrestrial fauna will occur in the area.

The occurrence of barrier effects on terrestrial fauna species is therefore negligible.

As mentioned above, according to the MEIA, with regard to the mammal species observed and recorded in the survey area, it is considered that the operation of the park cannot cause significant or permanent disturbance or adverse impact. The mammal species recorded in the project area are mostly species that are highly adaptable to anthropogenic impacts and it is considered certain that their activity or vital habitat will not be disturbed or lost to the extent that there will be an impact on their presence, the population they maintain in the area or the integrity of their habitats. These species are found in most parts of Greece and are species with satisfactory (e.g. hare) or very large populations (e.g. fox).

Especially for the species *Canis lupus* (wolf) it is not possible to link its presence directly to the field survey area of the MEIA (the species is mentioned in the TEDs of the studied neighbouring Bulgarian area of the Natura 2000 network EEZ BG0001032, and numbers at least 25 individuals

within it). In the study area throughout the year, no wolf packs were ever recorded in the study area, but only solitary individuals of the species, and therefore the risk of displacement of breeding area by the installation of the studied ESU is not evident from the field measurements. The main impact that can be identified is not directly related to the ASPHE works themselves but to the potential for increased anthropogenic mortality due to the possibility of increased access to the area due to the new roads.

Also from the MEOA it is clear that with regard to the chironomids from their recordings in the survey area of the MEOA, it is obvious that the use of the area by them is not significant. Although they were observed in a significant number of species, they do not appear to be intensively active in the area (low rate of records per hour of recording). For the most important species recorded (species listed in Annex II of Directive 92/43/EEC), their presence in the area is extremely low, with the number of crossings per hour of recording.

As for the other fauna species (except for avifauna), no impacts on amphibians are expected from the project, while for reptiles it is stated that the operation of the project and the accompanying works is not considered that it may affect the existing presence of reptiles in general to the extent that it may create problems.

Cross-border effects

As it has been mentioned in the construction phase, in addition to the Natura network areas belonging to the Greek territory, the accompanying SEA has also examined the adjacent Natura 2000 network area with the code BG0001032 and the name "Rodopi - Iztochni", which is classified as a Special Conservation Area (SCA). Thus, the Study Area of the MEA was defined as the wider area of the installation of the ASPE XEFOTO with the description and characteristics mentioned referring to all the protected features of the SPA GR1130012 and SPA GR009, while the protected features of the nearest SPA GR11300010 and the neighbouring Bulgarian SPA BG0001032 were also taken into account.

The emphasis in the examination of the neighbouring Bulgarian EEZ BG0001032 was given to those species of other fauna that, due to the distances they can travel during their daily movements (and the very short distance of the project site from the boundaries of the above mentioned EEZ), may be affected by the project. Those species of other fauna in the above mentioned EEZ.D, which were selected for examination, consist of 12 species of arthropods *(Barbastellus barbastellus barbastellus, Mioniopterus schreibersii, Myotis Bechsteinii, Myotis blythii, Myotis capaccinii, Myotis emarginatus, Myotis myotis, Rhinolophus blasii, Rhinolophus Euryale, Rhinolophus ferrumequinum, Rhinolophus hipposideros, Rhinolophus mehelyi),* because of the distances they can travel to meet their daily needs, five species of mammals (other than carnivores) (*Canis lupus, Ursus arctos, Myomimus roachi, Spermophilus citellus, Vormela peregusna*) and three species of reptiles (*Testudo graeca, Testudo hermanni, Elaphe sauromates*), which are either species with a large area of endemism (e.g.e.g. *Canis lupus, Ursus arctos*), or which may be affected by the project under consideration due to the proximity of the site of the project to the boundaries of the SPA.

As for the chiral moths of interest, they have been recorded in locations greater than 10 km from the boundaries of the production license blocks of the project under study, with a shorter distance recorded for the species Rhinolophus hipposideros (13 km), and although according to the IUCN red list the species is classified as threatened (NT: Endangered), according to the Bulgarian Red List it is not classified as threatened, as mentioned above, the species (together with Rhinolophus ferrumequinum) is the most abundant in the country (273 sites).

Finally, for the final assessment of the impacts, a field survey was carried out within the framework of the MEIA, which included field recordings, which were naturally carried out within the Greek territory.

The field surveys and according to the MEOA revealed the presence in the area of seven species of chiral species belonging to Annex II of Directive 92/43/EEC (barbastelle, footed myotis, trannomyotis, winged bat, mesrinolophus, microrhinolophus, trannolinolophus), while the species of dragonfly, mountain bat, Alcathus myotis, Daubenton's myotis, Daubenton's myotis, great night-owl bat, small night-owl bat, night-owl bat, white bat, Nathusius's bat, nanon bat, micro bat, brown oton bat, Mediterranean oton bat, parsnip bat, belong to the corresponding Appendix IV. Of all the other mammals recorded (except chimaeras), none belong to Annex II of the above Directive, while the bobcat is a species of Annex IV and the wolf is a species of Annex V of the Directive. Of all the reptile species, two turtle species (gray turtle and Mediterranean turtle) are species listed in Annex II to the Directive, while of all the species, the gray turtle, Mediterranean turtle, green lizard, wall lizard, viper and starry-eyed viper are species listed in Annex IV to the Directive. The water snake does not belong to any of the above Annexes. As regards amphibians, only the species *Bufo viridis* (green toad), which belongs to Annex IV of the above Directive, was observed during the fieldwork. It is worth noting that throughout the fieldwork, the presence of horses was recorded in the study area, which, although referred to as wild horses, are in fact natural populations of individuals of the species that were abandoned in the area decades ago by their owners, who used them for agricultural and livestock work, managed to survive and reproduce in the natural environment, maintaining natural populations in the study area, and

Regarding the impacts of the operation of the proposed W/F on other fauna species, these are integrated with the above mentioned ones as it is not possible to distinguish between the Greek and Bulgarian territory for species that have the possibility of movement and that naturally do not know geographical borders.

Overall Assessment - fauna (excluding avifauna)

Thus, we consider that the potential impacts from the operation of the project on the fauna of the area are weak negative, long-term and fully reversible. It is expected that the most sensitive species, such as small mammals, will be removed and relocated but at short distances from the noise and light source locations, as they are nuisance factors for these animal populations.

Therefore, the induced impacts of the project are assessed as weak direct and indirect, localized, partially manageable and partially reversible. These impacts are also likely to be of a transboundary nature as the species under consideration are mobile and do not know geographical boundaries.

9.5.2.3 Birdlife

Regarding the impacts on avifauna from the operation of the studied ESDP, it should be noted that the planned wind turbines of the ESDP "XEFOTO" are placed in a relatively sparse arrangement between them. Thus, it is not expected that the possibility of bird passage perpendicular to the ridges will be significantly reduced (there are large gaps and free ridges). There are no significant synergistic effects in the project study area with other types of activities, other than RES, since in the vicinity of the project the activities are mild (mainly extensive livestock farming).

Thus, for the individual potential impacts concerning the avifauna from the operation of the studied ESDP according to the attached annexed study of the MEA study, it is expected that:

1) Impacts from impacts

Of the species of large raptors observed in the field survey area, the vulture, the hornbill, the snake eagle, the black vulture, and the golden eagle, in descending order of ranking, are considered to face a theoretical potential risk of impact effects from an impact, since they appear to use the AISP installation area with lower or higher intensity of frequency. Therefore, and because of the above, the importance of the wider area for the species, the use of the area (foraging), their size and the fact that the above species, like most large predators - scavenging birds, are K-selection species in terms of their evolutionary growth strategies, the above species were classified, in terms of impact impact impact, in the risk category "indicative risk of impact".

Also, especially in the case of the black-tailed godwit, the above mentioned project area is a suitable area for the siting of wind farms, as according to the scientific publication of Vasilakis et al. (2017), the authors propose the installation of wind farms in this area as a solution to the potential problem of the black-tailed godwit population reduction if all the wind farms planned to operate in the area operate simultaneously. The above study predicts that if all the wind farms under licensing are installed in this peripheral zone (and even within part of the first zone in the non-core area, see fig. 2 of this publication), even with their simultaneous operation, the population mortality rate will not exceed 1 %, which is the ideal solution compared to the other scenarios. With regard to the snake eagle and the wasp, it is very likely that, despite the fact that the fieldwork did not identify any nests of these two species within the field survey area, nor any behaviour directly indicating their presence (flights carrying branches or transporting food), most of their crossings were of the same individuals (a pair for each species) for which the area of the project under study is part of their endemic area.

In the case of the Black-backed Stork, a more stringent classification of the species in the risk category "potential risk of impact" was also followed, based mainly on the absolute number of observations obtained for the species (37 individual crossings for the Black-backed Stork) and despite the fact that the expected number of impacts per year was not high.

With regard to the species: kestrel, gull, gull, peregrine falcon, cormorant and common sandpiper, although the probability of impact with the wind turbines of the project is infinitesimal, according to the characteristics of their flights. However, due to their presence in the area, the possibility of impact cannot be excluded by the study team. Due to the importance of the area and the, albeit small, probability of impact resulting from the flights, a more stringent classification of the turbines in the category "potential risk of impact" was preferred.

With regard to other species of important raptors, such as the Whooper's Eagle, the Common Chiffchaff, the Osprey, the Willow Warbler, the Winter Petrel and the Black-tailed Godwit, the probability of impact on the wind turbines of the project under study, based on field records, is zero as their total individual crossings are minimal. Although the

above species do not appear to be directly associated with the study area and in particular with the project site, this fact, as mentioned above, cannot exclude the possibility that these species may make accidental transits from the project site, and therefore there may be some probability of impact for them as well, which is however very small, and therefore the above species have been classified as 'low or no significant impact risk'.

The category "low or no significant risk of impact" also included the species Silver Pelican and Roseate Pelican. As in the case of the cormorant, no feeding or nesting habitats exist for these two species in both the installation area and the field survey area.

Regarding the very important species of interest *Neophron percnopterus* (Egyptian vulture), although it was not observed in the fieldwork of this Special Ecological Assessment, it is considered that it may be occasionally active in the wider area of the project. The species is a breeding visitor to the study area, with an active nesting site in the rocky complex of 'Thracian Meteora'. However, in accordance with the Greek legislation[11] , the exclusion zone for the installation of wind turbines for the present project is defined as the zone of 5,000 meters radius from the Egyptian vulture nest, a distance that does not require the movement of wind turbines of the project under study, as it was taken into account from the outset during the siting of the project, in order to protect the species and to harmonize the proposed project with the Greek legislation (Government Gazette B' 3760/25-10-2017).

It is also noted that in the wider area of the studied wind farm there are also five feeding sites for raptors - scavengers, with the closest of them being more than 5 km away from the location of the nearest wind turbine of the studied project. Therefore, and given the above distance, the project is not expected to have a negative impact on the role and function of the network of feeding sites.

For the other important species of smaller bird fauna (ostriches, oakleopods, etc.) it was judged by the MEIA that there can be no significant impacts as they are species that move over short distances, usually making low flights and in addition, no large concentrations were recorded in the field survey area.

2) Impacts from direct habitat loss (and change in habitat structure)

As for the impact of habitat loss, according to the MEIA, it is not assessed as existing in the study area for the installation of the proposed ESPO, due to the very small area of occupation of the project and the high coverage of the respective habitats both within and outside the study area. The SEA also states that it is not assessed as existing for the area of the wind farm and the field survey area, due to its mainly forested form, with low-lying woody tree vegetation, mainly of broad-leaved species, and therefore not characteristic either as a feeding area or as a nesting area. With regard to smaller birds of prey, some of which use wooded areas within their native range, the above-mentioned impact is again not considered by the MEOA to exist, as the wind farm site is very small compared to the corresponding type of habitats that abound in the wider study area. The

[11] *National Action Plan for the Egyptian Vulture (Neophron percnopterus) in Greece (Government Gazette 3760/B/25-10-2017)*

same applies to the black-backed woodpecker, as the installation site is not located near water concentrations, nor within streams, nor does it have coniferous forest vegetation.

3) Effects of annoyance - seizure blockages

The disturbance due to the presence of wind farms in operation or under maintenance is considered to be of lower intensity than that caused during the construction period of a wind farm. Other causes of disturbance associated with the operational phase of a wind turbine include visual disturbance due to the rotors themselves, noise, traffic and presence of personnel associated with site maintenance and security, improved public access, turbines and other structures that provide advantages or improved access for predators.

The magnitude of the impact (indirect habitat loss due to disturbance, but also increased accessibility to the project area with the new road construction) on populations living at least for some time (breeding, wintering, feeding area) in the installation area was examined. Impacts due to disturbance may be associated with displacement of nesting habitat (possibly to a sub-optimal location), reduced breeding success or failure, displacement from a foraging area of the species, and in extreme cases, abandonment of the territory.

Thus, high intensity disturbance events can lead to displacement of species from an area, especially for species whose nesting sites are in close proximity to the studied ESU. Displacement, as well as the creation of a barrier due to the presence of W/Ts acting as barriers along bird movement corridors, may exclude species from important nesting/roosting or foraging habitats and increase their energy expenditure in an attempt to avoid the area where the ESU extends.

According to the analysis presented in the SEA regarding the impact of barrier creation, the wind farm under study occupies a small area and therefore cannot cause a similar type of impact on the above species. Also, given the proposal of the MEOA to install an automated wind turbine stopping system as one of the measures to mitigate the impacts of the wind farm on avifauna, the wind turbines to be installed will be stopped when birds of interest are passing through the area and the already minimum size of the barrier area will be further reduced.

Also, from the fieldwork (November 2021 - October 2022) carried out within the same MEIA and although the wider area of the installation of the "XEFOTO" wind turbine is an important migratory corridor for avifauna, no concentrations or significant group movements of migratory birds that could be affected by the presence of wind turbines were recorded. It should be noted that the topography of the area where the "XEFOTO" wind farm is to be installed, as well as the morphology of the wider area, does not create narrow passages that could guide species to cross from the site of this wind farm. For this reason, it is estimated by the MEOA that, based on the field data herein (and for the time period in which they were conducted), no potential impacts on migratory species would occur. However, and despite this fact, the additional mitigation measures proposed by the MEOA to address potential impacts also take into account the location of the study area.

4) Synergistic / cumulative impacts from all projects in the study area

There are no wind farms installed (licensed) in the immediate area of the installation area of the project (Source: P.A.E., available on 20/10/2022). The nearest licensed wind farm is located at an average distance (in a straight line) of more than 16 km (outside the protected areas under study), southwest of the production license blocks of the project under study. There are no licensed wind farms in the wider project area and within a radius of 10 km (Source: P.A.E., available on 20/10/2022). The nearest licensed wind farm is located at an average distance (in a straight line) of more than 200 km.

As the studied RES is located within protected areas, namely the GR1130012 and the GR009 SPA and given the differentiation of their boundaries and the location of some RES only within one of the above protected areas, in order to better address the synergistic impacts of the project under study, the study team of the Special Ecological Assessment Study chose to take into account the wider boundaries of the entire area enclosed within the two areas and a peripheral zone

In the above area, synergistic and especially cumulative (cumulative) effects on the populations of important species were examined. In the above area it was therefore found that there are 21 ESUs (including the one under study) in the process of being licensed for production (production licence). Thus, out of a total of 4,705.65 ha, an area which constitutes the total of the production licence blocks of the 21 ESUs (together with the studied one) located either within, or partially within, or within the boundaries of the synergistic impact study area, only 2.464,48 ha are located within the study area, while of the total of 136 wind turbines, which make up the above mentioned wind turbines (together with the 24 wind turbines of the project under study), only 85 are located within the synergistic impact study area.

- Regarding impacts from impacts, according to the MEIA, taking into account the assessments of the impact victim search programme in 9 existing NPPs in the Thrace region in 2009-2010, with regard to the 24 wind turbines under license (under production) of the project under study within the "synergistic impact study area", as mentioned above there are no installed wind turbines (licensed) within this area, the annual mortality rates are 3.65 and 4.15 for raptors and vultures respectively.

  In the case of the scenario, under which all of the GHPs under licensing will be licensed (this estimate constitutes the worst case scenario), within the "synergistic impact study area" there will be 85 wind turbines (in the licensing stage under production), the estimated mortality rates, according to the MEIA, will amount to 12.92 and 14.71 predators and vultures respectively. The above reported rates are high and it is estimated that if they are close to reality they would result in losses to the populations of the above species operating in the area, however, the actual mortality within the entire "synergistic impact study area" may vary significantly (estimated to be much lower) as the above estimates on which they are based refer to a wider geographical area.

  In conclusion, the contribution that its construction may have on the overall cumulative impact due to impact on energy infrastructure of the species of interest (with emphasis on scavengers - large predators) is estimated as low.

- With regard to habitat loss and degradation, the MEOA study team used certain assumptions, such as that all of the land within the polygons of the licensed ESPOs in the area is an area that will be lost to avifauna (strict approach), despite the fact that the magnitude of habitat loss will be much smaller than this as the encroachment within the polygons of the ESPOs will be much smaller (approximately 5-10% of the polygons).

  In the case that all of the licensed RES-EEs will be licensed (licensing stage under production) (worst case scenario), as there are no existing RES-Es within the synergistic impact study area, the estimated losses in descending order are in the following habitats: natural grassland, transitional woodland and scrub, broadleaf forest, hardwood forest, land used mainly for agriculture together with significant parts of natural vegetation, mixed forest and permanently irrigated arable land. The above habitats dominate according to the database and land cover mapping (Corine land cover 2018) reflected in the maps, covering in total more than 91% (2.1.2: 3.54%, 2.4.3: 4.84%, 3.1.1: 27.95%, 3.1.3: 4.08%, 3.2.1: 2.22%, 3.2.3: 33.41%, 3.2.4: 15.74%) the area of the synergistic impact study area, and the habitats under study also abound outside of it.

  In the case that only the project under study receives a permit (best case scenario), the estimated habitat losses are minimal and concern the following habitats in descending order: transitional woodland and scrub, hardwood and broadleaf forest. The above habitats dominate, according to the land cover database and mapping (Corine land cover 2018) shown on the maps, totalling over 77% of the area of the synergistic impact study area. Therefore, due to the fact that the project under study is located within habitats that are abundant throughout (and outside) the synergistic impact study area, due to the fact that the contribution of this project to cumulative/ synergistic impacts is small (there are no installed wind farms within the synergistic impact study area, but also not in the vicinity of the synergistic impact study area), it is considered that this project will have a very small impact on habitat loss/degradation in the study area and the wider

- With regard to disturbance and containment barriers, the assessment of cumulative impacts due to displacement, either as an indirect effect of disturbance or for avoidance of the wind turbine and its accompanying works that may be encountered by bird species, was carried out in the MEIA, based on the assumption that the total activity of species is halved within a 500 m radius of the wind turbine installation sites from the wind turbines. Based on this, the total area within which a halving of the activity of species of interest is expected to occur was calculated, which was assumed to include areas with scattered patches of necessary resources for avifauna, such as suitable nesting, cover, roosting, foraging, etc.etc. It is noted that in any areas/positions of suitable habitat included within the above areas where impacts due to disturbance and displacement are expected to occur, there will not be a complete cessation of activity of avian species, therefore there is no question of loss of all such habitat.

  Thus, in the case that all of the licensed RES-E will be licensed (licensing stage

under production) (worst case scenario). The habitats experiencing losses due to displacement, relative to the total available suitable habitat within the synergistic impact study area, in descending order, are: Watercourses, hardwood vegetation, natural grassland, broadleaf forest, transitional woodland and scrub, land used primarily for agriculture together with significant portions of natural vegetation, mixed forest, permanently irrigated arable land and beaches, dunes, sand dunes. The above habitats dominate according to the database and land cover mapping (Corine land cover 2018) reflected in the maps, covering in total more than 92% (212: 3.54%, 243: 4.84%, 311: 27.95%, 313: 4.08%, 321: 2.22%, 323: 33.41%, 324: 15.74%, 511: 0.21, 331: 0.37) the area of the synergistic impact study area, and abound outside of this area.

In the case that out of the total number of the PPAs under licensing (licensing stage under installation and under production), only the project under study is licensed (best case scenario), the estimated habitat losses (in the MPA) that show losses due to displacement in relation to the total available suitable habitats within the whole protected area, where a reduction of the activity of the species of interest by half (50%) is expected, are minimal and concern the following habitats in descending order: Transitional woodland and scrub, hardwood forest, broadleaf forest and land used primarily for agriculture together with significant sections of natural vegetation. These habitats cover a significant area according to the land cover database and mapping (Corine land cover 2018) shown on the maps, totalling over 41% of the area of the synergistic impact study area. Covering a total of greater than 81% of the area of the synergistic impact study area. Therefore, due to the fact that the project under study is located within habitats that are abundant throughout (and also outside) the synergistic impact study area, due to the fact that the contribution of this project to cumulative/collateral impacts is small (there are no installed wind farms within the synergistic impact study area, nor in the vicinity), it is considered that this project will have zero impact on disturbance and displacement of important habitats for species of interest in the study area and the wider area.

According to the above percentages of the areas where a decrease in the activity of avifauna species is expected, the activity of each species recorded through the field survey in the MEOA and their sensitivity to disturbance and displacement phenomena, the species that are expected to face minor impacts on the populations operating within the study area, in the event that all of the licensed SACs are licensed and installed, are the large birds of prey - passerines, as well as the birds of prey - passerines, and the birds of prey - birds of prey - birds of prey - birds of prey, as well as the birds of prey - birds of prey - birds of prey - birds of prey - birds of prey.

Given all the above mentioned information, it is concluded that no significant synergistic impacts are expected to arise from the installation and operation of the project under study in relation to the existing corresponding projects in the wider area, since, as mentioned above, there are no installed RES-EEOs in the

wider study area. Also, in the theoretical case that the worst case scenario of the installation of all of the licensed wind turbines is verified, although synergistic impacts are expected to be relatively high, the additive effect of the total of 24 wind turbines of the study project, based on the above analysis, is not expected to be of such an extent that it would adversely affect the protected objects of the protected areas concerned, their conservation status, conservation objectives, etc. Also, the set of mitigation measures proposed for the project under study that are discussed in subsequent sections of this SEA will also help in the above direction.

The above impacts to avifauna are expected to be mitigated with the adoption of the mitigation measures proposed in the remainder of this document and in the attached EIR. In summary, and in accordance with the attached SEA, the following table shows the significance of the impacts from the operation of the studied ESPO.

Table 78 Summary presentation of the impact of impacts by species of avifauna[12]

Kind of	Loss of habitat	Impact	Creation of a dam
Aegypius monachus (Black vulture)	O	XX	O
Aquila chrysaetos (Golden eagle)	O	XX	O
Accipiter brevipes (Saini)	O	X	O
Ciconia nigra (Black Stork)	O	X	O
Circaetus gallicus (Snake eagle)	O	XX	O
Circus aeruginosus (Cormorant)	O	X	O
Circus cyaneus (Winter squirrel)	O	O	O
Circus pygargus (Least Cormorant)	O	O	O
Clanga pomarina (Crane eagle)	O	O	O
Falco peregrinus (Peregrine Falcon)	O	X	O
Falco eleonorae (Black-backed Gull)		O	
Gyps fulvus (Vulture)	O	XX	O
Hieraaetus pennatus (Geraetus *pennatus)*	O	X	O
Milvus migrans (Tsiftis)	O	O	O
Pandion haliaetus (Fish Eagle)	O	O	O
Pelecanus crispus (Silver pelican)		O	
Pelecanus onocrotalus (Pelecanus *onocrotalus*)		O	
Phalacrocorax carbo (Cormorant)		O	
Pernis apivorus (Pernis apivorus)	O	XX	O
Caprimulgus europaeus (Yiddish)		O	
Dendrocopos syriacus (Balkan woodpecker)		O	
Dryocopus martius (Black Woodpecker)		O	
Emberiza hortulana (Stilt)		O	

[12] Source: Table 31 , Study "SPECIAL ENVIRONMENTAL ASSESSMENT FOR THE PROTECTED FEATURES OF THE SPECIAL PROTECTION ZONE CODE GR1130012 AND NAME "KOMPSATOU CAVE" AND THE SIGNIFICANT AREA FOR THE BIRDS OF GREECE CODE GR009 AND NAME "KOMPSATOU CAVE", October 2022

Kind of	Loss of habitat	Impact	Creation of a dam
Ficedula semitorquata (Oak flycatcher)		O	
Lanius minor (Cinderella)		O	
Lanius collurio (Eagle-eye)		O	
Lullula arborea (Tree star)		O	
Leiopicus medius (Middle woodpecker)		O	
Struciformes (Passeriformes)	A record was made on a case-by-case basis		

Legend: XXX = evidence of significant risk of incidence, XX = evidence of risk of incidence, X = possible risk of incidence, O = low or no significant risk of incidence

Based on the due assessment and evaluation and the summary of the conclusions in Chapter 10 of the SEA for the species populations of the relevant protected areas, it is concluded that the subject project of the AUCNEFT is "LOST" (subject to the implementation of all mitigation measures):

- It is not likely to delay or interrupt progress towards the conservation objectives of the Natura 2000 sites concerned.
- It is not likely to reduce the extent or fragment the habitat types of Natura 2000 sites or affect the representativeness and degree of conservation of their structure and functions.
- It is not likely to reduce the population size of species or affect the degree of conservation of their habitats or fragment them or affect the balance between species or affect the degree of isolation of species.
- It is not likely to cause changes to vital parameters (e.g. nutrient balance, soil degradation from potential erosion, dynamics of the relationships between biotic and abiotic parameters) that determine how Natura 2000 residential sites function.
- It is not likely to interact with predicted or expected natural changes in the Natura 2000 sites concerned.

The accompanying works of this ESDP project are not considered to have an adverse impact on the site and its integrity, nor on the species living there. The new openings for the installation of the wind turbines will not cause adverse effects on the Natura 2000 site and its protected objects, due to the correct siting (and the relevant proposals herein).

According to the SEA, the effects of the project in synergy with other related projects in the area are considered to be less than significant given that all of the mitigation measures identified in the SEA will be implemented.

Cross-border effects

As already mentioned, the Natura 2000 network site with the code BG0001032 and the name "Rodopi - Iztochni", is classified as a Special Conservation Area (SCA) and not a SPA and therefore its protection does not include bird species. However, because of the proximity of the territory of the Bulgarian State and the Natura network area in question to the SPA in question and the

distances that the bird species found in the project area can travel in order to meet their daily needs, they may also use areas within the territory of Bulgaria. However, as it is clear from the project design that all the interventions will be carried out within the Greek territory, any impacts during the operational phase of the ESDP will mainly concern the Greek territory and no significant impacts (of a cross-border nature) are expected in the neighbouring country.

Overall assessment

Therefore, the induced impacts of the project on avifauna are assessed as moderate negative direct and indirect, localized, long-term, partially manageable and partially reversible. Finally, no transboundary impacts are expected on the territory of the neighbouring country of Bulgaria.

9.5.2.4 Overall assessment of the impact on the flora and fauna of the area from the operation of the ESDP.

Therefore, the induced impacts of the project are assessed as moderate negative direct and indirect, localized, long-term, partially manageable and partially reversible. Finally, these impacts have negative weak impacts of a transboundary nature on other fauna species (except birds).

9.6 Impact on the man-made environment

9.6.1 Spatial planning - land use

When siting a wind farm, it has been estimated that only 1 to 3% of its total area is occupied by the wind turbines (pylon bases), whose foundations are mostly underground. If the area required for road construction is excluded, the remaining area (up to 99% of the total) is still available for other uses (e.g. grazing). Therefore, the installation and operation of the study project is not expected to result in a change to the existing anthropogenic activities and land uses of the wider area, which in the study area are crops and livestock with free grazing of livestock. The installation of the study ADF will be located in isolated and open areas of forest character. However, the land reserved for the project is small (during the construction phase) and very small (during the operation phase) compared to the corresponding available land in the wider area. It will therefore not affect the land uses of the study area in general and the surrounding area in terms of its current land uses in particular.

A significant part of the land that will be affected during the construction phase will be restored after the works are completed and therefore there will be no permanent change in land use.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. In view of the above, no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring Bulgarian state.

Overall Assessment

Given the ultimately relatively limited land occupation by the project, impacts to existing uses from the installation (construction-period and permanent occupancy) are considered minor and from the operation (permanent land occupancy) are negligible. Finally, no transboundary impacts

are expected both during the construction and operation phases on the territory of the neighbouring Bulgarian state.

9.6.2 Structure and functions of the man-made environment

The studied RES-E will be installed in an area where anthropogenic activities are limited and not intense although the nearest settlements are located at short distances (three settlements at a distance of less than 1.0 km - ranging from 0.63 km to 0.8 km). As has been thoroughly analyzed in Chapter 5 of this study, generally the distances defined by the K.Y.A. 49828/08 (Government Gazette 2464B'/03.12.2008), which approved the EIA&RP for the EIAs in Annex II, Table D, from residential activities are met.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

Overall assessment

In conclusion, no significant change in the residential environment of the study area is expected from the implementation of the project. Therefore, the impacts of the project are assessed as weak negative direct & indirect both during the construction phase of short term reversible and partially manageable, while during the operation phase weak direct & indirect long term partially reversible and partially manageable.

Finally, no transboundary impacts are expected both during the construction and operation phases in the territory of the neighbouring Bulgarian state.

9.6.3 Cultural heritage

There are no declared archaeological sites in the immediate study area, even within the territory of Bulgaria as no monuments are identified within a 2 km radius of the project (according to Chapter 8 - Section 8.6.4) and therefore no impacts on historical monuments or other sites of historical and cultural interest are expected from the construction and operation of the ESDP. In view of the above, no impacts of a transboundary nature are also not expected during both the construction and operation phases on the territory of the neighbouring state of Bulgaria.

9.7 Socio-economic impact

9.7.1 Economy - employment

The construction of a RES-EPP has a positive impact on the economy of the wider region where it is installed. In the case of mountainous areas, the presence of a wind farm does not affect the existing land uses (usually livestock farming) and constitutes an important and guaranteed source of resources for the local authorities (as explained below) on whose borders it is located.

During the construction phase, a significant number of temporary jobs will be created, as labour from the installation site will be used during the construction phase of the GIS, to carry out all the necessary infrastructure works. Overall, therefore, a moderate positive overall impact on the

economy, both direct and indirect, is expected from the creation of new jobs of a temporary and local nature.

In addition, the installation and operation of a wind farm creates new permanent jobs locally. These personnel are responsible for monitoring the proper functioning of the system (wind turbines, voltage boosting substations, metering system and systems installed by the utility company), for the immediate disconnection or reconnection of the wind farm to the grid in case of emergency, and for the maintenance of all equipment. The local staff need not be specialised, but simply have a basic technical understanding. Staff could be properly trained by the manufacturer, in the operation of the wind turbines - which is generally simple, like the operation of a common generator.

The overall positive impact on the economy of job creation is therefore expected to be weak.

Finally, with the direct financial benefit gained by Local Authorities, according to Law 3468/06 (Government Gazette 129 A'/27.06.2006), as amended by Law 3851/10 (Government Gazette 85 A'/04.06.2010) and Law 4414/2016 (Government Gazette 149 A'/09.08.2016) will be supported towards the development of other activities and the promotion of infrastructure construction projects, such as sewerage network, internal road works, cultural and tourism upgrading projects, with the aim of further increasing jobs and improving per capita income.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

Overall Assessment

Therefore, it is expected that the creation of new jobs will have a weak positive impact, both direct and indirect, on the economy and on the local economy in general (indirect impact), of a long-term nature.

Finally, no transboundary impacts are expected both during the construction and operation phases in the territory of the neighbouring Bulgarian state.

9.8 Impact on Technical Infrastructure

9.8.1 Impact on the road network

Both during the construction and operation phase of the project under study, the technical infrastructure networks of the area are not expected to be affected, only the road network.

More specifically, during the construction phase of the project, there will be a temporary, localized impact on road traffic due to the movement of vehicles and machinery of the construction sites and the transport of the W/T and other necessary equipment. As it has already been mentioned, the construction and operation of the APSIE under consideration will involve the opening of new roads (forest roads) with a total length of 14,884.00 m, these works are expected during construction to have a very limited impact on local traffic - which is very limited due to the nature and operation of these roads as they are forest roads. At the same time, all the necessary safety

measures (site markings, etc.) will be taken to ensure traffic safety. Consequently, these impacts during the construction phase are expected to be weak, localised and short-term in nature.

Finally, during the operation phase of the wind farm under study, no impact on the road network is expected, as any impacts from vehicle movements for maintenance or repair works are considered negligible. Therefore, the impact of the operation of the project on the road network is considered neutral in terms of its characteristics and magnitude.

Cross-border effects

As it follows from the design of the project, all the interventions will be carried out within the Greek territory and no cross-border impacts on the road network are expected both during the construction phase and during the operation phase in the territory of the neighbouring country of Bulgaria.

9.8.2 Impact on the water supply network

During the construction phase and as already calculated and analysed in the corresponding section of the 6ου Chapter, approximately 6,530 m^3 will be required (approximately) for the construction of the project. To meet the above water requirements and due to the location of the works, it is not envisaged to connect to an existing water supply network. The water needs will be met by tankers (water carriers), which will be equipped with the necessary permits. There will therefore be no changes to the water supply network in the wider area.

The ASPEE under study will not be connected to a water supply network as it is not feasible to connect the building to an adjacent water supply network, so, as described in chapter 6, an underground water tank, watertight, made of reinforced concrete, will be constructed outside the building. The tank will be filled by a suitable tanker which will take water from the water supply network of the surrounding area.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

9.8.3 Impact on the sewerage network

The project is not connected to the municipality's sewage network and during the construction and operation phase there will be no changes compared to the existing situation.

Chemical toilets will be installed especially for the construction phase and to serve the site personnel.

During the operational phase and in relation to the building's drainage, as mentioned in chapter 6, since it is not possible to connect to an adjacent network, a cesspool system is foreseen, in accordance with local planning regulations.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

9.8.4 Impact on energy resources

No impacts on energy resources are expected during the construction phase of the ESDP at the "XEFOTO" site and due to the nature of the works.

No negative impacts are expected during the operation phase of the ASPEE and due to the nature of the project, while no other impacts are expected on the electricity distribution network, apart from the limited extension of the existing 150/33kV "Iasmos" 150/33kV Voltage Booster Station. On the contrary, the operation of the wind farm is expected to have weak positive impacts as it will optimally exploit the available wind potential to produce electricity, helping to achieve the country's environmental objectives and international obligations, as well as to meet the principles of sustainable development and increase the country's energy security.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

9.8.5 Impact on the telecommunications network

No impacts on the telecommunications network are expected during the construction phase, but during the operation phase the connection of the W/F will be achieved through fibre optic cables which will be placed within the installation channels of the M.T. cables.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

9.9 Correlation with anthropogenic pressures on the environment

Cumulative impacts on the environment can result from a number of projects and activities with similar impacts that interact with each other, on the ecological integrity of the area. The isolation of the study area to date has resulted in the main land uses and more generally anthropogenic activities in the area remaining traditional (agriculture, livestock farming) and as a result no significant problems or pressures on the environment have arisen. Overgrazing and illegal logging in some cases have created pressures on the area concerned.

Therefore, at the present stage and in the study area of the project under consideration, during the construction and operation phase of the project, it is not expected that the above anthropogenic pressures on the environment of the area will be enhanced.

There are no installed wind farms (operating license) in the area where the project is located (Source: P.A.E., available on 20/10/2022). The nearest wind farm with an operating license is located at an average distance (in a straight line) of more than 16 km (outside the protected areas under study), southwest of the production license blocks of the project under study. There are no licensed wind farms in the wider project area and within a radius of 10 km (Source: P.A.E., available on 20/10/2022). The nearest licensed wind farm is located at an average distance (in a straight line) of more than 200 km.

However, in the wider area of the project under consideration there is interest in the development of RES-E, so several RES-E units are to be installed or planned in the wider area of the project under consideration and outside the study area. Specifically, nine (9) wind turbine generators have been licensed by the Regulatory Authority for Energy (RAE) in the wider area, which have a total capacity of 345.4 MW, occupy a total area of 2,880.73 ha (total area of the nine wind turbine generator license blocks) and consist of 71 wind turbines. Of these wind farms, parts of four are located within a radius of 10 km from the 'XEFOTO' wind farm under consideration. Of the nine NPPs licensed for production and located within the 10 km radius area, two are less than 5 km away (4.06 and 4.20 km respectively), while the other seven are between 5 and 10 km away (see relevant maps in subsection 4.4 of this report).

Although the number of wind turbines to be installed is relatively high for the region, all of these are for wind farms that are in the production license and as mentioned in the previous section, they may receive a negative opinion until the stage of obtaining the operating license, at which point it is not possible to judge a wind farm for its synergistic impacts compared to wind farms that may never be built. Therefore, the wind farm under consideration will not contribute significantly to the densification of wind farms in the wider area due to its location and also as it includes 24 wind turbines and therefore will not contribute significantly to existing anthropogenic pressures in the wider area.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory and no cross-border impacts are expected during both the construction and operation phases in the territory of the neighbouring country of Bulgaria.

Overall Assessment

Therefore, the impacts of the construction of the project with anthropogenic pressures on the environment are considered in terms of their characteristics and magnitude to be weak negative, short-term, partially manageable and partially reversible. While the impacts of the operation of the project with anthropogenic pressures on the environment are judged in terms of their characteristics and magnitude to be weak negative, long-term, partially manageable and partially reversible.

Finally, no transboundary impacts are expected during both the construction and operation phases on the territory of the neighbouring Bulgarian state.

9.10 Impact on air quality

The negative impacts of NPPs on the atmosphere are small and limited to the construction phase. A number of studies carried out worldwide have demonstrated the undeniable positive impacts of the operation of NPPs for electricity generation.

Air pollution and carbon dioxide (CO_2) emissions from the consumption of fossil non-renewable resources for energy production are a major threat to sustainable development. The most significant gaseous emissions from the combustion of fossil fuels for electricity generation are CO_2 , SO_2 , NOx and PM-10 (particulate matter ≤ 10 micrometers). The quantity and concentration of pollutants generally depend on the type of fuel consumed.

W/Ts use energy from the movement of air and produce mechanical energy that is then converted into electricity. Since there is no combustion to produce wind energy, there are no greenhouse gas emissions or other pollutants. A typical 1,000 kW (1 MW) wind turbine generates on average in a relatively good wind potential location in Greece 3 million kWh per year and thus avoids the release of about 1,896 tonnes of carbon dioxide (CO_2), which is the same amount of CO_2 absorbed annually by 2,528 hectares of forest or 126,400 trees in proportion.

The operation of the RES-E will result in the saving of a significant amount of primary energy that would have been produced by conventional power plants. In this way, the utilisation of a "clean" product such as air, the absence of toxic substances or emissions contributing to the greenhouse effect and acid rain, the protection measures and proper design, the small scale of the project, the absence of any kind of solid, liquid or gaseous waste and the absence of ionising radiation contribute to avoid any adverse effects on the environment, both immediate and wider.

9.10.1 Construction phase

During the construction of a NPP there are small pollutants in the atmosphere due to:

- the production of dust from the movement of vehicles and the handling of materials and earthworks (excavation work, dredging, loading and unloading of earth and aggregates, operation of mobile crushers and concrete silos, etc.),
- the production of exhaust gases from the movement of trucks and construction machinery on site; and
- the production of exhaust gases from the means of transport that will transport construction materials to and from the construction site.

However, this pollution is temporary, short-lived and small in scale and the distance of the work sites from the nearest settlements is sufficient to avoid impacts on them.

The operation of construction sites and earthworks are expected to cause an increase in dust (coarse particles) in the atmospheric environment. The increase will be felt mainly in the immediate project area and is not expected to affect settlements in the wider area due to the above mentioned reasons. Besides, any impacts are localised and can be significantly reduced by appropriate mitigation measures and can be considered negligible negative considering the size of the wider area compared to the planned interventions. Their duration is directly related to the construction period of the projects.

Especially regarding the construction phase of the road works (opening of new roads) and the installation of the underground public transport network, it should be mentioned that the impacts on the atmospheric environment of the area are related to the following groups of processes:

1) The earthworks.
2) The movement of vehicles involved in construction e.g. trucks, excavators, pushers.

The atmospheric contribution of the (majority) diesel vehicles is considered negligible, as the respective loads are expected to be very low. In fact, the main air pollutant during the construction phase of the project under consideration is dust, which is generated by earthworks and is due to the excavation and grading required for the construction of the roadbed, namely:

- Dust from the scraping and pulverisation of the surface of the materials on the site.
- Disturbances of soil materials, of an engineering nature, characterised by low cohesion e.g. excavations, deposits and other earthworks.
- Transport and distribution of soil and other easily crushed materials.
- Exhaust fumes from road and cable duct construction machinery and material transport and removal vehicles.

However, no impacts are expected on the settlements of the study area as the distance of the work sites from the nearest settlements is sufficient for no impacts to occur.

The emissions of pollutants and dust associated with road traffic for the construction of the ASDP are estimated to be extremely limited despite the fact that the roads are dirt. Theoretical calculations show that for a typical average wind speed of 16 Km/h, particles with a diameter greater than 100 μm settle up to 6-9 m from the point of emission. Particles with a diameter of 30-100 μm are usually hindered in their settling and, depending on their degree of turbulence, settle at a distance of 30-150 m from the emission point. Smaller particles have low settling velocities due to gravity, so that the settling rate is affected by atmospheric turbulence. As an example, the USEPA recommends a dust emission factor of 1-10 kg dust/vehicle.km for vehicle traffic on unpaved surfaces. Considering the direct relationship between dust transport distance and wind intensity and in accordance with the climatic data of the study area, it is expected that the air pollution during the construction phase of the project will be low.

It is estimated that the period of time over which the construction of the project will take place will be limited and the number of vehicles and machinery that will take part in its construction will also be limited. By taking the necessary measures, it is expected that both dust emissions and exhaust emissions from vehicle engines will be significantly reduced.

For the purposes of the present study, the typical composition of a wind farm construction site will be used in order to estimate the air emissions during the construction phase. This site composition is presented in the table below.

Table 79 Typical site composition of the construction site of the ESDP under study

Machine/Vehicle	Quantity of machine/vehicle
Promoter	1
Heavy Truck	3
Mechanical Excavator	1
Loader	1
Crane	1

The fuel type and daily fuel consumption of the site vehicles/machinery that will or may be used for the construction of the ESDP is presented in the following Table.

Table 80 Type and daily fuel consumption of these vehicles/site machinery

Machine/Vehicle	Type of fuel	Daily consumption (litres/day)
Promoter	Diesel	350 lt
Heavy Truck	Diesel	100 lt
Mechanical Excavator	Diesel	250 lt
Loader	Diesel	200 lt
Crane	Diesel	200 lt

The pollutants emitted and their emission factors for the specific fuel type (diesel) are shown in the following table.

Table 81 Diesel fuel emission factors (g pollutant/kg diesel)

Fuel	NOx	NM-VOC	CH_4	CO	NH_3	$N O_2$	PM	$PM_{2,5}$
Diesel	48,8	7,08	0,17	15,8	0,007	1,30	2,29	2,15

Source: EMEP/CORINAIR Emission Inventory Guidebook - 2007

Based on the above, the total quantities of pollutants (in Kg) that will be emitted daily during the construction phase of the project are estimated in the following table.

Table 82: Estimation of the total quantities of pollutants (in Kg) to be emitted daily during the construction phase of the studied RES-EPP.

Machine/ Vehicle	Quantity	NOx (Kg)	NM-VOC (Kg)	CH_4 (Kg)	CO (Kg)	NH_3 (Kg)	$N O_2$ (Kg)	PM (Kg)	$PM_{2,5}$ (Kg)	Total pollutants
Promoter	1	14,52	2,11	0,05	4,70	0,00	0,39	0,68	0,64	23,09
Heavy Truck	3	12,44	1,81	0,04	4,03	0,00	0,33	0,58	0,55	19,79
Mechanical Excavator	1	10,37	1,50	0,04	3,36	0,00	0,28	0,49	0,46	16,49
Loader	1	8,30	1,20	0,03	2,69	0,00	0,22	0,39	0,37	13,19
Crane	1	8,30	1,20	0,03	2,69	0,00	0,22	0,39	0,37	13,19
Machinery Set	7	53,92	7,82	0,19	17,46	0,01	1,44	2,53	2,38	85,74

The above table estimates, in approximate terms, the total quantities of pollutants that will be emitted per day during the construction phase of the studied RES-EPP. The quantities of pollutants generated are not significant, and the pollutants will be removed without causing significant changes in the air quality of the area. Even in the case of a standstill, the concentrations of pollutants in the atmosphere will not exceed the permissible limits, provided of course that the relevant legislation on permissible emissions from the engines of the machinery/vehicles on the site is complied with.

In summary, it is estimated that there will be an increase in air pollutant emissions during the construction phase of the project under study, which may cause locally elevated pollutant concentrations. This impact however:

- It is typical and expected for projects of this kind.
- It can be minimised by complying with the current Greek and EU legislation concerning emissions from construction machinery and vehicles on site and by implementing the required good construction practice and taking appropriate remedial measures during the construction phase.
- It is locally limited to the immediate area of the projects.
- It is temporary and will not cause significant irreversible degradation of the air environment of the immediate area.

Cross-border effects

As it follows from the project design, all of the interventions will be carried out within the Greek territory and the distance (0.78 km) from the nearest settlement within the territory of the neighbouring Bulgarian state ("Kushla" - Kushla) will be the same as the nearest one within Greece (distance 0.63 km - settlement of Kalotycho), while the others will be at a much greater distance. Therefore, as mentioned above for the case of settlements within the Greek territory, the distance from the work area is sufficient for the settlement "Kushla" not to be affected. Also the impacts as mentioned above from both dust and pollutant emissions from the machinery are local in nature and affect the immediate area of work, while the parts of the project adjacent to the border line are limited in relation to the overall works required for the construction of the ESDP and the intensity of dust and air pollutant emissions is significantly reduced with distance. Therefore, during the construction phase, transboundary impacts on the atmospheric environment are expected to affect the territory of the Bulgarian State, but their intensity is expected to be significantly lower than that expected in the Greek territory due to the above mentioned and in particular are considered to be of negligible negative intensity.

Overall assessment

Taking into account the size and nature of the project under study, it is estimated that the impacts during the construction phase on the atmospheric environment due to the size of the project and the extent of the affected surfaces will be negative, generally moderate in intensity, localised in nature, partially manageable with the adoption of appropriate measures proposed in the relevant section of Chapter 10 of this study and immediately reversible after the completion of construction works. As mentioned above, impacts of a transboundary nature are also expected but are of negligible intensity and otherwise have the same characteristics as above.

9.10.2 Operating phase

No negative impacts on air quality are expected during the operational phase of the project, as the project does not emit any gaseous pollutants. It will also not emit dust particles (respirable and nonrespirable) and odours. In addition, the W/Ts do not cause thermal pollution of the atmosphere, as they do not emit hot gases or use atmospheric air to cool their parts and circuits.

The exploitation of wind potential shall not involve any form of chemical, physical or biological process which results in the generation and release into the environment of any gaseous pollutants of any kind as end or intermediate products. On the contrary, the project under study is expected to have a positive effect on the general state of the atmospheric environment, as its operation will contribute to an increase in electricity generation through renewable, environmentally friendly energy sources. The amount of electricity generated by the proposed RES-E project will contribute positively to the country's energy deficit by developing energy production from renewable resources and meeting part of the annual energy demand.

Finally, any impacts from vehicle movements for maintenance or repair work are considered negligible.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above, no cross-border impacts are expected during the operational phase.

Overall Assessment

Taking into account the size and nature of the projects under study and the significant capacity in terms of electricity generation, it is estimated that the impacts during the operational phase of the project under study on the atmospheric environment will be significant positive, direct and indirect, long-term and national.

No cross-border effects are expected on the territory of the neighbouring state of Bulgaria.

9.11 Noise effects

9.11.1 Construction phase

The main causes of noise occur mainly during the construction of a RES-EEO and are:

- The first and main source of noise is the machinery used on site, both mobile and stationary, such as excavation or soil loosening machines, loading of excavated material, paving and compaction of materials, drilling machines and aggregate and concrete production machines.
- The second source is noise from the traffic of heavy vehicles carrying excavated materials to the disposal sites, aggregates from quarries, ready-mixed concrete from production plants and any other material needed for the construction of the project. Noise from these vehicles may also affect areas far from the construction site, for example along the roads that these vehicles follow to and from the site.

However, these effects are temporary, short-lived, mainly small in scale and reversible. Given also that the project under study is relatively far from anthropogenic activities, and that the noise source mainly affects the immediate project site and attenuates significantly with distance from the project site (a reduction of about 6 dB for every doubling of distance), the intensity of the overall impact on the acoustic environment is estimated to be low. Even in the case of the works to be carried out in the area near the nearest settlement (Kalotycho), the distance of 632 m from the boundary of this settlement, based on the above mentioned, and the noise emission from the modern technology vehicles and project machinery, is considered sufficient to avoid nuisance to this settlement. Also from the other construction works of the RES-EPP (shaping of the platforms of the generators, installation of the generators themselves as well as the control panels and the power transmission network). Due to the nature and limited nature of the works, no significant disturbance is expected from the extension of the "Iasmos" power plant, and any impact on the acoustic environment of the area will be limited to the boundaries of the site of the power plant.

In the context of the present study, the LAeq(T) level calculation from the operation of a typical construction site of a 12-hour NPP construction site for hypothetical receivers located at a distance of 100 & 200 m from the various site noise sources was investigated according to the British Standard BS5228.

The following table shows the composition of a typical wind farm construction site, indicating the estimated operating times (tc) and the technical characteristics of the machinery/vehicles.

Table 83 Estimated operating times and technical characteristics of the machinery/vehicles of a typical construction site of a NPP

Machine/Vehicle	Quantity of machine/vehicle	LWA	Estimated Operating Time
Promoter	1	106	8
Heavy Truck	3	102	8
Mechanical Excavator	1	101	8
Loader	1	113	6
Crane	1	102	6

Since all noise sources are mobile, the distance index r=3 was taken. No account has been taken of sound reductions due to sound barriers, but instead of adverse increases in noise levels due to reflections (+3dB).

The results of the assessment of the noise level from the machinery at the construction site of the wind farm under study are presented in the following table.

Table 84: Noise prediction for receiver 1 - distance 100 m from mobile machinery based on the "mobile plant on site - L_{WA} " method

Machine type	L_{WA} {dB(A)}	Receiver distance (m)	Distance travelled	Distance	Soundproofing	Reflection	Corrected LpA {dB(A)}	Distance ratio	Risks. Time	Duration of action (h)	Duration of action as a % of 10 h	Corrected Duration of active substance as a % of	Correction L_{Aeq} {dB(A)} (10 h)	Activity L_{Aeq}
Heavy Truck	102	100	200	48,00	0.00	3	54,00	2,00	0,34	8	80,0	27,2	-5,65	48,35
Heavy Truck	102	100	200	48,00	0.00	3	54,00	2,00	0,34	8	80,0	27,2	-5,65	48,35
Heavy Truck	102	100	200	48,00	0.00	3	54,00	2,00	0,34	8	80,0	27,2	-5,65	48,35
Excavator	101	100	200	48,00	0.00	3	53,00	2,00	0,34	8	80,0	27,2	-5,65	47,35
Loader	113	100	200	48,00	0.00	3	65,00	2,00	0,34	8	80,0	27,2	-5,65	59,35
Crane	102	100	200	48,00	0.00	3	54,00	2,00	0,34	6	60,0	20,4	-6,90	47,10
													Total Index L_{Aeq}	60,68 dB(A)

Table 85: Noise prediction for receiver 2 - distance 200 m from mobile machinery based on the method "mobile plant on site - L_{WA} "

Type of Machine	L_{WA} {dB(A)}	Receiver distance (m)	Distance travelled	Distance	Soundproofing	Reflection	Corrected LpA {dB(A)}	Distance ratio	Risks. Time	Duration of action (h)	Duration of action as a % of 10 h	Corrected Duration of active substance as a % of	Correction L_{Aeq} {dB(A)} (10 h)	Activity L_{Aeq}
Heavy Truck	102	200	200	54,02	0.00	3	47,98	1,00	0,08	8	80,0	6,4	-11,94	36,04
Heavy Truck	102	200	200	54,02	0.00	3	47,98	1,00	0,08	8	80,0	6,4	-11,94	36,04
Heavy Truck	102	200	200	54,02	0.00	3	47,98	1,00	0,08	8	80,0	6,4	-11,94	36,04
Excavator	101	200	200	54,02	0.00	3	46,98	1,00	0,08	8	80,0	6,4	-11,94	35,04
Loader	113	200	200	54,02	0.00	3	58,98	1,00	0,08	8	80,0	6,4	-11,94	47,04
Crane	102	200	200	54,02	0.00	3	47,98	1,00	0,08	6	60,0	4,8	-13,19	34,79

Total Index L_{Aeq}	48,38 dB(A)

Table 86: Noise prediction for receiver 3 - distance 400 m from mobile machinery based on the method "mobile plant on site - L_{WA} "

Type of Machine	L_{WA} {dB(A)}	Receiver distance (m)	Distance travelled	Distance	Soundproofing	Reflection	Corrected LpA {dB(A)}	Distance ratio	Risks. Time	Duration of action (h)	Duration of action as a % of 10 h	Corrected Duration of active substance as a % of	Correction L_{Aeq} {dB(A)} (10 h)	Activity L_{Aeq}
Heavy Truck	102	400	200	60,04	0.00	3	41,96	0,50	0,08	8	80,0	6,4	-11,94	30,02
Heavy Truck	102	400	200	60,04	0.00	3	41,96	0,50	0,08	8	80,0	6,4	-11,94	30,02
Heavy Truck	102	400	200	60,04	0.00	3	41,96	0,50	0,08	8	80,0	6,4	-11,94	30,02
Excavator	101	400	200	60,04	0.00	3	40,96	0,50	0,08	8	80,0	6,4	-11,94	29,02
Loader	113	400	200	60,04	0.00	3	52,96	0,50	0,08	8	80,0	6,4	-11,94	41,02
Crane	102	400	200	60,04	0.00	3	41,96	0,50	0,08	6	60,0	4,8	-13,19	28,77
													Total Index L_{Aeq}	42,36 dB(A)

Table 87: Noise prediction for receiver 4 - distance 500 m from mobile machinery based on the "mobile plant on site - L_{WA} " method

Machine type	L_{WA} {dB(A)}	Receiver distance (m)	Distance travelled	Distance	Soundproofing	Reflection	Corrected LpA {dB(A)}	Distance ratio	Risks. Time	Duration of action (h)	Duration of action as a % of 10 h	Corrected Duration of active substance as a % of	Correction L_{Aeq} {dB(A)} (10 h)	Activity L_{Aeq}
Heavy Truck	102	500	200	61,98	0.00	3	40,02	0,40	0,08	8	80,0	6,4	-11,94	28,08
Heavy Truck	102	500	200	61,98	0.00	3	40,02	0,40	0,08	8	80,0	6,4	-11,94	28,08
Heavy Truck	102	500	200	61,98	0.00	3	40,02	0,40	0,08	8	80,0	6,4	-11,94	28,08
Excavator	101	500	200	61,98	0.00	3	39,02	0,40	0,08	8	80,0	6,4	-11,94	27,08
Loader	113	500	200	61,98	0.00	3	51,02	0,40	0,08	8	80,0	6,4	-11,94	39,08

Crane	102	500	200	61,98	0.00	3	40,02	0,40	0,08	6	60,0	4,8	-13,19	26,83
													Total Index L_{Aeq}	40,42 dB(A)

According to the results, the level of the LAeq (12 hr) indicator, coming from the machinery of the construction site of the studied RES (concerning the landscaping of the platforms and the installation of the W/T) will be 60,68 dB(A) at a distance of 100 m, while doubling the distance from the work site will bring the level to only 48.38 dB(A), already well below the limit set by PD 1180/81 for residential areas (50 dB(A)). At a distance of 400 m the noise level is only 42,36 dB(A) and at a distance of 500 m the estimated noise level is only 40,42 dB(A). It should be noted that in the above calculations it was assumed that all the machinery and vehicles on the construction site would operate simultaneously, which is an unfavourable assumption as this is not actually the case. Therefore, it follows from the above calculations that no nuisance is expected to occur in the settlements in the wider area of the works. Thus, the settlements in the area are not expected to be affected as the boundary of the nearest settlement (Kalotycho) is located at a distance of more than 500 m, namely 0,63 km.

Any impacts from the operation of the sites are localised and can be significantly reduced by taking appropriate remedial measures, as proposed in the relevant section of Chapter 10, to minimise impacts on the acoustic environment. Indicative examples are:

- Locating construction sites as far away as possible from settlements and man-made activities.
- Use of site machinery and vehicles of strict noise emission standards.
- Implementation of the most stringent regulations, both Greek and EU
- Selected route of heavy vehicles.

Finally, any impacts on the acoustic environment are considered to be fully reversible, as they last as long as the construction phase of the project.

Cross-border effects

As it follows from the project design, all of the interventions will be carried out within the Greek territory and the distance (0.78 km) from the nearest settlement within the territory of the neighbouring Bulgarian state ("Kushla" - Kushla) will be the same as the nearest one within Greece (distance 0.63 km - settlement of Kalotycho), while the others will be at a much greater distance. Therefore, as mentioned above for the case of settlements within the Greek territory, the distance from the work area is sufficient to ensure that no impact on the settlement will occur.

Also the impacts as mentioned above are local in nature and affect the immediate area of works, while the parts of the project adjacent to the border line are limited in relation to the overall works required for the construction of the ESDP and as mentioned above their intensity decreases significantly with distance. Therefore, during the construction phase, transboundary type impacts are expected in terms of the acoustic environment affecting also the territory of the State of Bulgaria, but their intensity is expected to be significantly lower than that expected in the Greek territory due to the above mentioned and in particular they are considered to be of negligible negative intensity.

Overall Assessment

In conclusion, the anticipated impacts on the acoustic environment during the construction phase are expected to be negatively weak, particularly affecting the immediate area of the works,

partially reversible with the adoption of the preventative noise mitigation remedies proposed in the relevant section of Chapter 10 of this study, temporary and fully reversible after the completion of construction activities.

Impacts of a transboundary nature are also expected, but these are of a lower intensity and are otherwise of the same characteristics as above.

9.11.2 Operating phase

Looking at the noise generated by RES-E is significantly different in level and nature from that generated by other energy installations.

The noise generated during the operation of a GFCM is mainly:

- aerodynamic from the rotation of the blades, which is due to the passage of the wind through and around the rotor (impeller) of the W/T. When the wind speed is below the start-up value of the W/T (approximately 3 m/s), the rotor does not rotate and therefore no noise is generated. At wind speeds below 7 m/s, the noise is noticeable, whereas at higher wind speeds, the noise generated by the wind itself or by the rustling of tree foliage is louder and outweighs the noise emitted by the wind turbine.
- mechanical noise consisting of discrete frequency tonal noise originating from the electromechanical installation of the genset and in particular from the speed increase box and the generator.

Modern W/Ts are low-noise machines, compared to their power and with the continuous improvements by manufacturers, they are becoming quieter and quieter. The noise produced by a modern technology three-bladed wind turbine, similar to the one that will be used in the project, has been drastically reduced (it has doubled in the last 5 years) with manufacturing improvements. Specifically:

- The reduction of the mechanical noise was achieved by the improved construction aimed at reducing vibrations, the extensive use of rubber joints, the reinforcement of the sound insulation of the wind turbine shell and the improvement of individual parts of the wind turbine, mainly the speed multiplier and the electromagnetic generator.
- The reduction of aerodynamic noise was achieved by improving the design of the wings.

The wind turbines that will be installed in the project under study are the most modern, with advanced technological design and certified under very strict national and international standards, which incorporate modern technologies that reduce noise to a minimum. They practically eliminate the mechanical noise generated by the operation of the generator components, while minimizing the aerodynamic noise generated by wind friction with the impeller.

It has been proven internationally that the noise caused by the W/Ts under operating conditions (wind speeds > 4 m/sec) in the open environment is mixed with the noise of the surrounding area (wind noise, rustling of tree foliage, etc.) and, therefore, any adverse perception caused by the source causing the noise is reduced. In calm conditions and at wind speeds <4 m/sec no noise is generated, as the W/Ts cease to operate. On the contrary, at high wind speeds the ambient noise overwhelms the noise of the W/Ts.

Sound propagation in A/Vs is treated differently, depending on the specificity of the source. In general, it is true that in a point source stationary source the propagation follows a 6 dB decrease for each doubling of the source-receiver distance. The sound level at a distance of 40 m from a wind turbine is 50-60 dB(A), which is equivalent to the volume of a conversation (European Commission, 1999). At a distance of 200 m, the noise level drops to 44 dB(A), downwind of the W/T, for a wind speed of 8 m/s. The aerodynamic noise generated by the rotating blades of the engine is very low and in no way comparable to the noise level of conventional power plants.

In conclusion, the construction and operation of the ASPEE is not expected to significantly increase the existing noise level in the study area, while the distance from the nearest settlements (Kalotycho 632 m, Gidotopos 800 m and "Kusla" 780 m) is sufficient and according to the above, no nuisance to the residential environment is expected.

In order to better capture the noise generated by the operation of the W/F, a study was carried out concerning the calculation and mapping of the isodynamic curves of the generated noise on topographic relief.

For the calculation of the noise nuisance due to the operation of wind turbines, a noise calculation model was used, which is based on the standard "Description of noise Propagation Model specified by Danish Statury order on noise from windmills (Nr 304, dated 14 May 1991)". The model is based on hemispherical sound propagation over a flat reflecting surface. The model also uses atmospheric absorption. The noise level Lp at a distance R from the source, which in this case is the wind turbine rotor with intensity Lw, is given by

where α is the atmospheric absorption coefficient, which depends on the frequency and meteorological conditions (temperature, humidity and pressure).

In the case of a wind turbine, it is assumed that the noise level at given points in the site depends on the superposition of the noise from each individual wind turbine. Thus, for a given point of the site the total noise level (Lp,tot) coming from the whole number of wind turbines will be given by the relation:

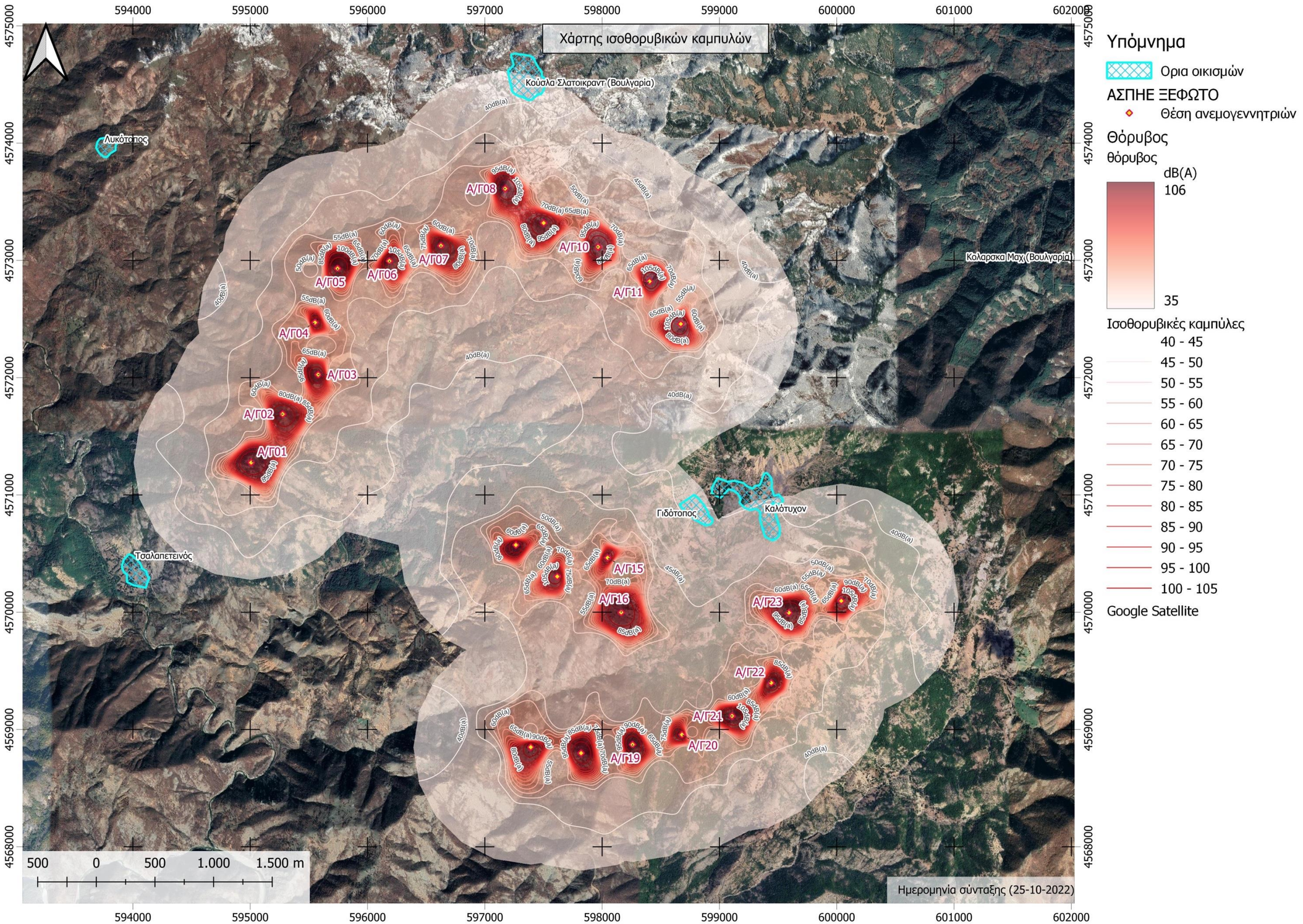
where Lp(j) is the noise level due to j turbines and Nm is the total number of turbines.

For each frequency of the acoustic source, the value of the total noise level is calculated. The total noise level for the whole frequency range is given by the relation:

where Lp,tot(i) is the noise level corresponding to frequency i and Nf is the number of discrete frequencies in the spectrum of the sound source.

Given the range of frequencies of the wind turbine noise level Lw (in dB or dB(A)), the positions of the wind turbines and their consequent distances from data points (in m), as well as the meteorological conditions in the study area, it is possible to calculate the noise level at each point, both at the wind turbines and in the surrounding area, based on the model. For the wind farm under consideration, the results of the application of the above calculations are shown in the noise map presented below.

Map 74: Noise level from the operation of the UNEPER "XEFOTO"



For the nearest settlement to the studied RES in the Bulgarian territory (Kusla Slatoikrad) which is approximately 0.78 km from the nearest NPP (NPP 8) and the nearest settlement in the Greek territory (Kalotycho) which is approximately 0.63 km from the nearest NPP (NPP 23) and based on the above results, it is concluded that no noise impacts are expected, since, according to the assessment carried out above, the level is below the level of 45 dB(A) for the entire area within the boundaries of the settlement of Kalotycho, and indeed the greater part of the settlement is below 40 dB(A), while in the settlement of Kusla Slatoikrad the level is below 40 dB(A) for which the level is lower than 45 dB(A), which is the limit for all residential activities as defined by the K.M.O.A. 49828/08 (Government Gazette 2464B'/03.12.2008) which approved the EIA&E for the RES in Annex II, Table D. Therefore, the settlements in the wider area are not expected to suffer any impact from the noise emitted by the wind turbines of the considered RES.

In conclusion, it is estimated that the location of the proposed wind farm, combined with the fact that the wind turbines to be installed incorporate all the latest mechanical and aerodynamic noise reduction technologies, ensure that the project will not cause a significant increase in the existing noise level outside its boundaries, while in residential areas the operation of the wind turbines will not even be noticeable. Thus, no local resident will be exposed to a higher noise level than is currently the case.

Finally, it should be mentioned that wind turbines are completely harmless to both plants and animals. As experience at international level has shown, livestock (sheep, cows, horses, etc.) are not disturbed by the presence or noise of wind turbines in any of their activities, even when they are located in close proximity. Grazing in the area where the wind turbines are installed will not be prevented, but will be possible up to the base of the wind turbines, since their foundations will be below ground level, the transformers of the wind turbines will be inside the pylons and the area will not be fenced off.

No noise of any kind is produced by the operation of the underground M.T. network, while during the operation of the Medium/High Voltage Lifting Substation, the sources of acoustic noise are mainly the Transformers, the autotransformers and the inductors, due to vibrations in their core and the operation of the cooling fans. The total noise level does not exceed 55 dB(A) in the immediate surroundings (within a radius of 4 m), with the result that the noise level at the fence boundaries is well below the maximum noise limits laid down in Presidential Decree 1180/06.10.81. It should be noted that the considered ASPHE will be connected to the existing "IASMOS" Voltage Raising Substation, so that the occurrence of any form of nuisance is not expected in relation to the existing situation.

Cross-border effects

As already mentioned above, and presented in the above map, for the nearest settlement to the NPP under study in the Bulgarian territory (Kusla Slatoikrad) which is approximately 0.78 km from the nearest W/T (W/T 8) and based on the above results, it is concluded that there are no expected noise impacts, since according to the assessment carried out above the noise level is below 40 dB(A) for the whole area within the boundaries of the settlement. While no noise impacts are expected with regard to the accompanying projects of the ESDP on the basis of the above mentioned.

Overall assessment

Therefore, the impacts from the noise generated during the operation phase of the studied RES-EPP are assessed as neutral and no transboundary impacts are expected on the territory of the neighbouring state of Bulgaria.

9.12 Effects related to electromagnetic fields

9.12.1 Construction phase

During the construction of the proposed ESDP and its accompanying works, no electric and magnetic fields are expected to be present and therefore no impacts of any kind are expected.

In view of the above, no cross-border effects are expected on the territory of the neighbouring state of Bulgaria.

9.12.2 Operating phase

In the studied UPS from a radiation point of view, the only subsystems emitting low level electromagnetic radiation are the generator and the M/S, the Medium Voltage (MV) input energy collection panel, and the M.T. line. The electromagnetic field of the generator is extremely weak and is confined to the engine shell which in this case is located at a height of 135 m above the ground. Also the M/T is located inside the tower of the W/T. In general, the emitted electromagnetic radiations are very low and certainly negligible in places where access is free.

Consequently, no increase in radiation levels is expected from the installation and operation of a GHP, given that the electrical generators of the GHP are small and low voltage, installed on top of the pylon and shielded for possible electromagnetic interference.

Regarding the power transmission and interconnection projects of the ASPHE "XEFOTO", it should be mentioned that the High and Medium Voltage Transmission Lines emit low frequency (50Hz) electromagnetic radiation. These radiations are classified as non-ionizing, as opposed to ionizing radiations such as X-rays and gamma rays, which are dangerous to human health.

It is noted that the Medium Voltage (MV) connection line (internal & external network) will be underground within a trench (following the route of the existing and new road network) and only a small section of 129.24 m of the external MV network will be overhead in order to cross the Komsato River. It should also be mentioned that advanced technology M.T. conductors will be used, which are almost neutral in terms of electromagnetic field generation. It should be noted that the intensity of the electromagnetic fields is drastically reduced by undergrounding them in the ground, which means that the values of the electric and magnetic fields are minimized and practically zero. Therefore, it is not likely to cause harmful thermal or genetic effects on living organisms and therefore no impact of any kind is expected.

As it has already been mentioned, the interconnection of the ASPEE under consideration with the energy transmission network will be carried out through the existing "Iasmos" Voltage Booster Substation, so that no change in the existing situation is expected as the only subsystem that emits low-level electromagnetic radiation is the transformer.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above, no cross-border impacts are expected during the operational phase.

Overall Assessment

Therefore, the impacts in terms of electromagnetic fields during the operational phase of the studied RES-EPP are assessed as neutral and no transboundary impacts are expected on the territory of the neighbouring state of Bulgaria.

9.13 Impact on water

An ESDP project, due to the mild nature of the project, rarely causes disturbances in the hydrological situation of the wider area. In terms of the water flow path, its absorption rate, drainage paths and the rate of soil leaching, no impact is created given the minimum effective area covered by each wind turbine in total, the large distance between them (W/T). The soil morphology and the presence of plants and trees is not altered to such an extent, especially after the restoration of the affected areas from the works, by the construction of an AER, as to raise concerns about its impact on surface water flow in the event of rainfall.

9.13.1 Construction phase

During the construction phase, the water resources of the area are not expected to be affected, provided that appropriate measures are taken to protect them. The main ESDP project will not be constructed in or near watercourses as, due to the location of the project on the ridge, there is no established hydrological network in the area of intervention. With regard to surface runoff, the nature and location of the project ensures that there will be no change in the surface runoff diet as no interference with surface runoff, either through detention or diversion projects, is expected. There is therefore no risk of flooding due to the location of the project and also because the water flow is unaffected and the foundation of the W/Ts in general is such that there is no question of their destruction in a flood. While it is not envisaged to construct a new STP but to use the existing STP "IASMOS" with limited expansion in terms of E/M systems but which will be carried out within the land where it is installed, so the nature and scale of the proposed works cannot affect the surface water runoff diet.

It should be noted that, based on the NMP, no water abstraction site or spring is identified in the immediate area of the ASPHE.

Particularly with regard to surface water, the only element that could potentially alter its existing hydraulic function is road works. It should be noted, however, that for road works there will be provision for appropriate drainage and channelling of stormwater to natural receptors by constructing the necessary culverts at their locations in accordance with the specifications for Class C roads, which are presented in Chapter 6 of this report.

As regards the Medium Voltage (MV) connection line of both the internal and external network, it will be underground within a trench that follows the route of the access road (existing and new) and therefore no impact on the hydrology and hydrogeology of the areas through which it will

pass is expected. The only works will be the construction of the trench for the installation of the road, but these will be excavations of a small depth and width (trench dimensions of 1.20 m x 0.60 m for the internal network and up to 1.20 m x 1.00 m for the external network) and within the limits of existing or future roads. It should be noted that as regards the external network of M.T. and at a length of approximately 129.24 m, this will be aerial in order to cross the river Komsato, with this option (aerial routing) the river will not be affected at all and therefore no impact on the river is expected.

During the construction works of the ESDP and its accompanying works, special attention should be paid to possible spills of small quantities of liquid waste from the construction site to be installed in the project area, which are:

-mineral oils from the maintenance of vehicles and machinery.

-Oil or petrol from the movement of vehicles.

-Wet waste from the washing of concrete vehicles.

-Home type injuries of the site staff.

A potential leak could potentially create some pollution problems in the groundwater aquifer, depending on the intensity and extent of the leak. Minimising these impacts can be achieved by controlling the proper operation of machinery and proper management of oil products in accordance with the provisions of the legislation. Washing of concrete vehicles will be prohibited within the site, while washing of all other vehicles will be avoided. Special provision will be made for staff effluent (e.g. chemical toilets). Refuelling of vehicles will be carried out at licensed petrol stations and not on site, and scheduled maintenance of vehicles and machinery will be carried out at authorised, legally operating workshops off site. Any minor maintenance - repair of minor faults and any minor leaks will be handled with environmental sensitivity and always in accordance with the relevant legislation. Collection materials for such spills will be available on site and all oils and lubricants will be collected in containers and removed by licensed operators in accordance with relevant legislation.

The construction of the proposed ACHP is not associated with water withdrawal needs or requirements for increased water supply consumption beyond normal site water requirements. As previously detailed in 6° Chapter 6 of this report, the estimated water requirements for construction of the ASPHE are estimated to be approximately 6,530 m^3 over a period of approximately 8 months. These quantities will be met through appropriately licensed water sources and will be transported by tankers (water trucks), which will carry the necessary permits. Therefore, no significant impacts on the quantitative characteristics of the water resources of the project study area are expected during the construction phase of the subject EIS.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above analysis, no significant cross-border impacts are expected during the operational phase on the territory of the neighbouring country of Bulgaria.

Overall Assessment

As a result, potential impacts to surface and groundwater are expected to be negative minor, localised, partially manageable and fully reversible upon completion of the works. and no transboundary impacts are expected on the territory of the neighbouring state of Bulgaria.

9.13.2 Operating phase

During the operational phase, the GHPs have no impact on rainwater flow and drainage routes and the impact of the GHP on water resources can be considered practically non-existent. Operation of the project under study will not affect in any way the quality or quantity of surface and groundwater in the surrounding area. The operation of a CCGT does not involve any production process wastewater, nor does it pose a risk of thermal pollution of neighbouring surface or groundwater receptors, as no cooling water is used. All the circuits of the generators and the M/S and the "IASMOS" Voltage Raising System are closed so that they are immediately shut down in case of failure, without any oil leakage. In addition, the only liquid waste generated by the operation of the UPS is lubricants from maintenance and municipal wastewater of the operating personnel. Since the above mentioned liquid waste will be managed in accordance with the provisions of the legislation, no impact on surface and groundwater in the area is foreseen.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above mentioned, no cross-border impacts are expected during the operational phase in the territory of the neighbouring country of Bulgaria.

9.14 Impact - Vulnerability to the risks of major accidents or disasters

The installation of wind turbines in an area is a project that is not associated with chemical or radiation emissions. There is no risk of explosion because the operation of wind turbines does not require the use of flammable or explosive materials. Furthermore, the operation of a Genset does not require flammable fuels, reactive acids or other combustibles and there is no risk of combustion, making it extremely safe because it is purely electrical. Because the W/Ts operate at ambient temperature, there is no risk of accidents due to contact with hot surfaces of the installation.

The proposed underground transmission line of the MT line has no risk of explosion or leakage of hazardous substances (including, but not limited to, oil, insecticides, chemicals or radiation) nor is there any risk of accident or abnormal conditions during construction or operation.

The works required for the connection of the W/F to the existing "IASMOS" Voltage Raising Substation will be carried out in accordance with the current modern specifications and due to their limited nature, even in case of malfunction, the risk of a serious accident is not expected.

In conclusion, no significant risks to the environment are expected during the construction and operation phase of the NPP and the accompanying works at the "XEFOTO" site, given its limited scale and the evolution of the technology involved, as well as the safety measures taken during the execution of the works and the subsequent operation of these facilities.

Cross-border effects

As it follows from the project design, all the interventions will be carried out within the Greek territory. Based on the above mentioned, no cross-border impacts are expected during the operational phase in the territory of the neighbouring country of Bulgaria.

9.15 Summary of impacts in tables

In general, renewable energy projects, such as RES projects, such as RES-E, are eminently environmentally friendly projects, where, especially in the case of Greece, they constitute a set of significant positive components for the economy and the environment of the country:

(v) They are a catalyst for achieving the Kyoto Protocol targets for reducing greenhouse gas emissions. The stalling of the promotion of renewable energies not only means not only no improvement in the quality of the air environment, but also significant damage to the national economy, based on the implementation of the EU-25 Emissions Trading Scheme.

(vi) The country's high dependence on oil makes it imperative to promote renewable energy sources, so that they take a larger share in the country's energy mix. In this case, it is clear that economic growth and sustainable development are two separate objectives.

(vii) Greece has one of the highest wind potentials in Europe. This means that for a given energy production a smaller number of wind turbines and associated projects are required.

(viii) The country's energy production is mainly based on lignite-fired power stations, with the dramatic consequences this has for the health of the inhabitants of large areas of the country.

CCGTs have zero emissions of solid, liquid and gaseous pollutants. Thus, they do not have a negative impact on the natural environment of the area where they are installed, but also on the climate of the planet in terms of air pollutants.

On the other hand, there is no doubt that, like any project, from the simplest and smallest to the most complex and large, CCS has a range of impacts on the environment. In most cases, however, the intensity and extent of these impacts are small and should not lead to the non-installation of a CCS.

Based on the analysis of the previous chapters, it is possible to summarize the expected environmental impacts of the construction and operation of the project, as shown in the following tables.

Table 88 Summary table of the environmental impact assessment of the project under study during the construction phase

Environmental parameters	Probability	Land area	Complexity	Time horizon	Positive (F)/ Negative (A)	Tension	Prevention	Avoidance	Reversal	Minimization	Cooperative (S) or Transnational (D) effects
Climatic & bioclimatic characteristics						O					
Morphological & landscape characteristics	5	T	A	M & Π	A	---	Not	Not	Partly	Partly	Δ
Geological, tectonic and soil characteristics	5	T	A	Π	A	--	Not	Not	Partly	Partly	
Natural environment	5	T	A & E	M & Π	A	---	Partly	Partly	Partly	Partly	Δ & Σ
Anthropogenic environment	3	T	A & E	Π	A	-	Partly	Not	Fully	Partly	
Socio-economic environment	2	T	A	Π	Θ	+					
Technical infrastructure	3	T	A	Π	A	-	Partly	Not	Fully	Partly	
Anthropogenic pressures on the environment	2	T	A	Π	A	-	Partly	Not	Partly	Partly	
Atmospheric environment - air quality	5	T	A	Π	A	--	Not	Not	Fully	Partly	Δ
Acoustic environment & vibration	5	T	A	Π	A	-	Partly	Not	Fully	Partly	Δ
Electromagnetic fields	1	T				O					
Water	2	T	A	Π	A	-	Partly	Not	Fully	Partly	

SUBMISSION

Probability of occurrence	"1" Unlikely to "5" Probable
Land area	Local (T), Regional (R), National (N)
Complexity	Direct (A), Indirect (E)
Time horizon	Temporary (P), Permanent (M), Repeatability (E)
Prevention, avoidance, reversal or minimisation	Fully reversible, Partially reversible, Irreversible
Extent of estimated impacts:	+++= Positive and strong, ++=Positive and moderate, += Positive and weak +/O = Positive negligible, O = Neutral, -/O = Negative negligible -=:Negative and weak, --=Negative and moderate, ---= Negative and strong

Table 89: Summary table of the environmental impact assessment of the project under study during the operational phase

Environmental parameters	Probability	Land area	Complexity	Time horizon	Positive (F)/ Negative (A)	Tension	Prevention	Avoidance	Reversal	Minimization	Cooperative (S) or Transnational (D) effects
Climatic and bioclimatic characteristics	5	E	E	M	Θ	+					
Morphological and landscape characteristics	5	T	A	M	A	--	Not	Not	Partly	Partly	Δ
Geological, tectonic and soil characteristics						O					
Natural environment	5	T	A & E	M	A	--	Partly	Partly	Partly	Partly	Δ & Σ
Anthropogenic environment	3	T	A & E	M	A	-/O	Partly	Not	Partly	Partly	
Socio-economic environment	3	T	A & E	M	Θ	+					
Technical infrastructure						O					
Anthropogenic pressures on the environment	4	T	A	M	A	-	Not	Not	Partly	Partly	
Atmospheric environment - air quality	5	E	A & E	M	Θ	++					
Acoustic environment and vibration						O					
Electromagnetic fields						O					
Water						O					

SUBMISSION

Probability of occurrence	"1" Unlikely to "5" Probable
Land area	Local (T), Regional (R), National (N)
Complexity	Direct (A), Indirect (E)
Time horizon	Temporary (P), Permanent (M), Repeatability (E)
Prevention, avoidance, reversal or minimisation	Fully reversible, Partially reversible, Irreversible
Extent of estimated impacts:	+++= Positive and strong, ++=Positive and moderate, += Positive and weak +/O = Positive negligible, O = Neutral, -/O = Negative negligible -=:Negative and weak, --=Negative and moderate, ---= Negative and strong

10 ADDRESSING ENVIRONMENTAL IMPACTS

10.1 Climatic and bioclimatic characteristics

As mentioned in Chapter 9, during the construction and operation phase of the considered ESDP, it cannot change the climate/bioclimate parameters, both in the area where the projects are planned (main projects and accompanying supporting works) and in the wider area. Therefore, no impacts are identified in either of the two phases considered (construction and operation phase) and therefore no specific preventive or remedial protection measures are required beyond those proposed in the section proposing mitigation measures to protect the quality of the ambient air environment.

On the contrary, the project during its operational phase will have a positive contribution to the further penetration of RES in electricity generation and to the reduction of greenhouse gas emissions with all that this implies in addressing the greenhouse effect and climate change.

10.2 Morphological and landscape characteristics

10.2.1 Construction phase

The impacts on the landscape from the presence of the construction sites are considered to be short-term and largely reversible after the end of the works.

With regard to the presence of construction machinery and site facilities, the following are proposed:

- The extent of the project occupancy zone to be limited to what is strictly necessary for the construction of the project.
- Any kind of site facilities (offices, workshops, warehouses, etc.) to be removed after the end of the contract and the site to be restored, regardless of the ownership of the site.

In order to reduce as much as possible the negative impacts on the landscape and the aesthetic environment due to the construction of the proposed ESDP, it is proposed to implement the following measures:

- Fully restore all affected surfaces during the construction phase that are not required to be used during the operation phase (area of control house grounds that will not be used during operation, W/T platforms, road slopes, etc.).
- Prohibit any permanent paving or cementing of surfaces that do not serve the absolutely necessary operational needs of the project.
- Under no circumstances is the uncontrolled disposal of waste and waste of any category allowed in the project area or in the wider area.
- All waste and wastes (solid and liquid, hazardous or non-hazardous) resulting from the construction activities during the construction of the works should be managed appropriately to avoid pollution of the area (soil, subsoil, surface and groundwater) from uncontrolled disposal or spills.
- The construction sites should be equipped with household waste bins to collect the municipal waste of the workers on the construction sites. This waste shall be periodically disposed of appropriately, at the discretion of the contractor. It should be noted that particular care

should be taken to ensure that this solid waste does not include rubble or hazardous materials, the disposal of which should be in accordance with the legislation in force on the relevant categories of waste.

- The management of the used mineral oils is to be carried out in accordance with the provisions of P.D. 82/25.2.2004 (Government Gazette 64/A/2.3.04) on "Determination of measures and conditions for the management of used mineral oils", having regard to article 101§4: article 73§b, Law 4819/2021. Waste lubricating oils and fluids of each type will be collected separately by category in suitable tanks or drums and temporarily stored in a covered area.
- The management of toxic and hazardous waste is done in accordance with the provisions of the KYA HP 13588/725/2006 (Government Gazette 383B/28-3-2006) "Replacement of KYA 19396/1546/97 (Government Gazette 604B/18-7-1997)", as amended by Y.A. 8668/2007, (Government Gazette 187/B/2.3.2007), Y.A. οικ. 146163/2012, (Government Gazette 1537/B/8.5.2012), Law 4042/2012, (Government Gazette 24/A/13.2.2012) and H.A. οικ. 62952/5384/2016, (FEK 4326/B/30.12.2016).
- The deposition of excavated material to be used as embankment material shall be done in a manner that does not allow for erosion and leaching of materials. Such deposits should be formed into gentle slopes, covered with appropriate plastic covers and wetted to limit the spreading of material.
- Plant soil that is suitable for reuse should be cleared of large roots or stones and then piled in heaps to facilitate reuse.
- The disposal of materials, even temporarily, at points in the water network of the immediate or wider area is not permitted.
- avoid the long-term depositing of earthworks or aggregates in any workplace. The removal of unsuitable excavated materials shall be carried out as soon as possible.
- Finally, if required by the competent Forestry Authority, it is possible to design horticultural interventions which have as their main objective:
    - The restoration of the natural environment and the harmonious integration of roads into the landscape.
    - The protection from the erosion of the soil surface of the embankments caused mainly by the effect of rainwater, with the extraction of various particles from the body of the embankments and the maximum percentage of this (about 75%) usually takes place in the first autumn and winter period after the end of earthworks.
    - The restoration of vegetation to be removed during the excavation works.

10.2.2 Operating phase

As extensively discussed in the corresponding section of Chapter 9, the project design already incorporates measures and precautions to ensure maximum visual harmony of the ESDP with the landscape and minimize any visual intrusion. Briefly, some of the key points are reiterated:

- The placement of wind turbines at sparse distances between them that exceed the minimum distance requirement (2.5 times the diameter of the blade of the wind turbine, i.e. 2.5 * 170 = 425 m), in accordance with the provisions of KYA 49828 (Government Gazette 2464B/3.12.2008) '*Approval of the special framework for spatial planning and sustainable development for*

renewable energy sources and the strategic environmental impact assessment of this framework' (Annex IV, Table A.C).

- Visual uniformity in the layout of the turbines which has been shown not to disturb the harmony of the area. Visual uniformity is achieved by the similarity of the type and dimensions of the rotor and superstructure, as well as the height of the support pillar of each wind turbine.
- During the design of the project under study, care was taken to ensure that the layout of the wind turbines is such that any public view to and from the installation area is not obstructed.
- There are no important monuments (cultural or natural) in the area, so there is no issue of disturbance of the view from any important natural or cultural heritage monument.
- The adoption of simple tubular towers (rather than trusses), a three (3) blade helix and colour scheme that blends in with the surroundings has been shown to give a harmonious and elegant aesthetic effect and increase visual acceptance and integration into the wider field.
- Avoiding fencing of the ASPHE.
- Placement of the W/Ts in line with the linear element of the ridges.

Also, as already mentioned in the corresponding section of Chapter 9, research has shown that when the wind turbines of a wind farm are rotating, the human eye considers them to be useful, so that they are more easily accepted by the observer. In this case, any visual disturbance due to the presence of a man-made project in the landscape is largely offset by the sense that the project serves a public purpose, which is indeed consistent with the protection of the environment and the production of clean and cheap electricity. Moreover, the rotation of the blades is a pleasant sight that is positively received by the observer. Conversely, when a significant number of turbines are not operating while the wind is blowing, the observer's perception of the usefulness of the wind farm (and of wind energy in general) is dulled.

For this reason, it is considered advisable to maintain the rotation of the rotors for the longest period of time, and the developer should regularly and thoroughly maintain the rotation mechanisms and replace any damaged parts as soon as possible.

During the operation phase, no additional measures are required beyond the maintenance of the entire project, so that no uncontrolled waste of any kind is discharged into the project, which, apart from the aesthetic degradation, also affects the functionality of the project. Thus, the waste resulting from the operation of the W/F should be removed from the W/F premises at regular intervals. Any other solid waste generated during maintenance (parts of electrical or mechanical equipment, batteries, etc.) will be removed immediately under the responsibility of the maintenance technicians.

Finally, the plantings - where they are carried out following indications from the competent authorities - should be properly maintained in accordance with the remedial measures proposed herein, as they also contribute to the improvement of the aesthetic environment in the project area.

10.3 Geological, tectonic and soil characteristics

10.3.1 Construction phase

The only impacts on the geological and soil characteristics of the study area are due to the opening of new roads, the creation of the plazas and the foundations of the W/T, the creation of the construction site and the two sites for the installation of the control houses.

The following general measures are proposed to address these impacts:

- The earthworks required for the construction of the ESDP and other accompanying works should be limited to the area strictly necessary. Consequently, before the start of the works, an appropriate demarcation of the occupation zones should be carried out.
- Restoration of the damage caused to the soil of the installation sites.
- Reuse of suitable excavation materials.
- Maintain natural soil slopes so that there is no change in surface water runoff.
- Vegetation plantings on soils that are being reclaimed to serve the needs of the construction phase.
- The quantities of aggregates stored for the needs of the project should be limited to those that are strictly necessary at any given time, used as soon as possible and not accumulated.

With regard to the management of excavated materials from the roadworks and the M.T. channel, the following remedial measures are proposed:

- All suitable earthen and semi-soil excavated materials will be used in the necessary backfill.
- The earthy excavated material from the surface mantle should be prioritised for coating the slopes of the embankments in order to achieve rapid revegetation with vegetation cover.

Regarding the management of excavated materials from the installation of wind turbines and associated works, it is proposed to:

- The transport of excavated materials will be carried out by means of transport vehicles equipped with appropriate covers to prevent their dispersion or spillage on the roads.
- Most of the excavated materials will be reused in the form of fill to form the platforms, fill the excavation cones, shape the surfaces in the area of the project and cover all the excavations for the cabling and the foundations of the two control houses, after the quantities necessary for the backfilling have been temporarily deposited in areas within the site boundary.
- The deposition of excavated material to be used as embankment material shall be done in a manner that does not allow for erosion and leaching of materials. Such deposits should be formed into gentle slopes, covered with appropriate plastic covers and wetted to limit the spreading of material.
- The disposal of materials, even temporarily, at points in the water network of the immediate or wider area is not permitted.
- The removal of unsuitable excavated materials should be done as soon as possible.

- Earthworks should be avoided during days with high rainfall.
- Efforts should be made to ensure that car routes serving the construction sites do not pass through the centres of settlements and residential areas.
- Any materials required for the construction of the project should be obtained from legally operating quarries in the area. It is prohibited to create a borrow pit or to take materials from river or stream beds for materials that may be required for the construction of the project.
- The management of the excavation products to be disposed of will be based on the existing legislation on the management of waste from excavation, construction and demolition (KYA No. 36259/1757/E103 "Measures, conditions and programme for the alternative management of waste from excavation, construction and demolition (AEK)" (Government Gazette 1312/B/2010), as amended and in force).

With regard to the presence of construction machinery and site facilities, the following are proposed:

- The extent of the project occupancy zone to be limited to what is strictly necessary for the construction of the project.
- Any kind of site facilities (offices, workshops, warehouses, etc.) to be removed after the end of the contract and the site to be fully restored.

In order to minimise the impacts on topography and soil quality characteristics due to the construction of the project, it is proposed to implement the following measures:

- Prohibit any permanent paving or cementing of surfaces that do not serve the absolutely necessary operational needs of the project.
- Under no circumstances is the uncontrolled disposal of waste and waste of any category allowed in the project area or in the wider area.
- All waste and wastes (solid and liquid) resulting from the construction activities during the construction of the works should be managed appropriately to avoid pollution of the area (soil, subsoil, surface and groundwater) from uncontrolled disposal or spills.
- The construction sites should be equipped with household waste bins to collect the municipal waste of the workers on the construction sites. This waste shall be periodically disposed of at the nearest waste disposal site, at the discretion of the contractor. It should be noted that special care should be taken to ensure that this solid waste does not include rubble or hazardous materials, the disposal of which should be in accordance with the legislation in force on the relevant categories of waste.
- The management of the used mineral oils is to be carried out in accordance with the provisions of P.D. 82/25.2.2004 (Government Gazette 64/A/2.3.04) on "Determination of measures and conditions for the management of used mineral oils", having regard to article 101§4: article 73§b, Law 4819/2021. Waste lubricating oils and fluids of each type shall be collected separately by category in suitable tanks with a capacity of 0.50 m^3 or in drums and temporarily stored in a covered area.
- The management of toxic and hazardous waste is done in accordance with the provisions of the KYA HP 13588/725/2006 (Government Gazette 383B/28-3-2006) "Replacement of KYA

19396/1546/97 (Government Gazette 604B/18-7-1997)", as amended by Y.A. 8668/2007, (Government Gazette 187/B/2.3.2007), Y.A. οικ. 146163/2012, (Government Gazette 1537/B/8.5.2012), Law 4042/2012, (Government Gazette 24/A/13.2.2012) and H.A. οικ. 62952/5384/2016, (FEK 4326/B/30.12.2016).

- All precautionary measures should be taken to prevent spillage of oil products due to damage, negligence, etc. and appropriate handling should be carried out to minimise such occurrences. However, in the event that, despite control and proper operating measures, a spillage of such materials occurs, care should be taken to avoid extensive soil soaking. For this purpose, absorbent materials (e.g. sawdust, sand) should be provided in sufficient quantities to adsorb and thus retain the leaking fuels and lubricants. After use, these absorbent materials should be carefully collected and disposed of for landfill. Absorbent materials stored in a suitable covered area should be periodically checked for their condition and if they are not in an appropriate condition and therefore have a reduced efficiency (e.g. they have adsorbed moisture and therefore have reduced or no efficiency). In this case they should be replaced as soon as possible.
- No burning of any kind of material (rubbish, tyres, oil, etc.) in the project area.
- The contractor is responsible for the good condition and tightness of the mechanical means. In order to protect the soil from leakage of mineral oils, fuels and other petroleum products from the construction machinery, appropriate measures should be taken such as good and regular maintenance of machinery, maintenance of machinery and its refuelling will not be carried out within the construction sites and will be carried out at legally operating petrol stations and garages in the area, except in case of emergencies (breakdown, accidental leakage, etc.). All spillage and fire safety measures will be observed.

Regarding the impact on morphology from the opening of the new road sections, the restoration of the embankment surfaces, their filling with vegetal soil, with the aim of:

- The restoration of the natural environment to its previous state and the harmonious integration of the surfaces affected by the project into the landscape.
- The protection from erosion of the soil surface of the embankments caused mainly by the effect of rainwater. It is usual for the maximum percentage of this erosion (around 75 %) to occur in the first autumn and winter period after the end of earthworks.
- The restoration of vegetation to be removed during the excavation works, where this is deemed necessary by the competent Forestry Service.

  To this end, earthworks should be followed by erosion control works to prevent the loss of valuable soil and the creation of furrow erosion before sufficient vegetation has developed. Vegetable land existing in the area where the work is to be carried out shall be collected and stored for use during the restoration work. The planting of the embankment slopes and deposits will be carried out in a single layer of lightly compacted vegetated soil with a minimum thickness of 0,20 - 0,30 m.

10.3.2 Operating phase

There is no risk of hazardous substances escaping during the operational phase of the NPP under consideration. The only liquid substances present are the lubricating oils of the transformers and the

hydraulic systems of the gensets. At the slightest deviation from normal operation (overheating, overvoltage, etc.) these devices are automatically shut down. In addition, all necessary fire safety and fire-fighting measures will be taken in accordance with the provisions in force and the instructions of the Fire Service.

- Staff waste water will also be taken care of in accordance with the applicable health regulations. In particular, a suitable disposal system (septic tank system) will be constructed, to which the control house will be connected.
- During the operational phase of the project, small amounts of solid waste are expected to be generated, which will come from the packaging of materials/maintenance of the facilities and from staff cleaning and hygiene materials. It is envisaged that bins will be placed within the control house to collect this waste, the waste will be removed at regular intervals. Any other solid waste generated during maintenance (parts of electrical or mechanical equipment, batteries, etc.) will be removed immediately under the responsibility of the maintenance technicians.
- For the safe management of hazardous wastes (e.g. oils from maintenance of W/T and HCs), these should be handed over to a natural or legal person (public or private) for collection, transport, storage, treatment, recovery or disposal, which has been granted a relevant permit or delivered under its authority, to approved alternative management systems for these wastes under the conditions provided for in the relevant provisions. The delivery and legal possession of hazardous waste shall be evidenced by the Identification Form which shall accompany the hazardous waste. Upon transfer of the identification form, the responsibility of the previous holder ceases and the new holder becomes responsible. The final holder (management entity or alternative management system) is responsible for the various procedures for the proper management of the waste, including regeneration, re-refining, recycling, decontamination, burial, incineration, etc. For the temporary storage of hazardous waste on the premises of the WEEE facility and until collection, either UN-compliant packaging (for solid waste) or tanks enclosed by a leakage collection system (for liquid waste) should be used. Collection containers should be in an area with appropriate signage and adequate ventilation and lighting. They must also be located in such a place and in such a way that they do not interfere with other activities of the installation.

10.4 Natural environment

10.4.1 Construction phase

Mitigation measures to address impacts to vegetation, flora and fauna during construction of the project are summarized as follows:

- The extent of the project occupancy zone to be limited to what is strictly necessary for the construction of the project.
- The spatial planning of the installation and the accompanying project should be carried out with the greatest possible clarity and detail so as to minimise the impact on the woody capital. The felling and grubbing of shrubs and trees and the disposal of the products must be carried out in accordance with the provisions of forestry legislation and the instructions of the competent forestry authority.

- Provide for all necessary measures to protect workers or visitors to the forest area. Stylish signs should be placed at appropriate distances to warn of possible hazards to the above, and should be posted at appropriate distances.
- Take fire protection measures for the vegetation near the work areas.
- No uncontrolled dumping of rubble, lubricants and other wastes or refuse shall be allowed at any location within or outside the wind farm and site blocks or within the immediate siting areas of the project components.
- The extent of land reclamation for road works should be limited to the extent strictly necessary for the execution of the works in question. The extent of clearing for the installation of wind turbines should be limited to the area of each wind turbine, taking into account the necessary size of the plazas. In general, the areas in which existing vegetation will be cleared should be limited to those that are absolutely necessary. For this reason, the construction works should be preceded by a precise delimitation of these areas by a team of surveyors. The boundaries should be clearly marked with a special tape so that the deforestation area is clearly visible.
- The width of the road network should not exceed the width of the road network as specified in the relevant road studies.
- It is also proposed to protect the soil surface of the embankments from erosion, which is mainly caused by the effect of rainwater, by the drifting of various particles from the body of the embankments and the maximum percentage of this (about 75%) usually takes place in the first autumn and winter period after the end of earthworks. To this end, earthworks should be followed by works to prevent the loss of valuable soil and the creation of furrow erosion before sufficient vegetation has developed. Further restoration work should be carried out in accordance with the instructions of the competent forestry department.
- The installation in the area of the project implementer, as long as it is a forest area resulting from the application of Article 14 of Law 998/79 or from ratified forest maps, will be carried out under the supervision and orders of the competent Forestry Services.
- Any damage to vegetation should be kept to a minimum and always in accordance with the instructions of the competent Forestry Department.
- During earthworks, dust dispersion reduction is required by wetting the soil in case of adverse weather conditions.
- After the completion of the construction of the ESDP and its accompanying works, all site facilities will be removed. The sites will be landscaped and restored to their previous condition.
- To protect the soil from leaching, surface runoff of water by creating woodland.
- Any natural vegetation that will be altered and will not be covered by infrastructure works after the completion of the works must be restored under the instructions of the competent forestry authority.
- It is also proposed to implement horticultural interventions which will have as a main

objective:

- The restoration of the natural environment from the alterations that will be caused to the natural vegetation due to the construction of the project and the harmonious integration of the roads into the landscape.
- The restoration of vegetation, which is to be removed during the excavation works. In the event of the removal of trees or dense stands of shrubs, it is proposed to replace them, possibly in the form of tree planting on the boundaries of the intervention area.
- For the planting of the embankment slopes and deposits, lightly compacted vegetative soil will be placed in a single layer, with a minimum thickness of 0.20 - 0.30 m.
- The protection from erosion of the soil surface of the embankments, which is mainly caused by the effect of rainwater, with the entrainment of various particles from the body of the embankments and the maximum percentage of this (about 75%) usually takes place in the first autumn and winter period after the end of earthworks.

- Regarding the planned plantings and if deemed necessary by the competent forestry department, it is proposed to prepare a study of the horticultural restoration of the intervention areas, which will be submitted according to the procedure provided by Y.A 15277/2012 (Government Gazette 1077/B/09.04.2012), taking into account any relevant suggestions of the competent Forestry Authority. Proposed:
  - Any planting work shall commence immediately on any part of the project where earthworks have been completed and the final surfaces have been formed. The planting work should include the preparation of the sites for the plants (final shaping of the ground surface, planting of the soil, coating of the soil) and the supply, installation and maintenance of the plants.
  - Vegetable land existing in the project area will be collected and stored for use during the restoration works. In the event of an excess of vegetation in one area, quantities may be transferred from one area or part of the project to another.
  - The proposed method of landscaping aims at the formation of plantations on the surfaces of embankments and road slopes, in order to protect them from surface erosion and reduce surface moisture and water evaporation.
  - As regards the species to be used for planting, these should be species that are adapted to the climatic conditions of the area and meet the requirements of the intended purpose.
  - Bearing in mind the above basic principles, in the selection of plant species, priority should be given to species belonging to the native flora or species that have been used by the forestry department in the reforestation of the area. The final species selected will be finalised in cooperation with the competent Forestry Department. The care of the plants should continue for at least 2 years after planting. In general, the purpose of the restorations is as follows:

i. The restoration of disturbed natural surfaces.

ii. Restoring (to the maximum extent possible) the landscape and vegetation balance to its original state.

iii. Better harmonisation and adaptation of the new road network to the natural environment.

- It is proposed to avoid fencing off areas in order to ensure the unhindered passage of fauna and herpetofauna.
- During earthworks, dust dispersion reduction is required by wetting the soil in case of adverse weather conditions.
- Take all necessary fire safety measures in accordance with the applicable provisions and the instructions of the relevant Fire Service.
- As the ASPE "XEFOTO" is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Kompsatos Valley", code GR009, but also within a short distance from the boundaries of the Special Protection Area (SPA) 'Rodopi - Iztochni', code BG0001032, and in terms of the protection of bird fauna, according to the conclusions of the MEIA study, it should:
    - special care should be taken during the construction and installation period of the park so that the works do not coincide with critical periods for the fauna of the area, regardless of the importance of the species, in order to avoid disturbance at this critical stage of their biological cycle (the period of reproduction of fauna species or nesting and rearing of young birds).
    - To carry out restoration of the area surrounding the works. Specifically, following the completion of the construction work it is proposed that all unnecessary roads and encroachments be reinstated in order to restrict access to the area resulting in reduced disturbance. No amount of surplus material resulting from road widening should remain on the project site, but all of it should be removed to an adjacent, appropriately licensed, equivalent site.
    - Provision should be made to limit mortality of herpetofauna during the construction phase. In particular, given that individuals of the gray turtle (*Testudo graeca*) and the Mediterranean turtle (*Testudo hermanni*), which are species listed in Annex II of Directive 92/43/EEC and at the same time species with a limited ability to avoid anthropogenic risks due to their low speed of movement, were observed in the wider area of the construction of the project under study, it is recommended that during the construction phase of the project and its accompanying works, a daily scanning by a specialist of the areas to be affected by earthworks (e.g.The movement of individuals of the above-mentioned species that are likely to be found outside the occupation zone of the above-mentioned works should be carried out by a specialist specialist in the areas where the works are to be carried out (e.g. new sections of the excavations) and the movement of individuals of the above-mentioned species that are likely to be found outside the occupation zone of the above-mentioned works.

This will also prevent the accidental mortality of individuals of the above species during the construction phase of the project.

Also in addition to the proposals of the MEEA should:

- The proposed environmental conditions of the project under study, as set out in Chapter 12 of this EIA, shall be strictly adhered to.
- Provide detailed information to workers involved in both the construction and operation phases so that all environmental conditions, particularly those relating to the natural environment, are respected.
- Implement a monitoring programme of avian activity and the effectiveness of associated conditions (based on the Monitoring Programme of Chapter 9 of the MEA). The monitoring of avifauna activity (following the records of the MEIA and its methodology) should also cover the construction phase of the ESDP.

10.4.2 Operating phase

As already mentioned in the corresponding section of the 9^{ου} Chapter of this report, the impacts of the considered ESDP on the flora and fauna of the area are assessed as moderate negative and localized. Thus, there are no emissions of gaseous, liquid and solid waste to affect the flora and fauna of the installation area. While it should be stressed that the wider area of the 'XEFOTO' ESPO is not fenced and therefore the ESPO under study does not constitute an artificial barrier for the movement of animals and for the spread of plants, since it is a small-scale and low-impact installation, with no fencing, while the installation of the gensets in places allows the land in between to remain untouched.

All measures should be taken to maintain the plantations, as they contribute to improving the landscape of the area. In particular, in the first year after planting, any gaps that may occur due to the death of seedlings will be filled in, and the care of the plants will continue for at least 2 years after planting.

Also, the project design already incorporates measures and precautions to ensure that any impacts on the avifauna of the area are minimised. Briefly, we reiterate some of the highlights:

1. The sparse spacing and orientation of the wind turbines allows the passage of species even between neighbouring wind turbines since the distances between the five wind turbines far exceed the minimum permissible (2.5 times the diameter (d) of the wind turbine blade = 2.5*170 = 425) as defined by the KYA 49828 (Government Gazette 2464B/3.12.2008) with which the EIA&AA for RES was approved.

2. The total area occupied by the wind turbines is small. The area within the boundary of the wind farm, which will eventually be left free after the works are completed, will clearly be re-used by the birds and other fauna of the area, thus ensuring minimal change to the existing habitats in the area.

3. The transmission of the electricity produced is carried out by underground medium voltage lines, with the exception of the external medium voltage line crossing the river Komsato for a limited length (about 129.24 m).

It is proposed to implement the monitoring programme proposed in the next chapter on the project's impacts on vegetation and avifauna during both the construction and operation phases.

Specific measures to address potential impacts on avifauna resulting from the results of the MEIA study include the following:

- Shutdown of the W/F in conditions of limited visibility due to cloud cover and extremely adverse weather conditions.
- To install an optical system for the automated stopping of wind turbines at the W/F (/impact mitigation) from the start of the project operation, mainly due to the importance of the area for birdlife. The system will include real-time visual flight detection (detection), activation of warning/avoidance means (acoustic). According to the MEOA, the proposed system is proposed to be configured to operate without bird deterrence (acoustic repulsion) during the breeding season and during the chick-feeding period, but only by stopping the wind turbines, in order to avoid the possibility of disturbing the species and the possibility of displacing them from the study area. Also, given the morphology of the topography and the possibility of the passage of species of interest perpendicular to the axis of the study project installation from a low height, which is likely to be a "blind spot" for the detection system of the above-mentioned stopping system, it is proposed that it is mandatory for the project promoter to carry out a preliminary study on the correct positioning of the camera angles to cover the above-mentioned possibility, while for those wind turbines where this cannot be covered by the installation of four cameras mounted on each wind turbine, it is proposed that the installation of a second set of cameras (eight tracking cameras on each wind turbine instead of four) is mandatory in order to fully cover the tracking of the species of interest from all directions of the horizon and from all possible heights. Other vital parameters that should be strictly adjusted to achieve the goal of minimizing the probability of collision are proper parameterization according to the biometric characteristics of the species in the area and short response time from species detection to complete stop of the wind turbine.

  It is also considered important that after the installation of the project under study, the above automated wind turbine shutdown system should operate with the simultaneous, daily and uninterrupted, presence of at least three ground observers (specialized scientific personnel) who will also have the ability to stop the operation of the wind turbines of the project under study in case a dangerous flight of species of interest is detected, until the above automated shutdown system is properly configured. The installation of the system shall be completed prior to the issuance of the operating permit.
- Avoiding the creation of resting or supervisory positions. Built-in structures that allow birds to perch or congregate in any facility should not be used.
- Constant lighting of wind turbines should be avoided to reduce the risk of collision. If this is unavoidable, flashing white strobe lighting should be considered as less attractive to birds.
- Cable undergrounding.
- Immediate removal of dead animals (dogs, sheep, goats, horses, cows, etc.) found within a radius of at least 500 metres from the base of the wind turbines. These dead animals should be transported to safe locations away from the wind farm, while remaining available for

scavenging birds and carnivorous omnivorous mammals. In the wider area of the wind farm, given that there are five feeding stations installed, it is proposed to transport the dead animals to these stations, rotating the stations at a time.

- Control of the use of the new road sections. After the necessary consultation with the competent authorities, the sections of the new road openings that will be created should not be open to all. In particular, it is proposed that a barrier be placed at the beginning of the sections of the new openings, after the construction of the project, and that only those involved in the maintenance and operation of the project and, of course, the competent authorities responsible for the study area should have access to the access road.
- It is also proposed that the width of the roadway deck after construction be limited to the minimum required for maintenance and operation of the project. Given the occasional presence of wolf and "wild horses" in the vicinity of the study area of the AISP, it is proposed that the project proponent be required to place warning signs on the access roads to warn of their presence, in order to reduce the speed of passing vehicles and avoid accidents that could cost both deaths of these species and loss of life.
- Monitoring of potential impacts on avifauna - fauna. There should be an explicit obligation to monitor the effects of the park, especially on bird species and other terrestrial fauna, after construction, and during the pre-construction and construction period, for a minimum period of four years (in total).
  Specifically, the monitoring programme will address the activity of avifauna and the effectiveness of the associated conditions (Post-construction monitoring programme for avifauna) and, if required, based on what is subsequently indicated, an appropriate corresponding programme for the manatees (limited in time to the period during which the mammal group is active, both during 24 hours and during the year). It is recommended that the monitoring and recording of impacts carried out be at least 4 years and be carried out during both the preconstruction and construction phases and during the first two years of operation of the project. The annual programme is then proposed by the RIA study team to be repeated every 5 years until the next renewal or modification of the EIA, at which time the frequency of repetition and the way it is carried out may be reviewed.

  On the basis of the above programme, it will be possible to assess the progress of the operation of the project and determine whether or not additional measures or modifications to the proposed measures are necessary in order to minimise any potential impacts.
- In the event that the monitoring programme records an increased intensity of impacts compared to the preliminary assessments and the scaling up of mitigation measures is deemed necessary, the additional measures proposed are:
    - Active management of habitats under the wind turbines. In those cases where post-construction monitoring identifies certain impacts (increased concentration or mobility of species on the site, incidents of collision of specific species) on specific turbines, it is proposed to design active management actions for the areas under the turbines (creation of undesirable habitats for birds) after appropriate studies. These studies should also take into account the other flora and fauna species in the area.

- Active habitat management around the periphery of the wind farm. It is possible that in cases where a wind farm is located in an area where there is a need for bird protection measures, active habitat management around the periphery of the wind farm may be required to create suitable habitats to attract birds away from the turbines. Such management actions could for example include ploughing and seeding of abandoned fields and clearing of forested fields after appropriate studies, so that species of interest likely to be affected by the wind farm are driven to safe alternative sites and indirectly favoured. These studies should necessarily take into account the potential impacts that will be assessed during the first period of operation of the wind farm, as well as the other flora and fauna species in the area.
- Increasing the starting speed of wind turbines. If there is an impact on hand gliders resulting from the installation and operation of the wind turbine under study, and as soon as it is detected (e.g. finding of a hand glider killed by the operation of the wind turbine), it is proposed to apply the measure of increasing the starting speed of the wind turbines. When implementing this measure, it is proposed, to avoid wind conditions with the highest bat activity, to increase the wind turbine starting speed and blade rotation so that at low wind speeds, of the order of 3.5 m/sec, the rotation of the wind turbine rotor is avoided. This can be achieved in three ways: a) by sweeping the blades (so that they are parallel to the direction of the prevailing wind, in effect reducing their surface area), b) by increasing the activation wind speed, and c) by applying methods to prevent blade rotation at lower wind speeds.
- Monitoring possible effects on the handrails. If an impact from the installation and operation of the proposed ESRP on chironomids occurs, and as soon as it is identified (e.g. a killed chironomid individual is found as a result of the operation of the ESRP), it is proposed that in addition to monitoring the potential impacts on birds and other terrestrial fauna, a corresponding monitoring of the potential impacts on chironomids is proposed.
- Paint one wing of each W/T black.
- Full shutdown of the GIS during sensitive periods. Specifically, in the event that the processing of the recording data from the automated wind turbine shutdown system or the simultaneous presence of field observers during the monitoring programs proposed below, after the installation of the project under study, indicates (from the analysis of the recorded videos or from the observations of field observers) that the risk of impact during a period is critically high and cannot be minimized through periodic shutdowns

In addition to the above provisions and complementary to the proposals of the MEEA, it is proposed to:

- as regards the automated wind turbine shutdown system in the RES-EWS, the monitoring, maintenance and control of the operation of the system shall be included in the permanent monitoring programme.
- The installation of automated prevention systems should be accompanied by a crash victim

search programme using the Before-After-control-impact (BACI) method, so the programme will be started before the systems are installed and adjusted in order to quantify their effectiveness. The ornithological survey of impact casualties will involve the search for dead animals (birds and bats) in the area under the wind turbines and around their pylons. The impact victim search programme is proposed to be carried out in parallel and as an integral part of the post-construction monitoring programme of the ASPHE.

- The design of the proposed LDC to comply with the obligations under par. 4 of article 5B of the 8353/276/E103/2012 Decree (Government Gazette 415/B) and in particular: the obligation to regularly check the site of the station (weekly or more often if necessary) and to remove dead animals (mainly livestock), the presence of which could attract scavenging birds of prey.

10.5 Anthropogenic environment

10.5.1 Spatial planning - land use

As discussed in the previous section, no significant impacts on existing land uses are anticipated. The strict limitation of the interventions to only what is strictly necessary and appropriate by the permitting authorities, as well as the compatibility of the project with the land-use planning, do not entail any requirements for further measures.

10.5.2 Structure and functions of the man-made environment

As analysed in detail in the respective impact assessment paragraphs, the proposed RES-E project will not cause significant impacts on the structure and functions of the man-made environment during both the construction and operation phases. to take all necessary measures to protect people passing through the project area from the risks that may be created by works carried out in the vicinity of the project, such as: the installation of warning signs and, more generally, measures to exclude public access to parts of the project that are at high risk,

Although all the works will be carried out at a sufficient distance from the nearest settlements, it is nevertheless proposed to comply with strict adherence to the noise, air and dust emission limits (construction phase).

Thus, it is proposed to comply with the following guidelines:

- The siting of construction sites and aggregate disposal areas should be based on the principle of the least possible disturbance to the residential environment and on the possibility of their full restoration.
- Strict adherence to noise emission limits as imposed by legislation and clearly defined routes for trucks and machinery through settlements

Also, during the construction phase and during the operation of the site, all fire protection measures should be taken in the event of a fire that may be caused by the operation of machinery, workshops, etc. and to minimise the risk of its transmission to adjacent areas.

Also, for reasons of flight safety and to avoid aircraft collisions, day and night lighting will be installed, in accordance with the requirements of the CAA and the GNAF.

All necessary measures must be taken to protect workers or visitors to the project area. To this end, signs will be placed at appropriate locations to warn of any potential risks to the above-mentioned persons.

During the operation of the project, all fire protection measures will be taken in case of fire at the substation, the Control Centre and the wind turbines. For this purpose, a Special Fire Protection Study for the organization of fire protection of the project will be prepared, which will be checked and approved by the Fire Department. The fire safety certificate issued by the Fire Department is a prerequisite for the issue of the operating licence.

10.5.3 Cultural heritage

There is no need to take measures to protect cultural heritage as no heritage related sites are identified in the area.

In any case, the opinions and comments of the competent services of the Ministry of Culture & Sports in the context of the environmental licensing process of the W/F. Any reservations of the archaeological services for specific sites will be taken into account and if necessary, appropriate modifications will be made to the design and layout of the projects.

10.6 Socio-economic

No specific measures are required as, as has been developed in the relevant section of Chapter 9, the proposed ESDP is expected to have a positive impact on the social and economic characteristics of the area through increased employment and direct economic benefit to the Local Authorities.

As mentioned, there will be an increase in jobs (direct and indirect) during the construction and operation phases. Every effort should be made to absorb labour from local municipalities so that the positive impact in terms of employment (direct and indirect) is spread throughout the local economy.

It is also proposed:

- To prepare a plan for the transfer of the necessary equipment, which will be notified and approved by the Local Authorities for the smooth conduct of the transfer operations, in order to avoid any kind of disturbance to the activities of the local residents.
- Ensure the smooth circulation of vehicles by managing traffic in all sections of the project where interventions are foreseen during the construction phase.
- To provide adequate information to the local community about the project under development, its positive impacts at local and national level and its negative impacts, while providing information on how to deal with them.

10.7 Technical infrastructure

During the construction phase of the project, the uninterrupted continuation of traffic in all sections of the project where interventions are foreseen - as mentioned above in section 9.8 - should be ensured in order to ensure the smooth movement of vehicles to and from residential areas and to take appropriate measures regarding the organisation of construction sites.

10.8 Correlation with anthropogenic pressures on the environment

As mentioned in the corresponding section of Chapter 9, the size of the ESPO and the nature of the area as well as the human activities developing in the area mean that no specific measures are necessary.

Furthermore, with regard to the cumulative nature of the projects, due to the existence or installation of new projects of similar technology in the wider area, the limited scale of the project and the compensatory benefits of its operation, together with the implementation of all the measures proposed herein, and the compliance with the environmental conditions to be determined during the issuance of the AEP, will contribute to the non-occurrence of significant cumulative effects from its presence in the area.

10.9 Air quality

10.9.1 Construction phase

As mentioned in the corresponding section of the 9ου Chapter of this report, negative moderate impacts on the atmospheric environment are expected during the construction phase of the project, given that the planned interventions have been limited to the minimum possible, while there are no other significant anthropogenic activities in the area of the studied ESDP.

In order to address the emission of pollutants and dust during the construction works, it is proposed to take the following measures to comply with the Greek and EU legislation and to implement the required good construction practice:

Compliance with current legislation on exhaust emissions from machinery and site vehicles. The main relevant legal provisions are as follows:

1) KYA 38638/2016/21.9.2005 "Limit values and guidelines for ozone concentrations in ambient air, in compliance with the provisions of Council Directive 2002/3/EC "relating to ozone in ambient air" of 12 February 2002".
2) KYA 9238 (Government Gazette 405B 27/2/2004) "Limit and guideline values of air quality in benzene and carbon monoxide".
3) PYS 34/30.5.02 (Government Gazette 125A/5-6-2002), limit and guideline values for air quality in sulphur dioxide, nitrogen dioxide, particulate matter and lead.
4) YA 28432/2447/92 (Government Gazette 536/B/25.8.92), measures to limit the emission of gaseous and particulate pollutants from diesel engines.
5) YA 13736/85 (Government Gazette 304/B/20.5.85), measures against emissions from diesel engines intended for vehicle propulsion.
6) YA 8243/1113/91 (Government Gazette 138/B/91), defining measures and methods for the prevention and reduction of environmental pollution from asbestos emissions.
7) PYS 25/18.3.88 (Government Gazette 52/A/22.3.88), limit and guide values for air quality in nitrogen dioxide and amendment of PYS No. 98 and 99/10.7.87.
8) PYS 98/10.7.87 (Government Gazette 135/A/28.7.87), limit value of lead in the atmosphere.

9) PYS 99/10.7.87 (Government Gazette 135/A/28.7.87), limit and guide values for quality

Implement the required good site practice for similar projects and the appropriate scheduling of works. The following are particularly noted:

- Clear demarcation of construction sites.
- The extent of the project occupancy zone to be limited to what is strictly necessary for the construction of the project.
- The use of adjacent land for construction purposes is not permitted without prior approval.
- Take appropriate measures to avoid dispersion of materials in case of strong winds and rainfall.
- Frequent and periodic maintenance of all project construction machinery, heavy wind turbine transport vehicles and other vehicles by qualified personnel, which should meet the specifications set out in Greek and EU legislation.
- Organisation of routes to and from the construction sites in order to minimise journey times, so as to minimise air pollutant emissions from vehicle movements.
- Organization, maintenance and supervision of vehicle parking areas and access roads, in order to minimize traffic congestion in the project area and the resulting air emissions.
- The movement of cars within the construction sites should be at a strict speed limit of 30km/h or in accordance with that provided for in the road design, and exhausts should not be sloped to the ground.
- Avoid disposing of solid or liquid waste that may release toxic or other gaseous pollutants (e.g. empty fuel containers, solvents, workshop fluids, or paints and general waste saturated with the above substances, tyres, etc.) together with household waste.
- Prohibition of any kind of burning of materials (tyres, oil, etc.) in the project area.

Atmospheric pollution during construction consists mainly of the release of dust. Because the release of dust from construction site activities is diffuse, it is not possible to control it after it has been emitted. Mitigation measures should therefore be preventive, i.e. focused on preventing the release of dust rather than corrective measures.

The amount of dust emitted from construction activities depends basically on soil moisture, wind speed and the area of the exposed surface. A large proportion of the releases are from moving material transport trucks, due to the velocity of the air flow around their loads.

Significant dust reduction can easily be achieved by simple and inexpensive methods such as regular wetting of earthmoving areas, trucking areas and dumps and aggregates.

Special measures should also be taken to contain the dust during transport procedures such as:

- The transport of excavated and aggregate materials will be carried out by trucks with a covered body. According to the legislation in force, all trucks transporting loose materials (e.g. excavation products) must be covered (Law 4433/1964 on Public Mining Exploration and other mining provisions as amended by Law 273/1976 PL 50/A and YA II-5h/F/17402/84ETC 931/B - Regulation of Mining and Quarrying Works).
- In case of transport of loose materials (e.g. sand, gravel, etc.), overfilling of vehicles is prohibited.

- Regular cleaning of the roads adjacent to the construction sites from material debris.
- Minimize the fall height when handling materials.

The management of the excavation products to be disposed of will be based on the existing legislation on the management of waste from excavation, construction and demolition (KYA No. 36259/1757/E103 "Measures, conditions and programme for the alternative management of waste from excavation, construction and demolition (AEK)" (Government Gazette 1312/B/2010), as amended and in force).

10.9.2 Operating phase

No air quality impacts are expected from the operation of the proposed ESPO, instead positive impacts are expected as mentioned in the corresponding section of Chapter 9ου , so no remedial measures are required.

10.10 Noise

10.10.1 Construction phase

As discussed in the corresponding section of the 9ου Chapter, weak impacts on the acoustic environment are expected during the construction phase of the project due to the operation of heavy vehicles and machinery on the construction sites. Given that the studied ESPO is located at a sufficient distance, as indicated in the Error! Reference source not found. from the nearest settlement (Kalotycho settlement - 0.63 km from the nearest A/E), while its accompanying works are also located far enough away from other intensive anthropogenic activities, and that the noise source mainly affects the immediate project site and attenuates significantly with distance from it, the related impacts are expected to be mild.

In Greece there is legislation in force concerning noise from construction sites, air bridges, etc. More specifically, in the context of protection from construction noise, it is the obligation of both the developer and the constructor to implement the current legislative framework, which applies:

- the use of silenced air hammers,
- using construction machinery and equipment that has the EU (CE) marking for the limit value of the noise level they emit,
- the limit values for the noise level of hydraulic power units, etc.; and
- the determination of the sound emission of construction site machinery and equipment (Leq(T) level).

In particular, during the construction works, it is necessary to comply with the noise emission limits indicated:

- in the Ministerial Decree 56206/1613/86 (Government Gazette 570B'/09.09.1986) on "Determination of the sound emission of construction site machinery and equipment in compliance with Directives 79/113/EEC, 81/1051/EEC, 85/405/EEC"
- in the H.A. 10399 F 5.3/361/1991 - Determination of the noise level limit of tower cranes in supplement to the H.A. 69001/1921 and A5/2375 (Government Gazette 689/B/1978) on

"Approval of the EEC type for noise level limits of construction site machinery and equipment" and on "use of silenced air bridges" respectively,

- the H.I.A. οικ. B 11481/523/1997 - Amendment of Joint Decision 765/14-1-91 (81/B) of the Ministers of National Economy, Environment, Town and Country Planning and Public Works, Industry, Energy and Technology and Commerce on the limitation of noise from cabled hydraulic presses, earth movers, loaders and excavator-loaders, in compliance with Directive 95/27/EC of the European Parliament and of the Council and
- the IA. H.P. 9272/471/2007 - Amendment of Article 8 of Joint Ministerial Decision No 37393/2028/2003 (1418/B), in compliance with the provisions of Council Directive 2005/88/EC 'amending Directive 2000/14/EC on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors' of 14 December 2005,

Also, to minimise noise impacts, it is recommended that modern construction vehicles and machinery are used and regularly maintained. Trucks should also be avoided from passing through settlements and residential areas in general and during quiet hours in particular.

By complying with current legislation and the above-mentioned measures, it is estimated that noise levels at the site boundaries will not exceed those required by legislation.

With regard to noise levels in the work area, it is estimated that they will remain in the majority of the positions and working hours below the limit of 90 dB(A) for 8-hour work (limit of noise exposure of workers above which the use of personal hearing protection equipment is required, P.D. 85/91, Government Gazette 38A/18.3.91). Of course, where required by the nature of the work, the contractor will provide workers with all appropriate personal protection equipment, in accordance with the applicable provisions. This remark does not only concern noise protection but also the general compliance with the provisions on the safety and health of workers.

10.10.2 Operating phase

Modern wind turbines have practically zero mechanical noise by design. However, the developer will regularly and diligently maintain the rotating mechanisms and replace any damaged parts as soon as possible to avoid the generation of even minimal mechanical noise that may be generated in the event of failure.

From the analysis of the noise during operation (see section Error! Reference source not found.), it is concluded that the existence of any form of disturbance from the ASPEE under study is not expected even in the nearest settlement of Kalotychos (located at a distance of 0.63 km from the nearest W/T) as the distance is significant and therefore the minimum level of 45dB(A) is ensured at the limits of all residential activities as defined by the K.Y.A. 49828/08 (Government Gazette 2464B'/03.12.2008).

In any case, the noise limits should be met by an appropriate adjustment of the engine operating capacity through modification of the software and the way each genset is operated.

10.11 Electromagnetic fields

As discussed in the previous chapter, the electromagnetic field generated at individual points of the installations is extremely weak and point-limited. There is no way to avoid or further limit these emissions. However, the fact that access to these sites (including the existing "IAMSOS" Voltage Booster Station) will only be available to the operating staff of the NPP and, moreover, for a limited period of time, as they are not permanent workplaces, provides, in part, the required safety against human exposure to electromagnetic radiation.

10.12 Water

10.12.1 Construction phase

The project by its nature does not have a significant impact on the surface and groundwater of the area and therefore no specific measures are required.

During the construction phase, mitigation measures are mainly focused on protecting the watershed diet of the whole area, protecting the quality of surface and groundwater.

In particular, it is proposed to take the following measures:

- The construction sites, both for the installation of the wind turbines and for the construction of the accompanying works, should not be located near streams and creeks and the Arda River where any leaching of mineral oils or other materials may flow into these water bodies.
- Proper operation of the construction site. No material may be disposed of, even temporarily, at any point in the watercourse of the immediate or wider area.
- Appropriate scheduling of construction works so that surface water run-off after rainfall is not impeded. This can be achieved either by the provisional rehabilitation of drainage routes or by providing for the construction of technical drainage works first (e.g. culverts in the road network), which will then be integrated into the project and will also function during the operational phase.
- Proper scheduling of work, with provision to avoid heavy earthworks during periods of heavy rainfall and avoid excavation work on rainy days to reduce the emission of suspended solids to the environment.
- When earthworks are carried out, measures shall be taken to severely limit the movement or leaching of solids into water bodies. To this end, temporary retention areas for solid waste should be constructed at all main points where excavated material may be washed away by rain into natural water bodies.
- The deposition of excavated material to be used as embankment material shall be done in a manner that does not allow for erosion and leaching of materials. Such deposits should be formed into gentle slopes, covered with appropriate plastic covers and wetted to limit the spreading of material.
- During the design of material deposition areas, rainwater management works (peripheral ditches, etc.) must be carried out in order to ensure that the flow of surface water remains unhindered and that deposition materials are not carried away.

- All waste and wastes (solid and liquid) resulting from the construction activities during the construction of the works should be managed appropriately to avoid pollution of the area (soil, subsoil, surface and groundwater) from uncontrolled disposal or spills.
- The management of the used mineral oils is to be carried out in accordance with the provisions of P.D. 82/25.2.2004 (Government Gazette 64/A/2.3.04) on "Determination of measures and conditions for the management of used mineral oils", having regard to article 101§4: article 73§b, Law 4819/2021. Waste lubricating oils and fluids of each type will be collected separately by category in suitable tanks or drums and temporarily stored in a covered area.
- The management of toxic and hazardous waste is done in accordance with the provisions of the KYA HP 13588/725/2006 (Government Gazette 383B/28-3-2006) "Replacement of KYA 19396/1546/97 (Government Gazette 604B/18-7-1997)", as amended by Y.A. 8668/2007, (Government Gazette 187/B/2.3.2007), Y.A. οικ. 146163/2012, (Government Gazette 1537/B/8.5.2012), Law 4042/2012, (Government Gazette 24/A/13.2.2012) and H.A. οικ. 62952/5384/2016, (FEK 4326/B/30.12.2016).
- The contractor is responsible for the good condition and tightness of the mechanical means. To protect water resources from spills of mineral oils, fuels and other petroleum products from construction machinery, appropriate measures should be taken such as good and regular maintenance of machinery, oil change and refuelling of vehicles and machinery at a specific suitable place and observance of all spill response and fire safety measures. Maintenance of machinery and refuelling will only be carried out at legally operating service stations and garages in the area, except in the case of emergencies (breakdown, accidental leakage, etc.).
- All precautionary measures should be taken to prevent spillage of oil products due to damage, negligence, etc. and appropriate handling should be carried out to minimise such occurrences. However, in the event that, despite control and proper operating measures, a spillage of such materials occurs, care should be taken to avoid pollution of the water resources of the area (surface and underground). To this end, absorbent materials (e.g. sawdust, sand) should be available in sufficient quantities to adsorb and thus retain the leaking fuels and lubricants. After use, these absorbent materials should be carefully collected and disposed of for appropriate disposal. Absorbent materials stored in a suitable covered area should be periodically checked for their condition and if they are not in an appropriate condition and therefore have reduced efficiency (e.g. they have adsorbed moisture and are therefore of reduced or no effectiveness). In this case they should be replaced as soon as possible.
- Chemical toilets should be installed for the site staff (washing, WC, etc.), in order to avoid the small pollution from urban waste water during the construction phase of the project.

10.12.2 Operating phase

The operation of the project is not expected to result in impacts on the water resources of the area.

During the operation of the project the only potential waste generated will be any discarded electrical and electronic equipment, which will be replaced after failure or at the end of its life. This equipment will be sent for recycling. Solid waste (filters, cleaning materials, etc.) will also be generated during the maintenance of the wind turbines and will be collected and removed from the plant.

Changing the fluids of the wind turbine hydraulic systems and the oils of the UPS will be carried out by the qualified personnel of the installation, through a specific procedure provided by the manufacturer. When changing the fluids, the risk of pollution of the surrounding area due to leakage is low and can only be caused by accident, human error or material failure.

Therefore, in case of such spills, the project operator should have available at the above points of the ESPEO the appropriate absorbent materials (e.g. sawdust, sand) in sufficient quantities so that in case of an accident and spillage, containment and limitation of dispersion of the leaking liquid waste and lubricants can be achieved. After use, these absorbent materials should be carefully collected and disposed of appropriately in accordance with legislation.

The management of the liquids resulting from the maintenance of the equipment will be carried out in accordance with the provisions of the legislation in force, i.e. in accordance with the provisions of P.D. 82/25.2.2004 (Government Gazette 64/A/2.3.04) on "Determination of measures and conditions for the management of used mineral oils", having regard to Article 101§4: Article 73§b, Law 4819/2021, and these will be temporarily collected in a special tank pending their final disposal in accordance with the above legislation.

Finally, the disposal of staff waste water must be controlled in accordance with the applicable health regulations. In particular, the construction of a suitable disposal system (septic tank) is planned for the WSEWTP, to which the control house will be connected, since there is no sewerage network in the area where the WSEWTP is to be installed.

The smooth drainage of the area must also be ensured by the maintenance and cleaning on an annual basis, before the beginning of autumn, of the culverts of the access network from debris, litter, etc. so that they are always able to drain their design flow.

11 ENVIRONMENTAL MANAGEMENT AND MONITORING

11.1 Environmental Management

In the previous chapters of this study as well as in the Special Ecological Assessment Study accompanying this study, a detailed assessment and evaluation of the environmental impacts of the project under study was carried out, while a series of preventive, remedial and compensatory measures were proposed.

In order to better implement the proposed measures, it is proposed that the project promoter implement an Environmental Management System (EMS) for the operation of the project, with at least the following objectives:

1. Implementation of the environmental conditions of the Environmental Terms Approval Decision of the project and all preventive, remedial and compensatory measures proposed in this study.
2. Prevention and/or control of any environmental impacts due to extraordinary events.
3. Disclosure of the records, impact control actions and indicators of environmental performance to the relevant Services through the submission of a periodic annual report.
4. Implement and adhere to the monitoring programme proposed in this study.
5. Effective protection of the environment.

International standards and procedures (e.g. ISO 14001 and 14004) can be used to ensure the proper design and effective implementation of the EMS.

In the case of the case of the ESDP under study, the potential environmental impacts are related to:

- the flora and fauna of the immediate area,
- the soil and hydrological characteristics,
- the issues of interference with the landscape; and
- the issues of noise nuisance

The above data are in fact the environmental monitoring indicators for which the relevant actions are defined and on the basis of which the environmental management programme itself is evaluated. The purpose of the monitoring programme must therefore be to record any changes in these indicators, with the ultimate aim of maintaining their characteristics, while at the same time implementing measures to manage the possible changes. Finally, the evaluation and monitoring of these actions are equally powerful tools for the most comprehensive and successful management of the natural environment.

The proposed Environmental Management Plan that follows considers separately the indicators mentioned above that may be affected by the construction and operation of the project, to the extent that this may occur based on the preceding impact assessment. The actions proposed therefore depend on and are proportionate to the estimated potential impacts.

In addition, the measures and ways to address the potential impacts that have already been proposed form, in practice, the basis of the Environmental Management Plan, which includes the following:

1. OBJECTIVE - INDICATOR: Flora

Maintain the density and composition of vegetation cover and the general vegetation pattern of the area and the uninterrupted continuation of natural regeneration, maintaining the ecological function of natural habitats.

ACTIONS - MANAGEMENT ACTIONS:

- Restoration of disturbed areas after the construction of the project, in accordance with the terms of the AEPO and the instructions of the competent Forestry Department.

  The next stage of the environmental permitting process of the project will be the preparation of a Disturbed Sites Restoration Study based on the assessment of the interventions that will occur for the installation of the project and its accompanying works, as well as a Reforestation Study. The model of the natural environment of the area will be used in the proposed plantings in order to use species that participate in the composition of the local flora. This will ensure, among other things, that the coherence and density of the forest stands in the area is maintained while indirectly supporting the natural recolonisation of disturbed surfaces.

  The company will properly maintain the plants for two (2) years. The maintenance work will be carried out only upon written order of the supervisor in the project diary, depending on the requirements of the plants (in particular the irrigation of the plants) and based on an indicative schedule (schedule) of maintenance work.

- Review of the cleanliness of the occupied areas of the works and removal of potential debris to avoid fire incidents.

2. OBJECTIVE - INDICATOR: Birdlife

Protection and conservation of important protected species as identified in the accompanying MPA.

ACTIONS - MANAGEMENT ACTIONS:

- Implementation of a monitoring programme for avifauna and manatees in the project area
- Implementation of an avian mortality control programme

3. OBJECTIVE - INDICATOR: Water resources - soil

Preventing and avoiding pollution of the aquifer and soil by pollutants and waste / Avoiding disturbance of surface water flow.

ACTIONS - MANAGEMENT ACTIONS:

In order to safeguard the status of the aquifer, a clear method of alternative management of any hazardous waste that may be generated is proposed, in accordance with the legislation in force and the details described in previous sections of this study.

Briefly, the following necessary actions are repeated below, for which relevant records and specific forms are kept by the operating staff and the company, in particular:

- Storage until collection in UN-compliant packaging (for solid waste) or in tanks enclosed by a leakage collection system (for liquid waste).
- Collection of waste lubricating oil (WOE).
- Collection of lubricant packaging.

- Collection of other hazardous waste.
- Collection of batteries.
- Regular maintenance of the sewage systems (septic tank) of the operating personnel.
- Regular maintenance and cleaning of stormwater drainage techniques and regular monitoring for any changes in surface runoff.

4. OBJECTIVE - INDICATOR: Landscape

Maintain the smooth integration of the W/T into the landscape.

ACTIONS - MANAGEMENT ACTIONS:

The construction characteristics of the W/Ts and their placement have been made with a view to, among other things, their smoother integration into the landscape character of the area. In order to prevent any deterioration of the natural landscape, the systematic maintenance of the metal parts of the W/Ts is necessary to prevent corrosion.

5. OBJECTIVE - INDICATOR: Sound environment

Maintaining the acoustic environment within permissible limits

ACTIONS - MANAGEMENT ACTIONS:

- The newer type of W/Ts have more modern features in terms of their technology, which among other things incorporate their operation at even lower noise levels. However, regular maintenance of the electrical and mechanical equipment of the Gensets ensures that these characteristics are maintained.
- In addition, during the execution of any work at the W/F site (maintenance, repair work, etc.), the company ensures the cooperation with contractors and subcontractors who install a construction site and have machinery appropriately certified for noise emission.

11.2 Monitoring Programme

The main objective of environmental monitoring is to ensure and continuously review and improve the Environmental Management Plan during the construction and operation of the project. Thus, in order to ensure the continuous improvement, suitability and effectiveness of the Environmental Management Plan and thus its performance, the Operator of the ESMP should review and evaluate the system at predetermined intervals. Therefore, it is proposed that a management review process of the system be developed that will include, as a minimum, the following:

- inspection results,
- the extent to which the objectives and targets have been met,
- the continuing suitability of the environmental management system in relation to changing conditions and information; and
- reservations of the interested parties.

At the same time, the environmental monitoring plan aims to record and maintain data suitable for documenting the implementation of environmental conditions, monitoring and providing adequate and documented information to public authorities and the public in the context of compliance with applicable legislation.

Accordingly, the following paragraphs analyse the proposed monitoring programme parameters for each of the environmental parameters for which an environmental management programme has been proposed.

1. OBJECTIVE - INDICATOR: Flora

PROPOSED MONITORING ACTIONS:

Correct application of the terms of the AEPO and the instructions of the competent forestry office and the obtaining of the necessary permits.

- Monitoring changes in flora

  Record any changes over time in the vegetation in the immediate area of the ASPHE projects. Any change does not necessarily imply a correlation with the operation of the ESDP, but in the context of the environmental management of the affected areas due to interventions for the needs of the ESDP, it is considered appropriate to record the possible activities that may cumulatively affect the existing vegetation and the recovery of plant stands. Review of the cleanliness of the occupied areas of the projects and removal of potential debris to avoid fire incidents.

  These tasks are routine tasks on a daily basis for the operating staff at the W/F site which may be carried out on a more regular basis, such as once a month, in order to inspect a wider 100 m zone around the perimeter of the works and to keep a record of the site inspection.

2. OBJECTIVE - INDICATOR: Birdlife

PROPOSED MONITORING ACTIONS:

The actions related to the monitoring of this indicator are detailed in the proposed Monitoring Programme proposed for avifauna (Chapter 9 of the SEA) and, if required, also for chironomids, as well as in the proposed mitigation and response measures for potential impacts in the Special Ecological Assessment Study (Chapter 8 of the SEA) that accompanies this study as an integral part of it.

The monitoring program will investigate the impacts of the construction & operation of the ASPHE on avifauna, with an emphasis on impacts of impacts and disturbance/displacement with a focus on critical avian species and if required, handflies. The purpose of the monitoring is to record any (low significance) changes in density, seasonal abundance, rates and spatial patterns of passage and any other element of bird behaviour that may be attributable to the operation of the wind farm and to provide periodic feedback with data from the project's mitigation programme on the biodiversity of the SPA.

It is proposed that during the operation of the ESDP, the monitoring and recording of its operational impacts be entrusted to qualified personnel who will be regularly on site and can act as a source of baseline information and continuous baseline observation. This staff should consist of qualified relevant scientists who will monitor the accuracy of the predictions of this study, possible variations in the use of the field survey area by the important bird species in the area that may be due to random or currently unforeseeable factors (e.g., the occurrence of a forest fire in the area that would create "open areas") varying the degree of use of the area by the different bird species, the effectiveness

The field work proposed to be carried out under the monitoring programme, to be at least 4 years in duration and to be carried out during both the pre-construction and construction phases, as well as during the first two years of operation of the project, and to include:

1. Regular surveys [proposed every 15 days (2 times per month) during critical periods and every 20 days (3 times per 2 months) the rest of the time] related to the risk of collision and the detection of nests in the area.
2. Inventory of project area use data and record the flights of important species in the project area and their interaction with the turbines.
3. Display of the above on a map to assess the situation.
4. Checking and recording of possible mortality in a special protocol that will be maintained by the company and will be available to the competent services - agencies for the control of incidents of impacts in the area.
5. Training of the employees of the W/Fs to deal with incidents of injured birds and the immediate notification of the competent services - agencies.
6. Training of the employees of the W/Fs to scan the area of the wind turbines for dead individuals of avifauna and checking the correct application of the procedure with inspections.
7. Assess the situation based on the information gathered.

A key part of the monitoring should be the assessment of bird impact rates on the park's wind turbines. Thus, the designers of the RIA propose:

- the monitoring of avifauna activity in proximity to the W/Ts (in line with the methodology of the MEA) beyond the initial four years, thereafter the annual programme will be repeated every 5 years until the next renewal or amendment of the AEA, at which time the condition may be reviewed.
- The effectiveness of the proposed measures will also be evaluated on a permanent basis (annually). The programme of permanent (annual) monitoring will include in principle an on-site check for mortality that will be initiated prior to the installation and adjustment of the systems in order to quantify their effectiveness. The ornithological survey to record victims of impacts involves the search for injured or dead animals (birds, but also bats) or their remains in the area under the wind turbines and around their pylons. The impact victim search programme is proposed to be carried out in parallel and as an integral part of the post-construction monitoring programme of the ASPHE. The scan zone should have a radius of at least 300m from each NPP, and the frequency of the programme should be at least every 15days (twice a month) during critical periods and every 20days (3 times every 2 months). It is suggested by the MPA study team that the frequency of the search may be increased after certain weather events such as low clouds or fog and during the migration season (April - May, August - October) when the probability of impact is increased. As injured or dead animals may be preyed upon by predators or scavengers, the most appropriate time to search for collision victims is early in the morning. The use of a trained detection dog is an appropriate practice for an effective victim search program. All recordings shall be carried out in specific protocols.
- Also included in the permanent monitoring programme is the analysis/evaluation of the summaries and recorded data of the Impact Prevention System/Automated Stoppage System.

At least in the monitoring years mentioned above, the annual evaluation of the System's flight detections should be more detailed, and should include (if technically possible via a digital platform) regular viewing/review by an expert, transcription of the recorded flights and identification of the types and other characteristics of the flights (number of persons, degree of approach to the rotor zone, reaction to the warning sound, etc.).

The above is developed in detail in the relevant annex to the annex to the 8^{o} and 9^{o} chapter of the MEIA.

3. OBJECTIVE - INDICATOR: Water resources - soil

PROPOSED MONITORING ACTIONS:

In order to safeguard the status of the aquifer, a clear method of alternative management of hazardous waste is proposed in accordance with current legislation. Therefore, the management of this waste is carried out by following all the prescribed methods for the collection, storage and disposal of lubricating oils, packaging, batteries and any other hazardous waste, while keeping a record of the waste in special forms, in accordance with legal provisions, by the operating staff and the company itself. Therefore no further monitoring actions are proposed.

To ensure that no change in surface water runoff is avoided, regular visual inspection of all civil engineering works by operations staff is recommended to identify any changes/incidents. This

monitoring shall include the construction phase of the projects as well as the improvement works of the existing road sections for the transfer of equipment to the ASPHE with special attention to the road intersections with local streams.

4. OBJECTIVE - INDICATOR: Landscape

PROPOSED MONITORING ACTIONS:

The smooth integration of the wind turbines into the landscape is ensured during the design, siting and construction of the GIS. Therefore, no further monitoring actions are proposed, except for the systematic maintenance of their metallic parts to avoid corrosion. These activities are in any case part of the work calendar of the operating staff of the ESPO for which detailed records are kept.

5. OBJECTIVE - INDICATOR: Sound environment

PROPOSED MONITORING ACTIONS:

The use of a newer type of W/T in the landscape ensures that the design and siting of the AECS ensures the protection of the acoustic environment and they have relevant certificates. Therefore, no further monitoring actions, with the exception of managing construction and maintenance activities, are proposed for the machinery used by subcontractors to have the appropriate EEC type certificates for operating noise levels.

12 CODIFICATION OF RESULTS AND PROPOSALS FOR THE ADOPTION OF ENVIRONMENTAL CONDITIONS

This chapter presents a draft Environmental Conditions Approval Decision (ERO) for the project under study.

The presentation of the draft Environmental Conditions Approval Decision (A.E.P.O.) follows the structure provided by the Ministry of Justice 48963/12 (Government Gazette 2703B'/05.10.2012) "Specifications of the content of Environmental Conditions Approval Decisions (A.E.E.P.O.) for projects and activities of category A' of the decision of the Minister of Environment, Energy and Climate Change (B΄ 21), as in force, in accordance with article 2 par. 7 of Law 4014/2011 (A' 209)', as currently in force.

DRAFT AEPO

DECISION ITEM:

1.1 Type of Decision: AEPO for a new project or activity

1.2 Project name: "Xefoto Wind Power Plant (WPP) "Xefoto" with a capacity of 148.8MW at the locations "Xefoto, Samaranos, Iskima & Mesovouni" with its accompanying works (33kV medium voltage external network for the electrical interconnection of the ASPHE with the ADMIE network through the existing substation "Iasmos") in the Municipality of Satra, Municipality of Myki, Regional Unity of Xanthi, by the company named "ELPE Renewables S.A.". Part of the medium-voltage network runs within the boundaries of the Municipality of Iasmos of the Rhodope Region and along existing roads.

1.3 Name of the entity:

HELPE Renewable S.A.

1.4 Geographical identification of the project location: The W/F and its accompanying projects are administratively under the Region of Eastern Macedonia - Thrace, in the Regional Unit of Xanthi, in the Municipality of Myki and specifically the W/F is located within the boundaries of the Municipal Unit (M.U.) of Satra while the medium voltage line passes through the M.U. of Iasmos and Sostou of the Municipality of Iasmos of the P.E. of Rodopi.

PREAMBLE:

2.1 Legislation related to the environmental permitting process of the project and key regulatory acts

The legislative framework is determined by taking into account:

Law 4014/2011 (Government Gazette 209/A/21.9.2011) "Environmental licensing of projects and activities, regulation of arbitrary acts in connection with the creation of an environmental balance and other provisions under the jurisdiction of the Ministry of Environment", as currently in force.

Law 4685/2020 (Government Gazette A'92/7-5-2020) "Modernization of environmental legislation, incorporation into Greek legislation of Directives 2018/844 and 2019/692 of the European Parliament and of the Council and other provisions", as currently in force.

YA 1958/2012 (Government Gazette 21/B/13.1.2012) "Classification of public and private projects and activities in categories and subcategories according to article 1, paragraph 4 of Law 4014/21.9.2011 (Government Gazette 209/A/2011)", as amended and in force today.

YA 15277/2012 (Government Gazette 1077/B/9.4.2012) "Specification of procedures for the incorporation in the Decisions on the Approval of Environmental Conditions or in the Standard Environmental Commitments of the intervention approval provided for by the provisions of the Forestry Law, for projects and activities of categories A and B of the Ministerial Decision No. 1958/2012 (Government Gazette 21/B/13.1.2012), in accordance with Article 12 of Law 4014/2011".

KYA 21398/2012 (Government Gazette 1470/B/3.5.2012) "Establishment and operation of a special website for the posting of decisions on the approval of environmental conditions (AEPO), decisions to renew or amend AEPO, in accordance with Article 19a of Law 4014/2011 (Government Gazette 209/A/2011)".

The CBA No. οικ. 48963/2012 (Government Gazette 2703/B/5.10.2012) "Specifications of the content of Environmental Impact Assessment Decisions (AEPO) for projects and activities of category A' of the decision of the Minister of Environment, Energy and Climate Change No. 1958/13.1.2012 (B΄ 21), as in force according to Article 2(7) of Law 4014/2011 (A/209)", as currently in force.

KYA 167563/EYPE/15.4.2013 (Government Gazette 964/B/19.4.2013) "Specification of the procedures and specific criteria for the environmental licensing of projects and activities of articles 3, 4, 5, 6 and 7 of Law 4014/2011, as defined in article 2 paragraph 13 of the same, the specific forms of the above procedures, as well as any other matter related to these procedures", as currently in force.

The CBA No. Oik. 1649/45 (Government Gazette 45/B/15.1.2014) "Specification of the procedures for opinions and the way of public information and participation of the interested public in the public consultation during the environmental licensing of projects and activities of Category A' of the decision of the Minister of Environment, Energy and Climate Change No. 1958/2012 (Government Gazette A΄21), in accordance with the provisions of Article 19 paragraph 9 of Law No. 4014/2011 (Government Gazette A΄209), as well as any other relevant details.

The Ministry of Environment, Energy and Climate Change (Government Gazette 135B'/27.01.2014) "Specification of the contents of the environmental licensing files for projects and activities of Category A' of the decision of the Minister of Environment, Energy and Climate Change No. 1958/2012 (B' 21) as in force, in accordance with article 11 of Law No. 4014/2011 (A' 209), as well as any other relevant detail", as currently in force.

The Ministry of Justice No. YPEN/DIPA/17185/1069/2022 (Government Gazette 841/B` 24.2.2022) "Modification and codification of the ministerial decision "Modification and codification of the ministerial decision 1958/2012 - Classification of public and private projects and activities in categories and subcategories according to par. 37.37.3. 4014/21.9.2011 (A΄ 209), as amended and in force" (B΄ 2471)

2.2 Documents and elements for the submission of the environmental permit dossier for the project

It will be completed by the Authority prior to the approval of the relevant AEP.

2.3 Opinions - views of services, bodies and citizens and any views of the project promoter on these opinions and views.

It will be completed by the Authority prior to the approval of the relevant AEP.

A. Description of the Project or Activity

General data - Classification

Details of the project organisation:	HELPE Renewable S.A.
Size of projects:	Twenty-four (24) wind turbines (gensets), with a power of 6.2MW each, for a total power output of 148.8MW. The interconnection of the ASPEE with the system will be achieved initially with an underground line of 33 kV external M.T. network of approximately 29.66km length, on an existing road network to the existing substation (substation) "Iasmos" of 20/150kV, 40/50 MVA. The construction and operation of the project requires the construction of 14,884m of new roads.
Project classification:	In accordance with the I.A. YPEN/DIPA/17185/1069/2022 (Government Gazette 841/B` 24.2.2022) "*Modification and codification of the ministerial decision "Modification and codification of the ministerial decision 1958/2012 - Classification of public and private projects and activities in categories and subcategories according to par. 37.37.3.* 4014/21.*9.2011 (A' 209), as amended and in force" (B' 2471)*"): The ASPEE is classified in Group 10 (Renewable Energy Sources - a/a 1.a: Onshore wind power generation and in particular Subcategory A1 (projects with P > 35MW and within Natura 2000 sites). The road works are accompanying works. Thus, as ancillary works they follow the category of the main project. The electrical interconnection projects (33kV MT interconnection line) are classified in Group 11 (Transport of energy, fuels and chemicals - a/o 10: Overhead, underground and submarine electric transmission lines with their accompanying facilities (substations and high voltage centres) are classified in Subcategory A2 category (50 kV≤ T≤ 400 and L≤ 20 km), but as accompanying projects follow the category of the main project.
Category of nuisance:	Average nuisance (a/α 303.e of the KYA οικ.3137/191/F.15/2012)

B) Project summary:

The RES-EPP will consist of a total of 24 gensets with a nominal capacity of 6.2 MW each, manufactured by SIEMENS GAMESA RENEWABLE ENERGY S.A. The gensets of this type have a blade diameter of 170m and a tower height of 135m. For the installation of the gensets, the same number of platforms will be created, adapted to the topographical configuration of each site (as shown in

the topographical plan accompanying the study) and will be constructed either by widening, when placed at the end of the roads, or by widening the roadway on both sides when placed in the path of the roads. The platforms have an average occupied area of 8,000 m^2 each with an average deck area of 5,800 m^2 . The platforms house the erection machinery (cranes, hoists) and the construction/assembly materials (pylon section wings and nacelles).

The following table shows the coordinates of the vertices of the installation polygons, in the EAFS '87 system:

Polygon vertices RAE 1	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	598482	4572732	41°18'9.34 "E	25°10'41.35 "N
2	598839,9	4572383	41°17'57.85 "E	25°10'56.53 "N
3	598456	4571990	41°17'45.26 "E	25°10'39.80 "N
4	597520	4573097	41°18'21.58 "E	25°10'0.20 "N
5	596062,9	4572483	41°18'2.30 "E	25°8'57.20 "N
6	594899	4570849	41°17'9.82 "E	25°8'6.25 "N
7	594475,9	4571307	41°17'24.86 "E	25°7'48.31 "N
8	595314,6	4572557	41°18'5.01 "E	25°8'25.07 "N
9	596023,3	4573479	41°18'34.59 "E	25°8'56.07 "N
10	596705,3	4573478	41°18'34.29 "E	25°9'25.39 "N
11	596764,8	4573912	41°18'48.32 "E	25°9'28.20 "N
12	597087	4573916	41°18'48.32 "E	25°9'42.06 "N
13	597216	4573673	41°18'40.37 "E	25°9'47.46 "N
14	598164,5	4573255	41°18'26.40 "E	25°10'28.00 "N
15	598498,7	4572980	41°18'17.36 "E	25°10'42.21 "N

Polygon vertices RAE 2	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	598352,4	4570684	41°17'2.99 "E	25°10'34.58 "N
2	598370,5	4569856	41°16'36.13 "E	25°10'34.88 "N
3	597227	4569944	41°16'39.50 "E	25°9'45.79 "N
4	596976,5	4570407	41°16'54.58 "E	25°9'35.29 "N
5	597011,6	4570892	41°17'10.31 "E	25°9'37.07 "N

Polygon vertices RAE 3	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	599176,6	4569378	41°16'20.26 "E	25°11'9.24 "N
2	599463,3	4570238	41°16'48.02 "E	25°11'22.07 "N
3	599929,8	4570628	41°17'0.45 "E	25°11'42.35 "N
4	600373,2	4570254	41°16'48.13 "E	25°12'1.19 "N
5	599251,4	4569042	41°16'9.35 "E	25°11'12.26 "N
6	597862,5	4568666	41°15'57.78 "E	25°10'12.36 "N
7	597377,1	4568652	41°15'57.52 "E	25°9'51.49 "N

Polygon vertices RAE 3	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
8	597360,8	4568909	41°16'5.87 "E	25°9'50.94 "N

For the construction and operation of the W/F, the necessary infrastructure works will be implemented, which include the following:

In summary, the proposed project includes the following:

- Configuration of 24 platforms for the installation of wind generators (W/T).
- Construction and operation of 24 gensets with a nominal capacity of 6.2 MW each. The wind turbines will be electrically interconnected through 0,69kV/33kV stand-alone step-up transformers with an underground medium-voltage line to be constructed along the roads to be used for access to the installation sites of the wind turbines.
- Configuration of two areas for the installation of control panels. Two Control Houses will be constructed, one Main (C.C.E.) and one Auxiliary (A.C.E.). The Main Control House will be installed close to W/T 18 and will be the outlet for the circuits from the Auxiliary Control House and the circuits from W/T 13 to 24. The Auxiliary Control Cubicle, which will be installed close to AG 7, will receive the circuits from AGs 1 to 12 and will then be connected to the Main Cubicle. Each control house will be installed within a 4,000.00m area.[2]
- Underground Medium Voltage (MV) 33 kV network that will electrically connect the gensets to the substations and then to the existing substation (substation) "Iasmos". For the interconnection of the wind farm with the interconnected system, approximately 32.4 km of underground medium voltage line will be required, which will connect the wind turbines to the substations and 29.66 km of underground medium voltage line, which will start from the installation site of the wind farm and end at the "Iasmos" substation.
- Road projects: A total of 14,884m of improvements to existing dirt roads and construction of new roads are required.

Based on the road study carried out for the ASPEE "Xefoto", the opening of an internal road network with a length of 14,884 m is foreseen.

The coordinates of the centre of the positions of the W/Ts in the EAA '87 system are given in the table below:

Serial number W/T	Geographical Coordinates				
	(ΕΓΣΑ87)		(WGS 84)		Altitude
	X	Y	λ	φ	
W/T01	595007	4571276	41°17'23.62 "E	25°8'11.13 "N	554,00
W/T02	595276	4571689	41°17'36.89 "E	25°8'22.92 "N	576,00
W/T03	595579	4572026	41°17'47.69 "E	25°8'36.14 "N	462,00
W/T04	595552	4572470	41°18'2.10 "E	25°8'35.23 "N	475,00
W/T05	595744	4572931	41°18'16.96 "E	25°8'43.75 "N	512,00
W/T06	596186	4572995	41°18'18.85 "E	25°9'2.79 "N	550,00
W/T07	596625	4573125	41°18'22.87 "E	25°9'21.74 "N	520,50
W/T08	597173	4573612	41°18'38.43 "E	25°9'45.58 "N	669,00
W/T09	597501	4573319	41°18'28.78 "E	25°9'59.51 "N	614,80

Serial number W/T	Geographical Coordinates				
	(ΕΓΣΑ87)		(WGS 84)		Altitude
	X	Y	λ	φ	
W/T10	597965	4573115	41°18'21.97 "E	25°10'19.34 "N	674,50
W/T11	598404	4572821	41°18'12.24 "E	25°10'38.05 "N	765,00
W/T12	598670	4572458	41°18'0.36 "E	25°10'49.27 "N	760,00
W/T 13	597264	4570573	41°16'59.86 "E	25°9'47.74 "N	541,00
W/T 14	597617	4570304	41°16'50.98 "E	25°10'2.76 "N	541,00
W/T 15	598046	4570464	41°16'55.98 "E	25°10'21.29 "N	537,00
W/T16	598162	4569998	41°16'40.82 "E	25°10'26.00 "N	504,00
W/T17	597391	4568849	41°16'3.91 "E	25°9'52.20 "N	447,00
W/T18	597820	4568798	41°16'2.07 "E	25°10'10.61 "N	501,00
W/T19	598259	4568871	41°16'4.24 "E	25°10'29.52 "N	587,00
W/T20	598680	4568956	41°16'6.81 "E	25°10'47.66 "N	581,00
W/T21	599107	4569115	41°16'11.78 "E	25°11'6.10 "N	628,50
W/T22	599441	4569397	41°16'20.77 "E	25°11'20.62 "N	587,50
W/T23	599592	4569996	41°16'40.13 "E	25°11'27.46 "N	610,00
W/T24	600038	4570096	41°16'43.17 "E	25°11'46.68 "N	656,50

A construction site facilities area will be created where construction machinery and other site facilities will be located. The land has a surface area of 10,991.61 m^2 . After the completion of the construction works of the ASPHE, the full rehabilitation of this site is foreseen. The construction site will be installed within the Platform of W/T07.

In addition, two areas will be designed for the installation of control cabinets on plots of 4.000,00m^2 each. Two Control Houses will be constructed, one Main and one Auxiliary. The Main Control House will be installed close to W/T 18 and will be the outlet for the circuits from the Auxiliary Control House and the circuits from W/T 13 to 24. The Auxiliary Control Cubicle, which will be installed close to DG 7, will receive the circuits from DGs 1 to 12 and will then be connected to the Main Cubicle. The area of the Main Control Cradle will be approximately 280m^2 , while the area of the Auxiliary Control Cradle will be approximately 120m^2 .

The coordinates of the coordinates of the tops of the fields of the two control houses in the EAGS '87 system are given in the following tables:

Master Control Cage (CMC):

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	597891,4	4568736,41	41°16'0.04 "E	25°10'13.64 "N
2	597877,22	4568743,46	41°16'0.28 "E	25°10'13.04 "N
3	597882,71	4568754,72	41°16'0.64 "E	25°10'13.28 "N
4	597888,8	4568762,51	41°16'0.89 "E	25°10'13.54 "N
5	597902,03	4568760,44	41°16'0.81 "E	25°10'14.11 "N
6	597918,4	4568757,3	41°16'0.71 "E	25°10'14.81 "N
7	597936,5	4568756,31	41°16'0.67 "E	25°10'15.59 "N
8	597948,42	4568754,22	41°16'0.59 "E	25°10'16.10 "N

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
9	597954,53	4568749,5	41°16'0.44 "E	25°10'16.36 "N
10	597965,65	4568746,46	41°16'0.33 "E	25°10'16.84 "N
11	597971,97	4568745,03	41°16'0.28 "E	25°10'17.11 "N
12	597981,54	4568743,83	41°16'0.24 "E	25°10'17.52 "N
13	597983,8	4568737,73	41°16'0.04 "E	25°10'17.61 "N
14	597986,07	4568733,15	41°15'59.89 "E	25°10'17.71 "N
15	597988,62	4568725,31	41°15'59.64 "E	25°10'17.81 "N
16	597990,14	4568717,53	41°15'59.39 "E	25°10'17.87 "N
17	597991,31	4568706,37	41°15'59.02 "E	25°10'17.92 "N
18	597993	4568695,65	41°15'58.67 "E	25°10'17.98 "N
19	597992,16	4568689,69	41°15'58.48 "E	25°10'17.94 "N
20	597974,15	4568687,89	41°15'58.43 "E	25°10'17.17 "N
21	597967,17	4568700,9	41°15'58.86 "E	25°10'16.88 "N
22	597958,5	4568710,51	41°15'59.17 "E	25°10'16.51 "N
23	597950,15	4568715,18	41°15'59.33 "E	25°10'16.15 "N
24	597943,66	4568719,4	41°15'59.47 "E	25°10'15.88 "N
25	597924,3	4568723,99	41°15'59.62 "E	25°10'15.05 "N
26	597908,01	4568727,04	41°15'59.73 "E	25°10'14.35 "N

Auxiliary Control Cage (AAC):

Tops CC	Geographical Coordinates			
	(ΕΓΣΑ87)		(WGS 84)	
	X	Y	λ	φ
1	596835,3	4573115,91	41°18'22.49 "E	25°9'30.77 "N
2	596935,3	4573115,91	41°18'22.44 "E	25°9'35.07 "N
3	596935,3	4573075,91	41°18'21.15 "E	25°9'35.05 "N
4	596835,3	4573075,91	41°18'21.19 "E	25°9'30.75 "N

Works for the internal wiring of the medium and low voltage and low voltage and weak currents in a trench with a width of approximately 0.40 to 0.70 m and a depth of 1.00 m that will be dug parallel to the existing and new roads.

Works for the electrical interconnection of the 24 W/T (internal medium voltage network). The external Medium Voltage network will depart from the main control house and will feed the electricity generated by the ASPHE to the NPP through the existing voltage boosting substation "Iasmos" located south of the ASPHE site. The line will be underground along its entire length except for a short section of only 129.24 m in length to cross the Komsato River. The entire development of the underground 33 kV M.T. line is through existing public roads and will have a total length of 29,652.16 m.

A detailed description of the construction and operation of the subject wind power plant is contained in the approved Environmental Impact Study and the accompanying topographic diagrams, plans and maps. This information forms an integral part of this Decision.

C. Established baseline characteristics of the project area & its sensitive environmental features:

The W/F project is located within the Wind Suitability Area of the Special Framework for Spatial Planning & Sustainable Development for RES (decision number 49828/2008 (Government Gazette 2464/B/3-12-2008).

The project under study is located entirely within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Koimpsatos Valley", code GR009.

A short distance from the project site within the Bulgarian territory and on the border with the Greek border are the corresponding boundaries of the Special Conservation Area (SCA) called "Rodopi - Iztochni" and code BG0001032, which is included in the Natura 2000 network. It is clear that no interventions are foreseen within the Bulgarian territory.

The regional framework for spatial planning and sustainable development of the region of Eastern Macedonia and Thrace is in force (Ministry of Environment and Natural Resources of Eastern Macedonia and Thrace (Government Gazette 248/A.A.P./25-10-2018 "Approval of the revision of the regional spatial planning framework of the region of Eastern Macedonia and Thrace and environmental approval of the same").

D. emission limit values for pollutants and maximum concentrations of pollutant loads in air, water, soil, noise and vibration levels and environmental quality:

D.1. Gaseous waste:

Limit and guide values for pollutant concentrations in the atmosphere are set:

- in the ΚΥΑ Η.Π.14122/549/Ε.103/2011 (Government Gazette 488/Β΄/30-3-2011)
- in the ΗΟΡ 22306/1075/Ε103/2007 (Government Gazette 920/B/8-6-2007) as currently in force.

For particulate emissions (dusts) the emission limits are specified in Decree 1180/81 (Government Gazette 293A/6-10-81).

D.2. Liquid waste:

The operation of wind power plants does not cause the emission of liquid waste, provided that the relevant legislation on the management of lubricants, i.e. the Decree 82/2004 (Government Gazette 64/A/2-3-2004) in conjunction with the Decree 13588/725/2006 (Government Gazette 383/B/28-3-2006) as in force today and the Decree 24944/1159/2006 (Government Gazette 791/B/30-6-2006) as in force today, for issues that may not be covered by the above Decree.

For urban-type liquid waste, the following apply:

Health Decree No. Ε1 b/221/1965 (Β 138) on the disposal of waste water and industrial waste, as amended by Nos. C1/17831/7.12.1971 (Β 986), C4/1305/2.8.1974 (Β 801) and Δ.ΥΓ2/Γ.Π. οικ. 133551/30.9.2008 (Β' 2089).

Any special provisions that may apply to the project area.

D.3. Electromagnetic fields:

For the electric and magnetic field of transmission lines and voltage transformers, the basic restrictions and reference levels of the Council Recommendation of 12 July 1999 "on the limitation of exposure of the general public to electromagnetic fields (0Hz - 300GHz)" apply, in accordance with the ICNIRP/1998 (International Commission for Non-Ionising Radiation Protection - GUIDELINES FOR LIMITING EXPOSURE TO TIME - VARYING ELECTRIC MAGNETIC AND ELECTROMAGNETIC FIELDS (Health Physics, April 1998, Vol. 74 No. 4), as amended for the low frequency part (1Hz -100kHz (Health Physics 99(6): 818-836, 2010)) and as mentioned in the Government Decree No. 3060/(FOP)/238/2002 (Journal of Laws of the European Union). 512/B΄/25-04-2002) "Measures to protect the public from the operation of low frequency electromagnetic field emission devices" [(Correction of Errors (Journal of Laws No. 759/B΄/19-06-2002)].

It should be noted that if more stringent conditions are established or adopted by the competent authorities in each case, they shall prevail and the project promoter shall comply, irrespective of whether or not this Decision expires.

D.4. Specific noise and vibration limit values in accordance with existing provisions:

A. Machinery used during construction work and machinery used externally during the operation of the project must be CE marked and accompanied by a guaranteed acoustic power level. The noise emission limit values for construction site equipment and machinery used externally during the operation of the project are laid down in the decisions: KYA 37393/2028/2003 (Government Gazette 1418/B/1-10-2003) and KYA 9272/471/2007 (Government Gazette 286/B/2-3-2007).

B. For the maximum permissible noise limits of construction sites and project installations, the provisions of Article 3 of Decree 1180/1981 (Government Gazette 293/A/1981) shall apply. The average energy noise level during the operation of the construction sites is set at 65 dB(A).

Γ. During the operation of the project, the noise level shall be subject to the limit values referred to in Decree 1180/81 (Government Gazette 293 A/81).

E. Conditions, measures and restrictions to be taken to minimise and address potential environmental impacts.

E.1 General arrangements:

The developer, as well as any person legally liable, shall be fully responsible for compliance with the environmental conditions, measures and restrictions imposed by this Decision.

The project developer shall designate a competent person, with appropriate training, to monitor compliance with the environmental conditions, measures and restrictions imposed by this Decision. The details of the responsible person must be communicated to the Agency by means of a solemn declaration by the company.

The developer is not exempted from the obligation to comply with the provisions of the applicable environmental legislation, irrespective of the existence of an explicit reference to the specific environmental conditions imposed by this Decision.

The developer is responsible for any possible damage caused to third parties. Furthermore, any modification or intervention in existing infrastructure in the context of the project must be carried out in cooperation with the competent bodies and in such a way as to minimise the impact on their operation. The developer must ensure that any damage or modification of infrastructure is repaired and financed by the developer.

Prior to the start of construction and operation of the activity, the operator should have obtained all the necessary permits and approvals required for the construction and operation of the RES-EEE. Also, for any individual activity or installation necessary for the construction - operation of the RES, all the permits and authorisations required by the applicable legislation should have been previously granted.

E.2 Construction Phase:

Before the start of construction of the project, the competent Archaeological Services should be notified in writing so that they can arrange for the supervision of the works by qualified employees, who will be hired on the advice of the relevant Antiquities Departments. If antiquities are found, the work will be stopped and a systematic excavation will be carried out. The costs of recruiting a supervisor and of carrying out the work will be borne by the project promoter.

In the event that during the works, antiquities are discovered or uncovered, the works will be stopped immediately in order to carry out an excavation survey. The further course of the project will depend on the results of the investigation, after the opinion of the competent bodies of the Ministry of Culture & Heritage. Sports.

The cost of the excavation, including the remuneration of the necessary personnel, which will be hired at the suggestion of the relevant Services, as well as the cost of maintenance, study and publication of the findings will be borne by the project budget under the provisions of Article 37 of Law 3028/2002 (Government Gazette 153/A/28.06.2002) "For the protection of Antiquities and Cultural Heritage in general".

The operation of the W/Ts will be stopped immediately if problems occur in the systems and in the operation of the Armed Forces in general.

For the areas of the project that fall under the provisions of the forestry legislation and before the start of the implementation of the project to comply with the provisions of the Ministerial Decision 15277/23-3-2012 (Government Gazette 1077/B/9-4-2012) as in force from time to time, for the determination of compensation for use. For the purpose of determining the fee for use, the total area of use of the main and accompanying works will be taken into account. For the issuance of the installation protocol of the company concerned in the area, the provisions of Article 4 of the a.p. 15277/2012 of the Ministry of Justice (Government Gazette 1077/B') must be complied with.

For the entire project and during the construction phase, the occupation zones (W/T, road construction, trench, etc.) should be delimited, so that any excavation of foundations and technical works that will be carried out will be limited to what is absolutely necessary and to avoid unnecessary excavations, excavations and deforestation. More generally, any damage to forest and non-forest vegetation during the construction of the project should be limited to the extent strictly necessary and any interference with the landscape should be limited to the extent strictly necessary. The felling

or grubbing of forest vegetation and the disposal of its products shall be carried out in accordance with the provisions of forestry legislation and the instructions of the competent Forestry Department.

The layout of forest roads (improvements - openings) will be designed in accordance with the current specifications for forest roads of category C and the permitted deviations. In any case, the forest road study must be drawn up on the basis of the specifications and approved by the competent Forestry Department. Similarly, the location of the construction site, the precise locations for the temporary storage of materials or unsuitable excavated material and the way in which these areas are to be laid out will be indicated by the competent Forestry Department.

No paving or cementing of existing or new roadways is allowed.

The construction of the control buildings should be made with such materials and in such a way that they are harmoniously integrated into the natural environment of the area.

Excavation work during the construction of the works should be carried out in the mildest possible manner and preferably with the minimisation of the use of explosives where necessary.

When earthworks are carried out, (excavation of platforms, excavation of foundations, opening of roads, opening of cable trenches, pylons, etc.), the excavation materials must be placed next to the trenches and used for their refilling. The soil layer containing the plant soil shall be collected and stored separately for use in environmental restoration work.

Take all necessary remedial measures to avoid soil erosion.

Avoid heavy earthworks during the period of heavy rainfall.

During earthworks, dust dispersion reduction is required by wetting the soil in case of adverse weather conditions.

The aggregates required for the construction of the project to be obtained either from the excavations that will be carried out in the context of the construction of the various sections of the project, or from existing legally operating quarries. The creation of borrow pits or the extraction of materials from river or stream beds for materials that may be required for the construction of the project is prohibited.

Trucks transporting materials must be fitted with a special cover in accordance with existing provisions.

The temporary deposition of any materials related to the construction of the project to be carried out exclusively within the occupied zone. The deposition of materials, even temporarily, in locations that affect surface water flow, are covered by forest vegetation or in protected areas outside the project polygon is prohibited.

The excavation materials from the construction of the project that cannot be used for the needs of the project (surplus excavation materials) should be managed in accordance with the provisions of K.Y.A. 36259/1757/E103/2010 (Government Gazette 1312/B/24-8-2010) "Measures, conditions and program for the alternative management of waste from excavation, construction and demolition", as currently in force. In the absence of an alternative management system, the following may be disposed of: a) for the rehabilitation of inactive quarries in the area (following the approval of relevant studies); b) to meet the needs of loans of other approved projects or for the rehabilitation of such

loans and which have approved environmental conditions and in accordance with these conditions; c) for the rehabilitation of uncontrolled waste disposal sites in consultation with the competent bodies; d) the excavated material that is not suitable for planting or the rehabilitation of the landfill; e) the excavated material that is not suitable for planting or the rehabilitation of the landfill.

Pollution of surface and groundwater and soil by any type of oil or fuel is prohibited. The developer must make available on the site adsorbent materials (sand, shavings, geotextiles, etc.) to deal with any spillage of oils or fuels on the ground, and must use them immediately to deal with the spillage. Regularly check the materials so that if for any reason they have adsorbed increased amounts of moisture and become less effective, they are replaced immediately.

Any waste generated during the construction of the project shall be collected and managed in accordance with the applicable provisions and conditions herein specified in the relevant section of this document entitled: "Waste Management".

During the construction and operation of the project, road traffic between residential areas should not be obstructed. In addition, the regular passage of trucks and other vehicles used in the construction of the project through residential areas during quiet hours should be avoided.

Take all appropriate practical measures to limit pollution (dust, noise, litter) during the construction phase. Chemical toilets shall be provided for site personnel for their convenience during the construction phase.

On-site washing of all equipment including project vehicles is prohibited.

The discharge of concrete mixer residues must be carried out at the site of the ready-mixed concrete supply site, which must have an appropriate treatment of liquid waste. It is prohibited to discharge the residues of the concrete mixers outside the site.

It is prohibited to remain on the project site and use machinery without the EEC Type Approval Certificate for Noise, as specified in paragraph C.4 herein.

During the construction and operation of the project, all fire protection measures must be taken in the event of fire and to minimise the risk of fire spreading to adjacent areas. The fire protection arrangements shall be checked and approved by the competent Fire Service, if required, before the start of the works.

To take all necessary measures to protect people passing through the project area from any risks that may be created by works carried out in the vicinity of the project or its operation, such as: placing warning signs and generally taking measures to exclude public access to parts of the project of increased risk.

To inform in writing, at least 15 days before the start of the works, the local bodies directly concerned, both for the crossing schedule and for the transport of the required materials from their area.

After the completion of the construction of the ASPHE and the accompanying works, all site facilities will be removed. All areas not necessary for the operation of the project will be grading and restored to their original condition.

Full restoration of the affected surfaces to their previous form.

In the intervention areas, including the slopes of open roads, horticultural restoration shall be carried out in accordance with an approved specific horticultural study. The plant species to be used shall be native and not alien to the natural plant community of the area. The planting work shall start immediately in each part of the project where the earthworks have been completed and the final surfaces have been shaped and shall be proportionate to the specific characteristics of the area of intervention of the project. In particular, maintain significant areas of low height vegetation cover within the installation polygon. Earthworks should be followed by erosion control works to prevent the loss of valuable soil and the creation of furrow erosion before adequate vegetation has developed. All plantings to be done while ensuring irrigation for rapid vegetation growth and maintenance. Plant care to continue for a minimum of two (2) years after planting at the responsibility of the developer.

Grazing should be prohibited at the sites of the restoration works, at least for two (2) years, in order to protect them.

For works, activities and facilities that will arise during the subsequent technical planning, such as construction facilities, etc. for which a general impact assessment has been carried out and conditions and restrictions are provided for in this decision, there is the possibility of submitting and approving them with a Technical Environmental Study (TEPEM), in accordance with Article 7 of Law 4014/2011.

E.3 Operational phase

Saving natural resources and energy:

Use low-energy electronic and electrical equipment (e.g. light bulbs). In addition, preventive inspections and maintenance of all the mechanical equipment of the wind power plant (WPP) should be carried out at regular intervals in accordance with the manufacturer's instructions.

Staff waste and urban waste water management:

Uncontrolled disposal of liquid and solid waste into the environment is prohibited. Staff liquid waste must be collected in an underground watertight tank, which must be emptied by a licensed body at regular intervals.

The management of non-hazardous solid waste must be carried out in accordance with the provisions of Law 4685/2020 (Government Gazette 92 A/2020) as in force, and under the responsibility of the operating body. In particular, municipal solid waste, refuse and other non-recyclable waste that does not belong to the list of hazardous waste must be collected in waste bins and collected by the waste collection vehicles of the cleaning service of the municipality concerned, or by a collection contractor who has a relevant solid waste management licence.

The management of waste falling under the provisions of Law 4819/2021 on the integrated framework for waste management, to be carried out in accordance with the provisions of this law and the regulatory acts issued under its authority and in accordance with the requirements and specifications of the respective alternative management systems approved by the Ministry of Environment and Natural Resources. In particular:

The packaging of various materials used during the operation of the project to be collected and stored in a way that avoids their dispersion in the environment and then delivered to licensed

companies for recycling through approved alternative management systems in accordance with Law 4819/2021 (Government Gazette 129 A).

Waste lubricating oils resulting (from equipment maintenance operations) should be managed in accordance with the provisions of the Decree 82/04 (Government Gazette 64/A/2-03-04). They should be temporarily stored in special watertight containers, which should be kept in a special sealed and covered area, not exposed to adverse weather conditions (rain, snow, etc.), which should be ventilated, controlled and kept clean from any leaks. This waste must be delivered to specialised companies that are contracted to an alternative management system and hold a management licence. At the time of delivery, a completed lubricating oil waste identification form must be submitted, copies of which must be kept for at least three (3) years. A register must be kept of the quantity, quality, origin, disposal, delivery dates, etc. of used lubricating oils.

The collection of electrical and electronic equipment to be scrapped, used batteries and accumulators and used tires of vehicles to be done through approved alternative management systems, in accordance with the current provisions (P.D. 116/04 (Government Gazette 81/A/05-03-2004) as amended and in force, the Y.A. H.P. 23615/651/E.103/2014 (Government Gazette 1184/B/9-5-2014), as amended by the H.A. YPEN/DNEP/36928/2227/2018, (Government Gazette 5459/B/6.12.2018) and M.A. ΥΠΕΝ/ΔΔΑ/81490/1650/2021 (FEK 4382/B` 22.9.2021). As well as of the KYA 41624/2057/E103/10 (Government Gazette 1625/B/11-10-2010) as amended by the M.A. 39200/2015, (Government Gazette 2057/B/18.9.2015) and M.A. YPEN/DDA/81492/1651/2021 (Government Gazette 4382/B` 22.9.2021). The relevant disposal documents must be kept.

The treatment and disposal of hazardous waste is prohibited. All hazardous and potentially hazardous wastes (e.g. waste lubricating oils, residues of adsorbent materials, etc.) must be managed in accordance with the provisions of Decree 13588/725/2006 and Decree 13588/725/2006 of the Ministry of Environment and Public Works. 62952/5384/2016 (Government Gazette 4326/B/30-12-2016), as applicable. They must be temporarily stored in closed, specially marked containers, in a properly designed area, protected from the weather, with impermeable flooring.

All hazardous waste temporarily stored at the facility must be delivered, under contract, to an operator/contractor who must have a hazardous waste collection and transport permit and a contract with the final recipient of the waste. The Environmental Consent Decision of the final recipient must allow the final recipient to receive such waste at his facility. Thereafter, the company must have the Environmental Approval Decisions of the respective recipients as well as other supporting documents.

For the delivery of waste to third parties, the relevant documentation to monitor the further management of the waste off-site must be available. In the case of hazardous waste, the 'Identification form for the collection and transport of hazardous waste' must be duly completed in accordance with the provisions of the Decree 24944/1159/06.

To keep the records and registers of article 62 of Law 4819/2021 (Government Gazette 129/A/2021) as in force, and to maintain them for as long as provided. Waste production data should be entered in the electronic system of Article 53 of Law 4819/2021 as in force.

The burning of solid waste both in open and covered areas is prohibited in accordance with KYA 11535/93 (FEK 328B/93), as well as the burning of used oils (Y.A. οικ. 189533/2011, (2654/B/9.11.2011).

Reduction of emissions to the atmosphere, vibration, noise and EM radiation

The emission limit values for pollutants and maximum concentrations of pollutant loads in ambient air, noise and vibration levels shall be as set out in paragraphs D.1 and D.4 hereof.

For the limitation of electromagnetic radiation, the provisions of paragraph D.3 herein shall apply.

During the operation of the project, periodic checks of the noise levels from the operation of the W/Ts will be carried out to ensure that noise levels in neighbouring settlements and residences do not exceed the permissible limits (≤45dB).

The measured noise level at the boundaries of the installation sites must not exceed the permissible noise limits as defined in Decree 1180/1981 (<65dBA). To this end, all appropriate soundproofing measures must be taken for the building installations housing electromechanical equipment, while outdoor electromechanical installations must be of appropriate specifications in terms of noise emissions and, if feasible, must be placed on an anti-vibration base.

Fixed refrigeration/air conditioning equipment installations containing controlled substances with a refrigerant fluid load of more than three kilograms are tested in accordance with KYA 37411/1829/E103/2007 (Government Gazette 1827/B΄/2007).

Adequate lightning protection shall be provided.

Limiting the impact on the natural environment and the fauna and flora of the area

The night lighting of the project, apart from the marking of the W/T, i.e. the control house etc., should be minimised and limited to what is strictly necessary for the safety of the installations and for the identification of risks to public safety, in order to limit the impact on the fauna and avifauna of the area. Also use lighting that does not attract insects so that bats are not attracted.

No buoyant structures that allow birds to perch or congregate on the project site should be used.

The control of unwanted vegetation and weeds shall be carried out exclusively by mechanical means and/or approved biological products. The use of chemical herbicides is prohibited.

Periods of non-operation of the W/Ts (e.g. for maintenance) should be minimised in order to reduce the risk of birds using them as roosting or nesting sites.

Conduct regular inspections of the wind farm site (at least weekly) and remove any dead animals within 500 m of the base of the wind turbines, the presence of which could attract scavenging birds of prey.

Conditions for other matters relating to the operational phase:

Access roads to serve the project, to be kept in common use and maintained in good condition.

Preventive maintenance of the gensets and maintenance work on all mechanical equipment of the W/F by a team of trained technicians and assistants. In the event that parts of the gensets are damaged, they shall be replaced as soon as possible.

The approach of persons not related to the project to points that may pose risks (transformers, medium and low voltage conductors, etc.) will be prevented by appropriate means (fences, warning signs). In general, provision should be made for all necessary measures to protect workers or visitors.

In this connection, it is necessary to place elegant signs warning of the possible risks involved in the above-mentioned areas in appropriate locations.

The daytime and nighttime light marking of the A/Vs should be done according to the instructions of the Ministry of Defence and the General Staff and taking into account the following restrictions:

The lights should have the lowest possible number of flashes per minute and the shortest possible flash duration.

Under no circumstances will incandescent lamps and fixed beam lights be used in both the W/T and other infrastructure of the W/F.

Transformers of all types, unless dry-type transformers are used, and any containers for the storage of used or new lubricating oils shall be located within leakproof safety oil tanks of an appropriate active volume in relation to the volume of oil contained.

In the substations of the RES-E installation, the equipment (transformers, capacitors, etc.) must comply with the specifications of the applicable legislation, in particular with regard to the use of substances subject to specific legislation, e.g. PCBs, PCTs.

To deal with potential accidents resulting in spills of non-biodegradable substances and soil and water pollution, the necessary measures should be in place to contain liquid contaminants such as sawdust, oil binders, various special biodegradants, etc. Regular monitoring of materials should be carried out so that if for any reason they have adsorbed increased moisture content and their effectiveness is reduced, they should be replaced immediately.

All necessary measures must be taken for the fire protection of the premises and a fire extinguishing network must be installed, in accordance with a special study approved by the competent authority (if such approval is provided for by the legislation in force).

Adequate lightning protection for the entire project must be installed at all times.

Ensure the proper management of rainwater and its proper drainage so as not to create problems in the surrounding area.

During winter in periods of very low temperatures and after snowfalls, monitor the W/Ts for ice accumulation that can cause accidents. Install information and proximity signs for the public during the winter period.

The terms of this Decision shall apply to the construction and operation of the project, irrespective of the owner or operator of the project. In case of change of the owner or operator or addition of a new owner or operator of the project, the provisions of this Decision shall apply to the new owner or operator (paragraph 8, article 1 of Law 4014/2011).

E.4 Restoration, partial, partial, gradual or permanent cessation of operations:

After the definitive cessation of the operation of all or part of the project, the site is to be restored and returned to its original use. The site will be landscaped and restored to its previous condition, where possible, by planting.

The issues related to the works during the shutdown will be specified in a Technical Environmental Study (TEPEM) which the developer must prepare and submit for approval, at the latest six months before the shutdown of all or part of the project, to the Environmental Licensing Authority.

The cost of uninstallation and removal of the equipment and the restoration of the site will be the primary responsibility of the beneficiary of the project, who will bear the sole cost.

The conditions referred to in this Decision shall apply with respect to site operation, earthworks, etc., as referred to in the section entitled "Construction Phase" herein.

The conditions referred to in this Decision shall apply with regard to the waste management issues referred to in the section entitled "Waste Management" herein.

E.5 Exceptional incidents of pollution or environmental degradation:

In the event of an emergency incident causing any pollution or other environmental degradation, those responsible are obliged to take the necessary measures for the restoration and/or prevention in accordance with the provisions of PD 148/2009 and the provisions of Section A of Law 4042/2012 apply.

The project developer must inform the competent authority for issuing the decision on the approval of environmental conditions, the Department of Environment & Water Economy Department of the competent regional authority and, where applicable, other competent authority in the event of any failure and pollution not provided for herein.

E.6 Additional environmental conditions,

The ASPE "Xefoto" is located within the boundaries of the Special Protection Area (SPA) called "KOMPSATOU VALLEY" (code GR1130012 - SPA) of the Natura 2000 Network, as well as within the Important Bird Area "Koimpsatos Valley", code GR009. In order to prevent and minimise potential impacts both on this site and on neighbouring Natura 2000 sites and to ensure their integrity and the coherence of the network, the following additional measures are imposed:

The proposed M.T. electrical interconnection line to be constructed underground, as provided in the project's EIR.

The width of the roadway deck after construction to be limited to the minimum required for maintenance and operation of the project.

Placement of warning signs on the roads (at least along the length of both sides of the polygons of the W/F installation), about the presence of the jackal and the wolf, in the wider area of the W/F, in order to reduce the speed of passing vehicles and avoid accidents.

A comprehensive Environmental Monitoring Program, as described in this EIS and the attached Special Ecological Assessment Study (SEA), should be adhered to and submitted to the Service in order to assess whether the location of an W/T creates problems with respect to what has been preliminarily assessed. The results will be submitted, together with any proposals for improvements to the project design, to the Competent Authorities. If required, based on the data, an appropriate corresponding programme for handlers (limited in time to the duration that this mammal group is active, both during 24 hours and during the year) will be implemented.

The construction works will be planned in such a way that they will not coincide with critical periods for the fauna of the area, regardless of the importance of the species, so as not to disturb this critical stage of their biological cycle (the period of reproduction of fauna species or nesting and rearing of young birds).

Prior to the start of construction works, a scanning by a specialist scientist of the areas to be affected by earthworks (e.g. new sections of openings) and the movement of individuals of herpetofauna, especially of the gray turtle (Testudo graeca) and the Mediterranean turtle (Testudo hermanni) that are likely to be found outside the occupation zone of the above-mentioned works.

Installation of an optical system of automated wind turbine shutdown in the W/F (impact prevention). The system should include the following features:

- Real-time visual flight reconnaissance (detection),
- Emission of repulsion sounds for birds at risk of collision (as specified in the ERA and referred to below),
- an automatic temporary stopping or slowing down system for rotors; and
- Ability to check the records on the basis of which the results will be reported.

The design, selection of the appropriate system, installation and configuration of its operation to be completed within one year from the start of normal operation of the project, taking into account the results of the bird monitoring programme. The installation of the system shall be completed before the issue of the operating licence. The monitoring, maintenance and control of the operation of the system will be carried out by suitably qualified scientific staff and will be included in the permanent monitoring programme. The results of the system's recordings will be included in the annual monitoring reports, which will be submitted to the competent bodies and services (IPEXOSH A.D.M.Th., O.F.I.P.E.K.A., etc.).

No use in any of the ASPHE's facilities of floating structures in order to avoid the creation of resting or supervisory positions.

The design of the proposed LDC to comply with the obligations under par. 4 of article 5B of the EIA 8353/276/E103/2012 (Government Gazette 415/B) and in particular: obligation for regular control of the station site and removal of dead animals (mainly livestock), the presence of which could attract scavenging birds of prey.

Any dead livestock found should be immediately removed from the W/F site, under the responsibility of the project proponent, and either disposed of in a certified inactivation unit in cooperation with the veterinary service or remain available for scavenging in existing licensed food aid sites.

Any dead livestock found should be immediately removed from the W/F site, under the responsibility of the project proponent, and either disposed of in a certified inactivation unit in cooperation with the veterinary service or remain available for scavenging in existing licensed food aid sites.

In parallel with regular monitoring for the detection of dead livestock or other animals, investigate - monitor and record for incidents of dead birds and bats (if required based on what is mentioned in the MEWP). The monitoring shall include as a minimum the area around the perimeter of the A/Rs and along the connecting roads of the A/Rs and within a radius of ≥300m on either side of them. The frequency of the survey shall be at least every 15 days (twice a month) during critical periods and every 20 days (three times every two months) during the rest of the period, in order to minimise

the loss of bodies and to allow a reliable assessment of the actual date, the condition of the find, the exact weather conditions where the event took place and whether or not it is related to the operation of the R/Vs. The frequency of the search may increase after specific weather events such as low clouds or fog and during the migration period (April-May, August-October) when the probability of impact is increased.

If an appropriate corresponding programme for the handflies is required, it will be limited in time to the duration of the mammal group's activity, both during the 24-hour period and during the year.

Keep a record of the checks carried out for the detection of dead animals and birds, on an appropriate recording form, as part of the environmental management of the project.

In case of detection of a dead or injured bird, the incident should be recorded and the Forest Service should be informed in order to provide the necessary treatment as soon as possible.

The permanent staff located at the project site to be informed and trained on environmental protection issues (fire protection, waste management, etc.) and in particular on issues such as the required actions in cases of detection of dead or injured birds. Also to place information signs to other users/visitors on the required actions and useful contact numbers in case of detection of dead or injured birds.

When designing restorations, take into account parameters related to habitat management and the contribution of vegetation in creating conditions for attracting or repelling important bird species (e.g. creation of upstream streams, nesting or roosting sites, attracting game birds, etc.), in order to contribute to the restoration of disturbed areas and to prevent impacts on birdlife.

Control of the use of the new road sections in consultation with the competent authorities. A barrier should be placed at the beginning of the new road sections, after the construction of the project, and only those involved in the maintenance and operation of the project and, of course, the competent authorities responsible for the study area should be able to access the access road.

In the event that the monitoring programme records an increased intensity of impacts compared to the preliminary assessments and it is considered necessary to scale up mitigation measures, the following additional measures should be implemented:

Active management of habitats under wind turbines by creating undesirable habitats for birds) after appropriate studies. These studies should necessarily take into account other flora and fauna species in the area.

Active habitat management around the wind farm after appropriate studies, so that species of interest likely to be affected by the wind farm are guided to safe alternative sites and indirectly favoured. These studies should necessarily take into account the potential impacts that will be assessed during the initial period of operation of the wind farm and the other flora and fauna species in the area.

Increase in the starting speed of the wind turbines if there is an impact from the installation and operation of the studied wind turbine generator on the handrails. Specifically, increase the speed of the wind turbine start-up and blade rotation, so that at low wind speeds, in the order of 3.5 m/sec, the rotation of the wind turbine rotor is avoided.

Monitoring possible effects on the handrails. If an impact on chiral mammals is observed as a result of the installation and operation of the ESDP project, and as soon as it is identified, in parallel with the monitoring of the potential impacts on birds and other terrestrial fauna, a corresponding monitoring of the potential impacts on chiral mammals shall be carried out.

Full shutdown of the GIS during sensitive periods. In the event that the processing of the recording data from the automated wind turbine shutdown system or the simultaneous presence of field observers during the monitoring programmes proposed below, after the installation of the project under study, indicates (from the analysis of the recorded video or from the observations of field observers) that the risk of impact during a period is critically high and cannot be minimised through periodic shutdowns, the wind turbines shall be shut down periodically.

E.7 Environmental Management - Monitoring programme and reports:

Implement a permanent environmental management plan - monitoring programme (see. (cf. MoA 170225/2014 Annex 2, Paragraph 11.2 and Annex 3.2.1 Paragraph 5), which will incorporate all procedures / obligations arising from this, If the project has an approved environmental management system (EMAS or ISO 14001), the procedures of the environmental management and monitoring plan, as far as possible, shall be incorporated into it.

The activity monitoring programme will be for the first four years (project preparation period, construction phase and during the first two years of operation) and then the annual programme will be repeated every 5 years until the next renewal or modification of the AEP, at which time the frequency of repetition and the manner in which it is carried out may be reviewed.

To keep logs - registers and records of documents, in the context of monitoring the effective protection of the environment and the implementation of the measures and conditions imposed:

- Maintenance logbook for electro-mechanical equipment of ASPEE.
- Diary of inspection/search for dead animals.
- File of documents for the disposal of liquid and solid hazardous and non-hazardous waste.
- Register of article 62 of Law 4819/2021 (Government Gazette 129/A/2021) - Register of hazardous waste (paragraph 4.a. of article 11 of the KYA 13588/725) as in force, and registration of the project operator in the Electronic Waste Register (EWR).
- File of urban waste disposal documents.

Submit the annual monitoring reports of the monitoring programme for avifauna. The reports are to be submitted to the licensing authority, to the O.F.I.P.C.A. and to the Department of Protected Areas of the Ministry of Environment and Natural Resources.

The company must keep all of the above and any other appropriate evidence of its compliance with the terms of this Agreement. Such evidence shall be kept at the project site and at the company's headquarters.

E.8 Other conditions, measures and restrictions:

Otherwise, the conditions, measures and restrictions described in the assessed environmental impact assessment and the EIA file shall apply, provided that they do not contradict the terms of this

document. The cost of all works, actions and interventions resulting from the environmental conditions, restrictions and regulations shall be borne by the project promoter.

The activity in question will be allowed to be established or continue to operate, provided that it adapts to the requirements and complies with any prohibitive or other obligations resulting from the revision of the existing legislative framework applicable to the activity or the area in which it is established.

If the design of the project is changed in relation to what is mentioned in this decision and in the accompanying file, either a final design compliance file of article 7, paragraph 1 of Law 4014/2011 or a modification file should be submitted, provided that the conditions of article 7 of Y.A. 167563/2013, as in force, are met.

For installations and works arising at a stage subsequent to the adoption of this document (see par. 2 of Law 4014/2011.

Before the start of construction works, the project manager must inform the competent environmental inspection authorities (article 20 of Law 4014/2011) of the date of the start of works, in accordance with the document of the Special Secretary of the Corps of Inspectors and Auditors of the Ministry of Environment, Nature Conservation and Nuclear Safety, number 31009/685/23-5-2018.

F. Period of validity - conditions for the renewal/amendment of the environmental permit granted:

The term of this Agreement shall be fifteen (15) years from the date of its issuance in accordance with the provisions of para. 8a of article 2 of Law 4014/2011 as amended by article 163 of Law 4951/2022 and provided that there is no change in the data on the basis of which it was issued.

The project promoter must submit in due time (at least two months before the above deadline, in accordance with par. 4 of article 5 of Law 4014/2011) a request accompanied by a renewal file A.E.P.O. to the competent environmental licensing Service, in order to comply with the provisions of article 5 of Law 4014/2011.

This Decision shall remain in force provisionally after its expiry until a new renewed or amended Decision is issued, provided that the debtor has requested its renewal in good time. If this renewal is not done in a timely manner as specified above and the period of validity has expired, then the project proponent shall be required to re-file an M.P.E. with the appropriate agency in order to obtain an environmental permit.

For the modernization, improvement, extension or modification of the project, as described in the M.P.E. and implemented under the terms and conditions of this decision E.P.O., compliance with Article 6 of Law 4014/2011, as in force, is required.

If during the inspections of article 20 of Law 4014/2011 it is found that serious problems of environmental degradation are caused or impacts on the environment are observed that have not been foreseen by this decision and the study accompanying it, additional environmental conditions may be imposed or this decision may be amended, as provided in par. 9 of Article 2 in conjunction with Article 6 of Law 4014/2011, not excluding any compensatory measures or fees within the meaning of paragraph 1 of Article 17 of Law 4014/2011. Furthermore, the developer is obliged to take

the necessary measures for restoration and/or prevention in accordance with the provisions of PD 148/2009.

G. Other provisions:

This Decision does not cover matters relating to safety against major accidents or the safety and health of workers, nor does it exempt the operator from the obligation to obtain other authorisations or approvals provided for by the legislation in force. This is issued without examining the title to the site of the project or activity and the building conditions and restrictions of the land and does not entail the legalisation or regularisation of any unauthorised existing structures to which the provisions of the applicable legislation on unauthorised constructions apply. The above information has been examined and is set out in this PIA under the responsibility of the developer.

This is subject to the proviso that it does not conflict with any planning and other special provisions that may prevail.

This Decision is granted on the basis of the data presented in the study and the accompanying drawings, which form an integral part of it, without carrying out the preventive checks referred to in Article 20 of Law 4014/2011. If it is established that this information is untrue, the validity of this Decision is automatically revoked.

H. Checking compliance with environmental conditions:

This E.P.O. decision, the relevant certified studies (M.P.E., M.E.O.A.) and the accompanying file and data (monitoring programme data, records, documents, etc.) must be available at the project site and must be shown to any competent control body in accordance with the legislation in force.

The project promoter has the obligation to:

Keep records (invoices, contracts, various supporting documents, registers of data, etc.) to prove compliance with the conditions laid down in this Decision. These records must be kept on the site of the project.

Allow access to any competent control body.

Provide all required data and information.

To facilitate the control and to comply with the recommendations - suggestions of the competent control bodies for the observance of the provisions of the applicable environmental legislation.

Any issues that arise during the implementation of the E.P.O. decision and are not covered by its terms are resolved on the basis of the applicable legislation (national and Community) and, where this is not possible, on the basis of the relevant certified P.P.E., the modification studies and the accompanying file.

In the event of any pollution or other environmental degradation or violation of the terms of this contract, the project managers are subject to the sanctions provided for by the provisions of Articles 28, 29 and 30 of Law 1650/86 as amended by Law 3010/2002, Law 4014/2011, Law 4042/2012 and Law 4409/2016 and are also obliged to take the necessary measures for restoration and / or prevention in accordance with the provisions of PD 148/2009.

I. Publication of the results of the consultation and of the EIA:

The results of the consultation, the opinions - views of services, bodies and citizens, in the context of the implementation of the number 167563/EYPE/2013 K.Y.A. in conjunction with the number 1649/45/2014 K.Y.A., were incorporated into the environmental conditions approved by this decision.

The publication of this Decision on the approval of environmental conditions, as required by law, is carried out by posting it on the special website at www.aepo.ypeka.gr (in accordance with the provisions of article 19a of Law 4014/2011, as well as the common ministerial decision 21398/2012).

I. Action against the A.E.P.O:

Anyone with a legitimate interest may bring a special administrative appeal against this decision only on grounds of legality, in accordance with the applicable legislation (Article 25 of Law 2690/1999 (Government Gazette 45/A) in conjunction with Article 1 paragraph 2 of Law 2503/97 (Government Gazette 107/A) and Article 8 of Law 3200/1955 (Government Gazette 97 A), within (30) thirty days from the date of posting the decision on the Internet.

13 ADDITIONAL INFORMATION

13.1 Specialised studies

For the needs of the project, a final study of the infrastructure works of W/F was commissioned and prepared, which includes:

- The recording of the final road study
- The study of the configuration of the wind turbine construction platforms
- The study of the general configuration of the premises of the Control Centres
- The detailed calculation of the areas of use and occupation

Also, in the context of the environmental impact study, a special ecological assessment study was carried out, which includes field observations for the collection of data, lasting 12 months, for birds, but also for the recording of other ecological data of the Wind Farms' installation area and the wider area (habitat types, fauna of the wider area, etc.), as defined in the Environmental Impact Assessment No. 170225 (Government Gazette 135/B/27-01-2014), concerning the specifications for the preparation of EIAs for A1 projects within ZEP areas.

Finally, no other specific studies were carried out at the initiative of the project promoter, or were available and used in the RIA.

13.2 Design problems and ways resolved

No major difficulties or problems arose during the study.

14 PHOTOGRAPHIC DOCUMENTATION

Photo 1: View of the northern polygon section of the ASPHE installation (Gens 2, 3, 4, 4, 5 & 6)

Photorealistic illustration of Photo 1

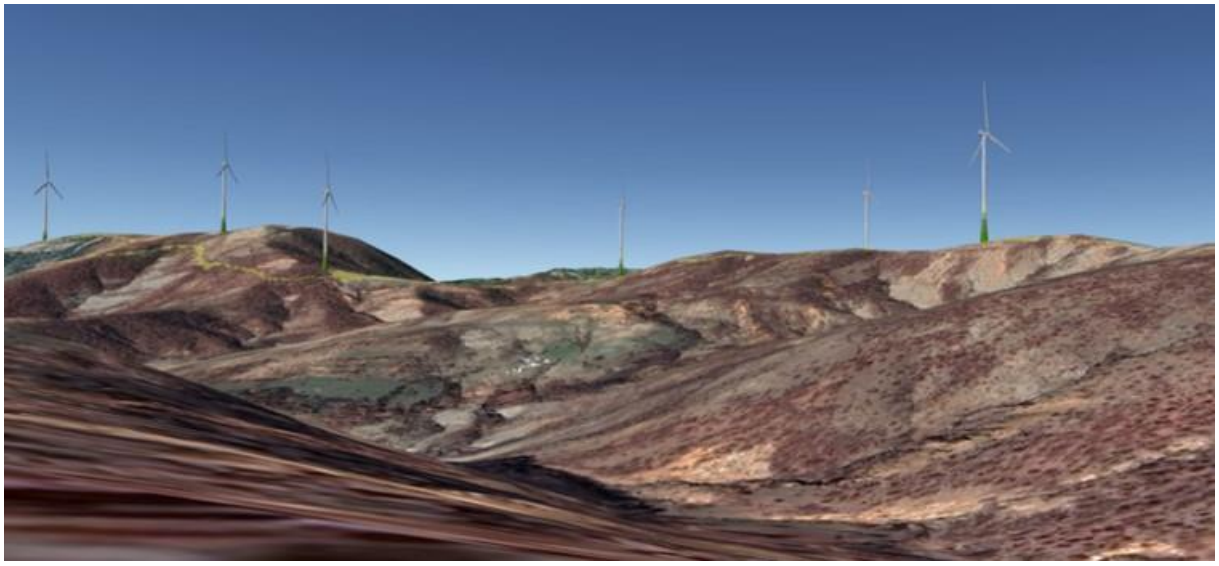


Photo 2: View of part of the northern polygon of the W/F installation (W/T 8 & 9)

Photorealistic illustration of Photo 2

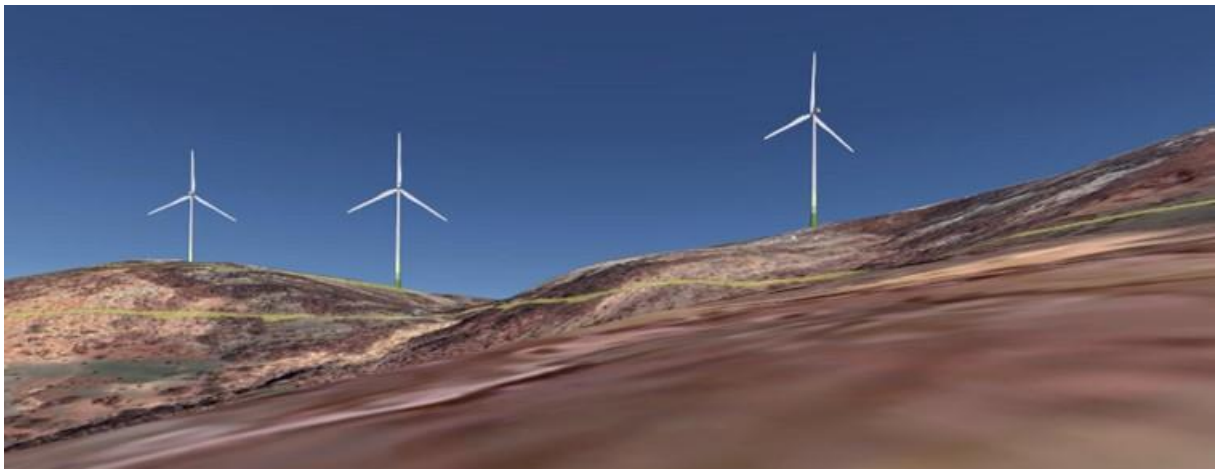


Photo 3: View of the northern polygon section of the ASPHE installation (Gens 1, 2, 3, 3, 4, 5 & 6)

Photorealistic illustration of Photo 3

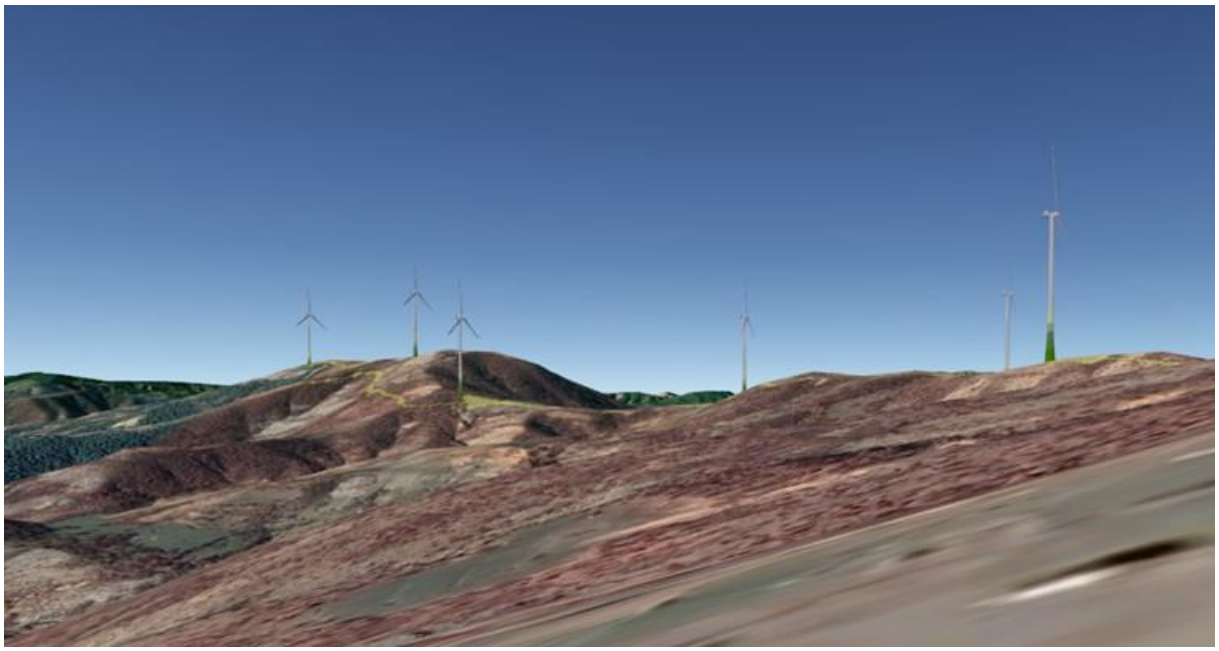


Photo 4 View of the northern polygon section of the W/F installation (Gensets 1, 2, 3, 4, & 5)

Photo 5 View of the wider area of the project, in the background the 13 14 15 16 Gensets of the central polygon of the W/F can be distinguished.

Photorealistic illustration of Photo 5

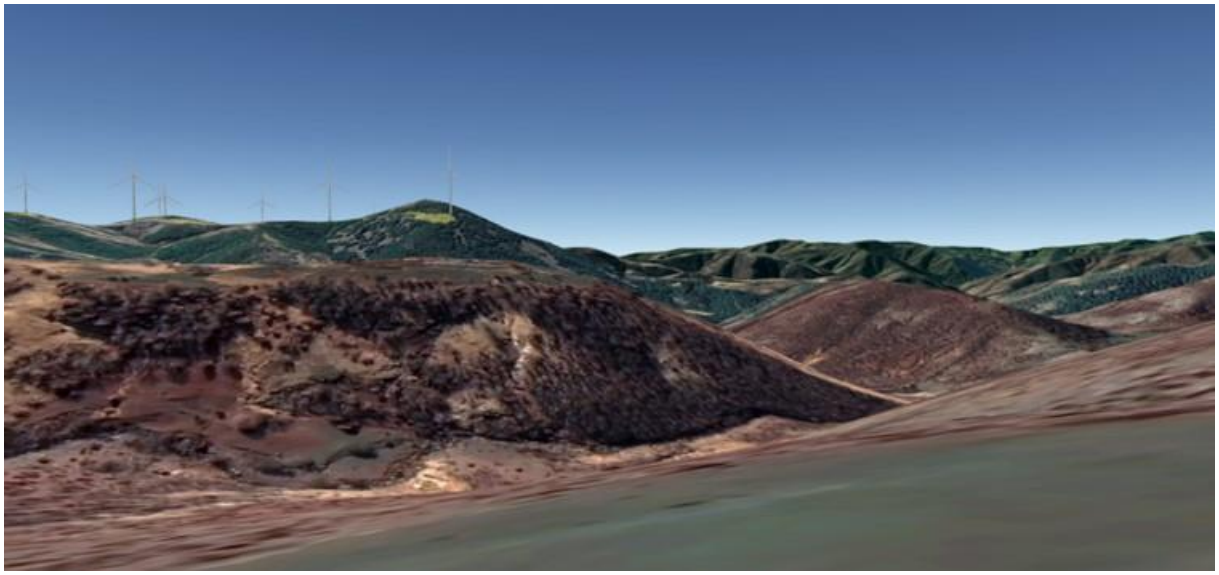


Photo 6 View of the project site

Photo 7 View of the project site

Photo 8 View of the project site

Photo 9 View of the project site from the location of the Auxiliary Control Tower

Photo 10 View of the project site from the location of the auxiliary control house

Photorealistic illustration of Photo 10

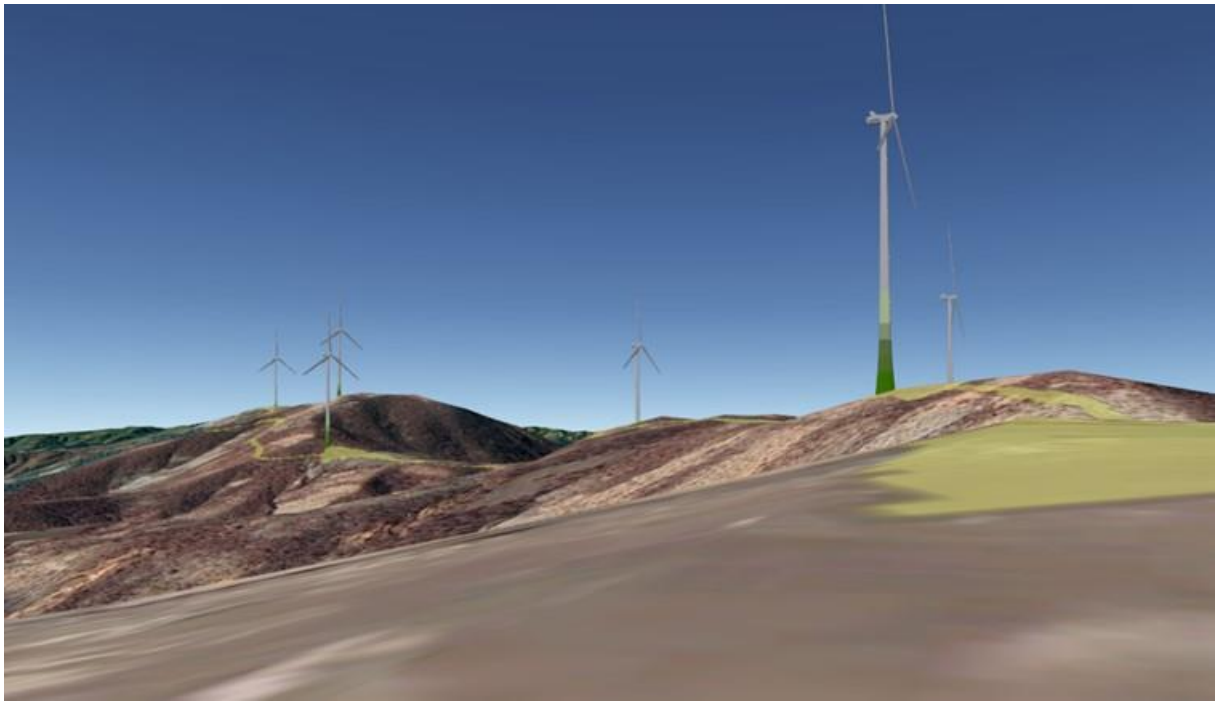


Photo 11 View of the project site from the location of the auxiliary control house

Photorealistic representation of Photography11

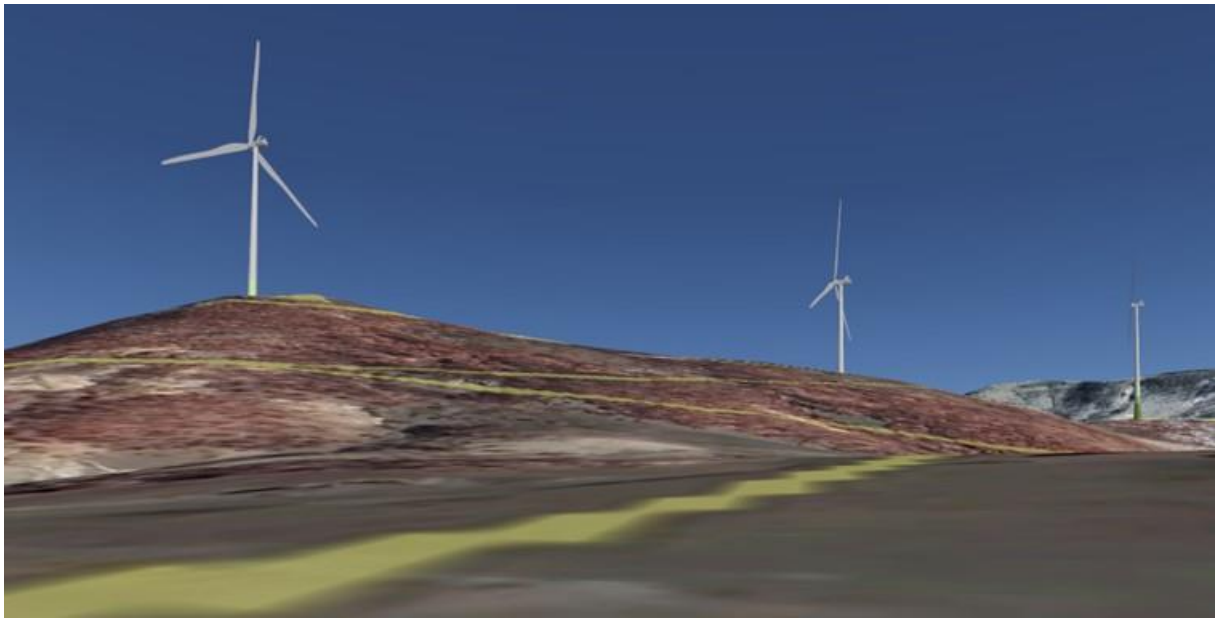


Photo 12 View of the project site from the location of the auxiliary control house

Photo 13 View of the project site, from the lateral view of W/T 7

Photo 14 View of the project site, from the lateral view of W/T 7

Photo 15 View of the project site, from the lateral view of W/T 7

Photo 16 View of the project site, from the lateral view of W/T 7

Photo 17 View of the project site, from the lateral view of W/T 7

Photo 18 View of the project site, from the lateral view of W/T 7

Photo 19 View of the project site, from the lateral view of W/T 6

Photo 20 View of the project site, from the lateral view of W/T 6

Photo 21 View of the project site, from the lateral view of W/T 6

Photo 22 View of the project site (OD5)

Photo 23 View of the project site, (OD05)

Photo 24 View of the project site

Photo 25 View of the project site, from the latitude of W/T 4

Photo 26 Panoramic view of the project site

Photorealistic illustration of Photo 26

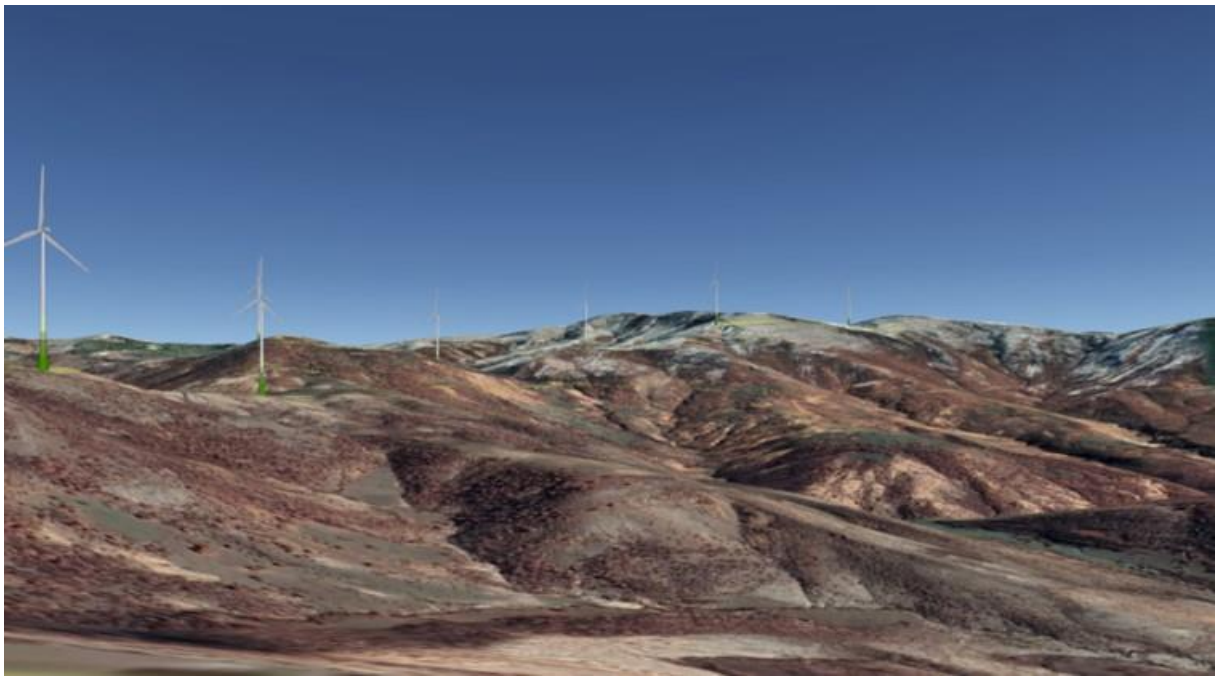


Photo 27 Panoramic view of the project site

Photorealistic illustration of Photo 27

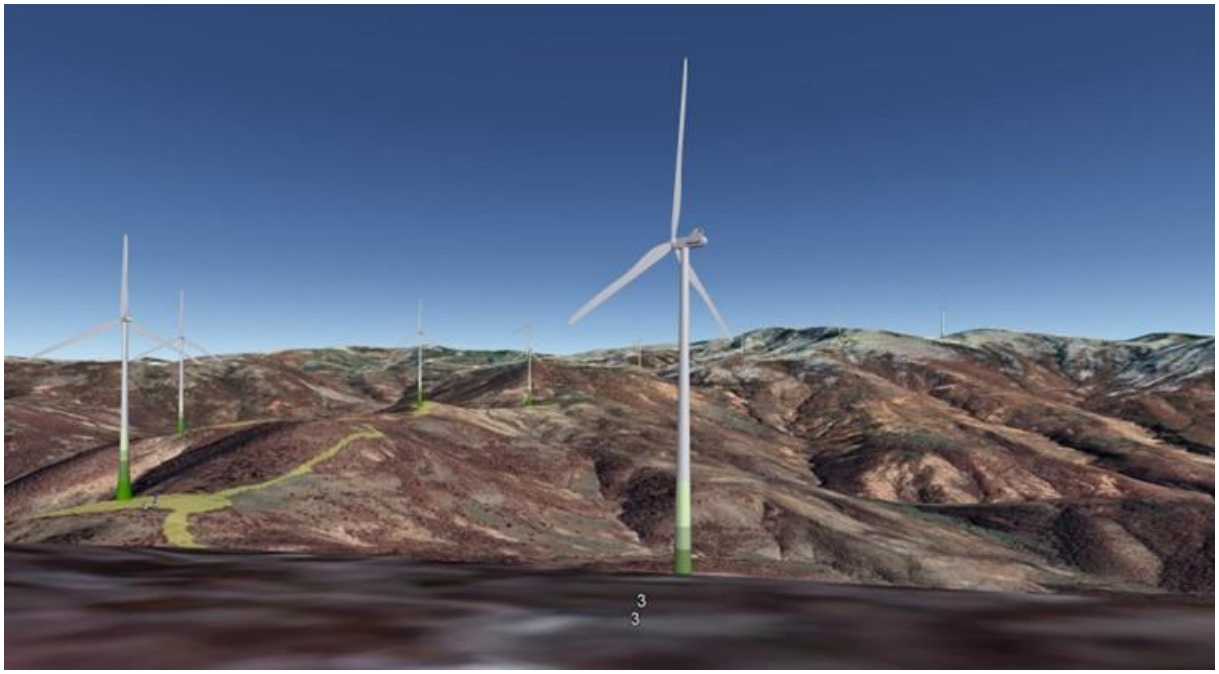


Photo 28 Panoramic view of the project site, from the latitude of W/T 6

Photorealistic illustration of Photo 28

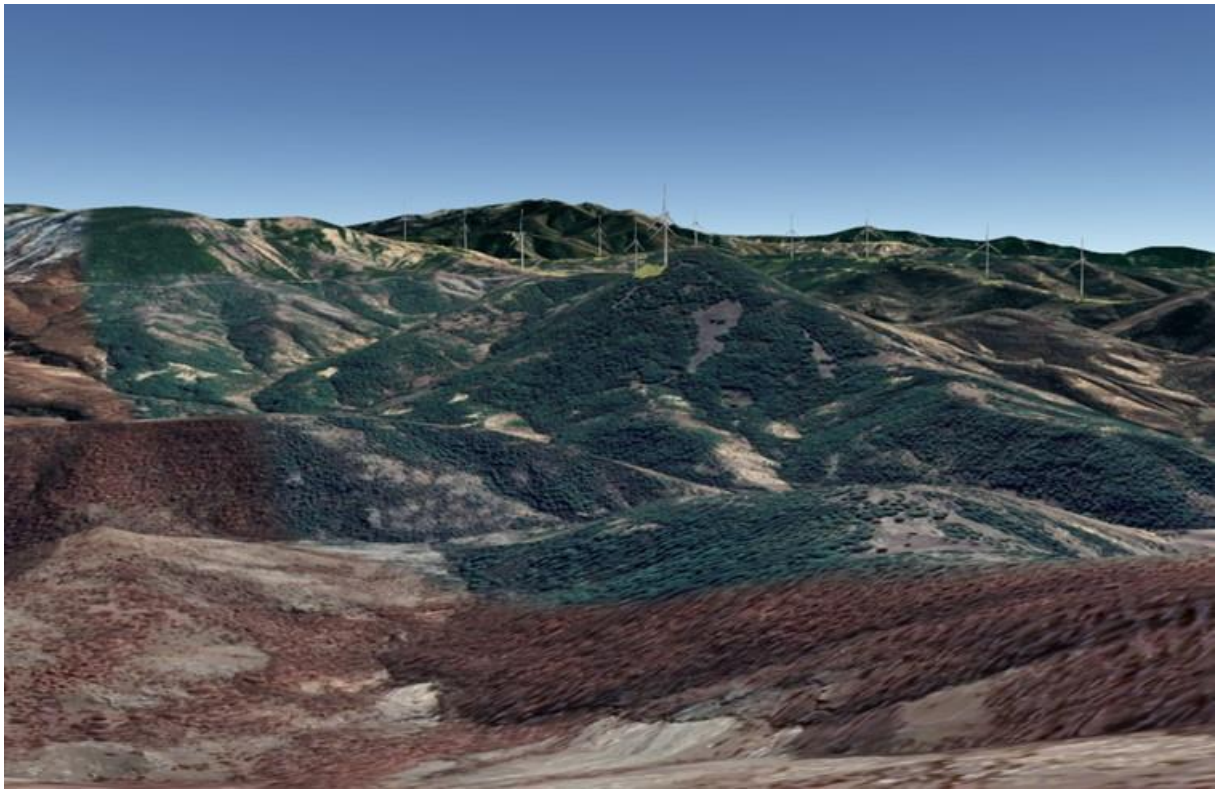


Photo 29 View of the installation area of W/T 1, from the side of W/T 2

Photo 30 View of the installation area of the W/Ts (20, 21, 22, 23 & 24)

Photorealistic illustration of Photo 30

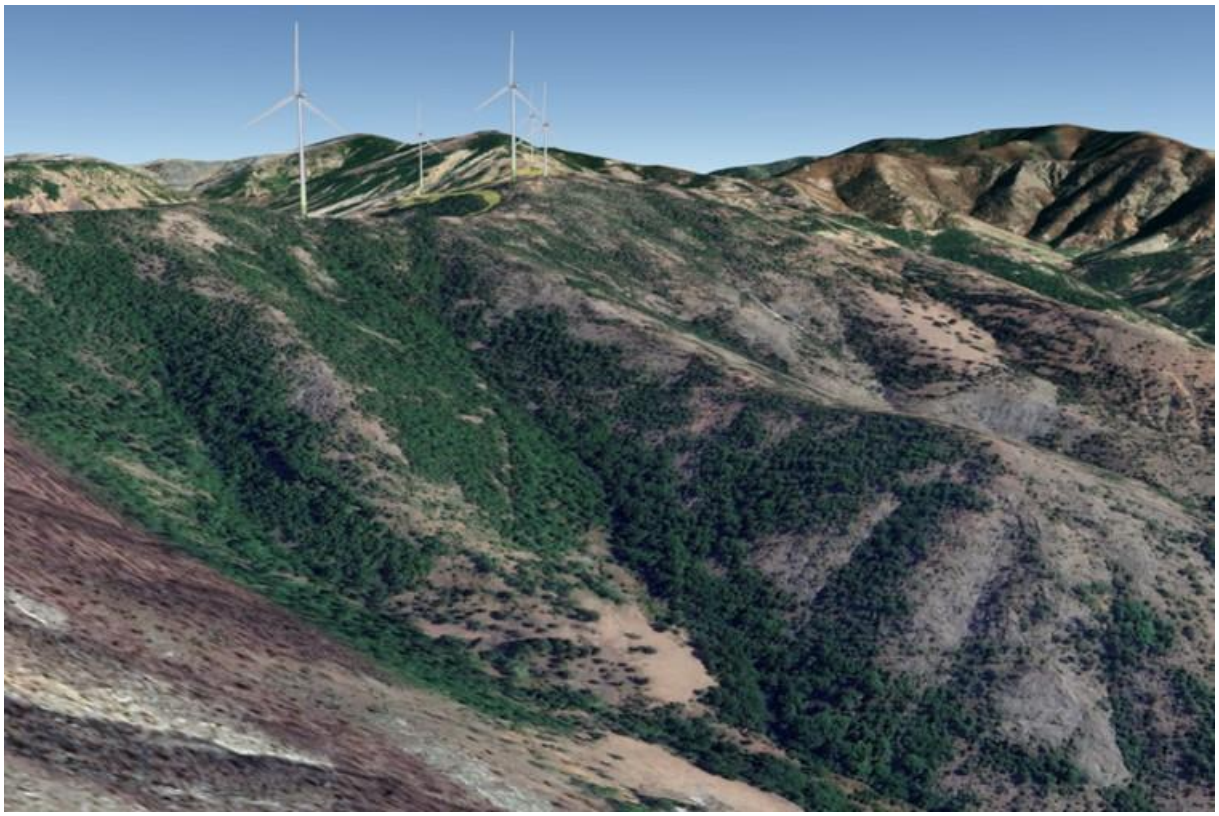


Photo 31 Panoramic view of the project site

Photorealistic illustration of Photo 31

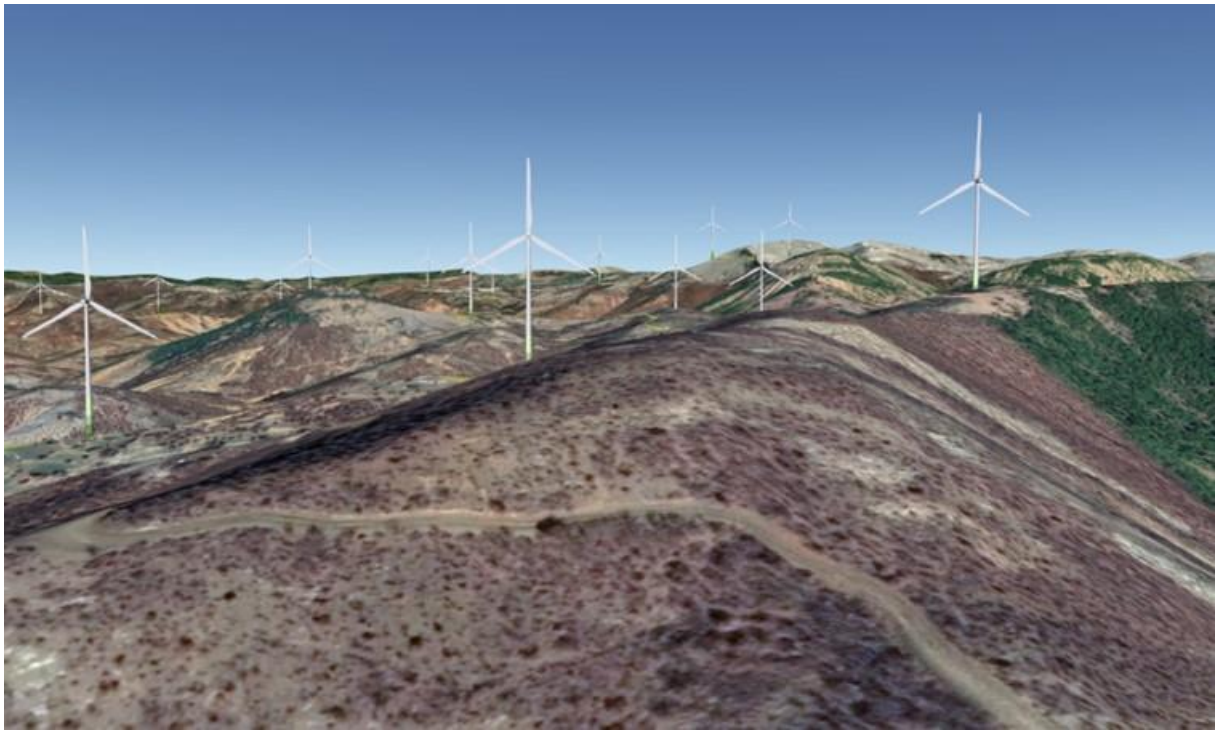


Photo 32 Installation area of the W/F (W/T 14, 15 & 16)

Photorealistic illustration of Photo 32

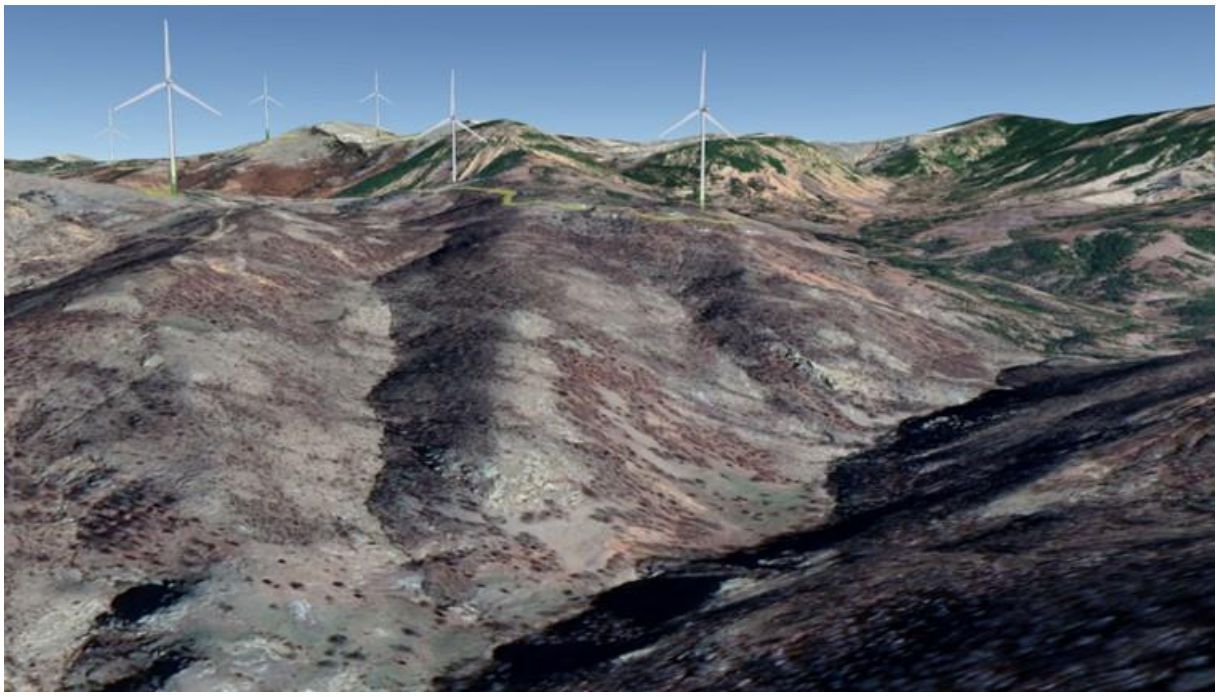


Photo 33 Installation area of W/T17 & 18 and the Main Control Cradle of the W/F

Photorealistic illustration of Photo 33

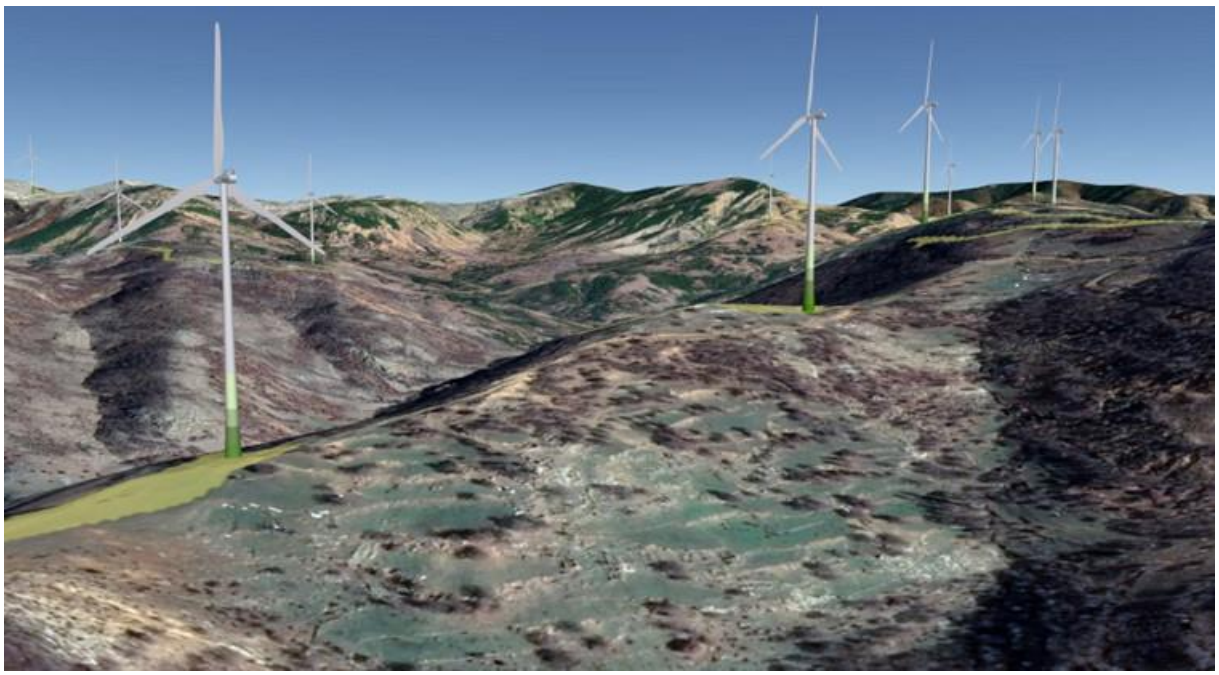


Photo 34 Installation area of W/T17 and 18 of the ASPHE

Photo 35 View of the project site, from the side of W/T 17

Photo 36 View of the installation area of W/T 13 & 14, from the side of W/T 15

Photo 37 View of the installation area of W/T 22 to W/T 17

Photorealistic illustration of Photo 37

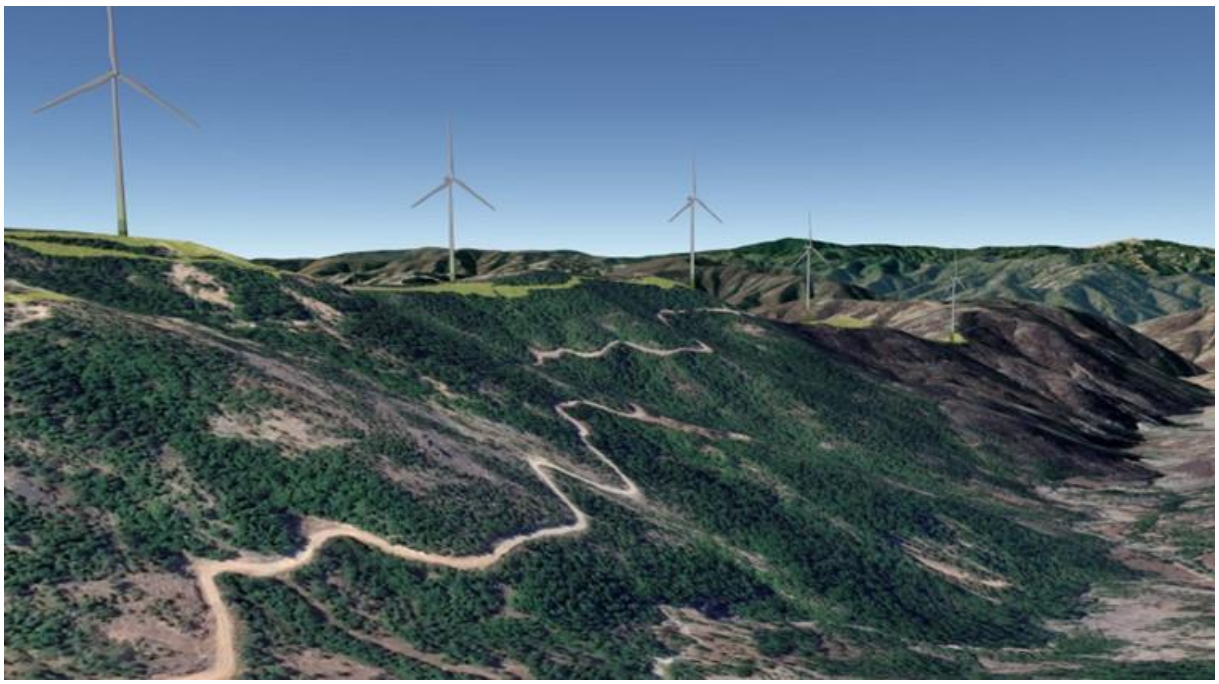


Photo 38 View of the installation area of W/T 13 & 17

Photorealistic illustration of Photo 38

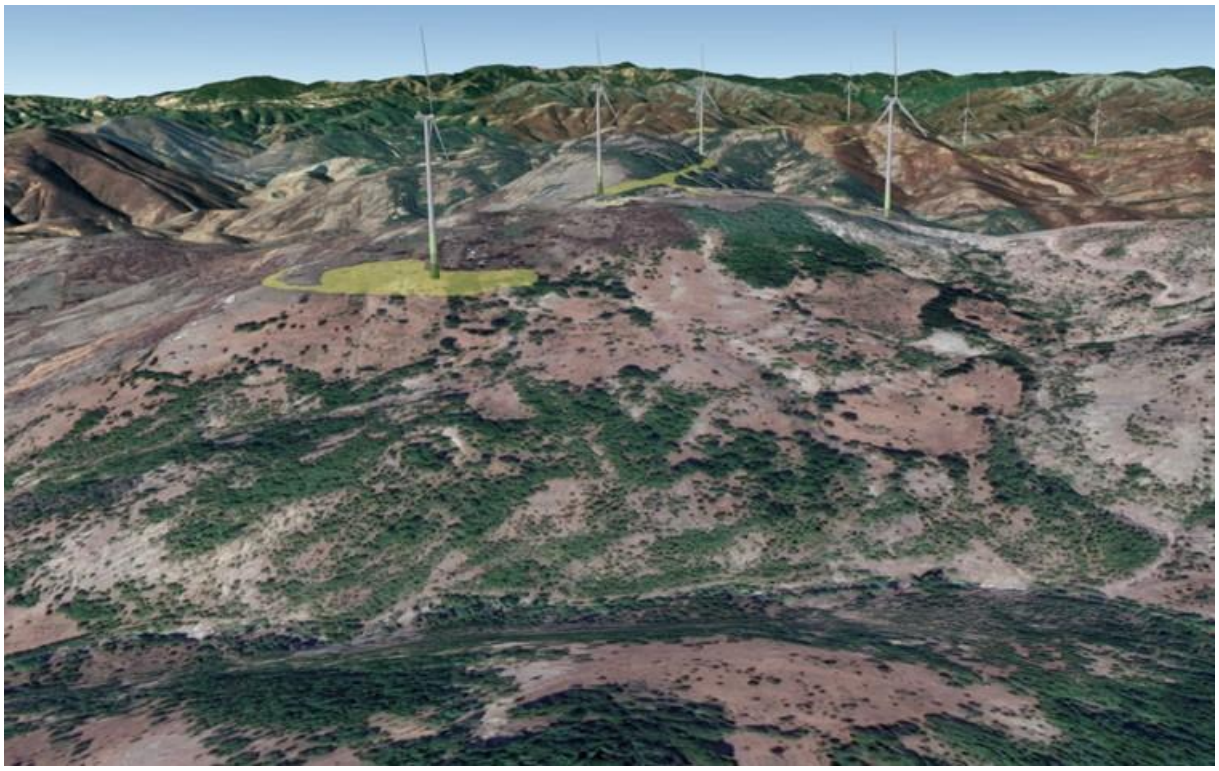


Photo 39 View of the installation area of W/T 23 & 17

Photorealistic illustration of Photo 39

Photo 40 Panoramic view of the northern Polygon, from the plane of W/T15

Photorealistic illustration of Photograph 40

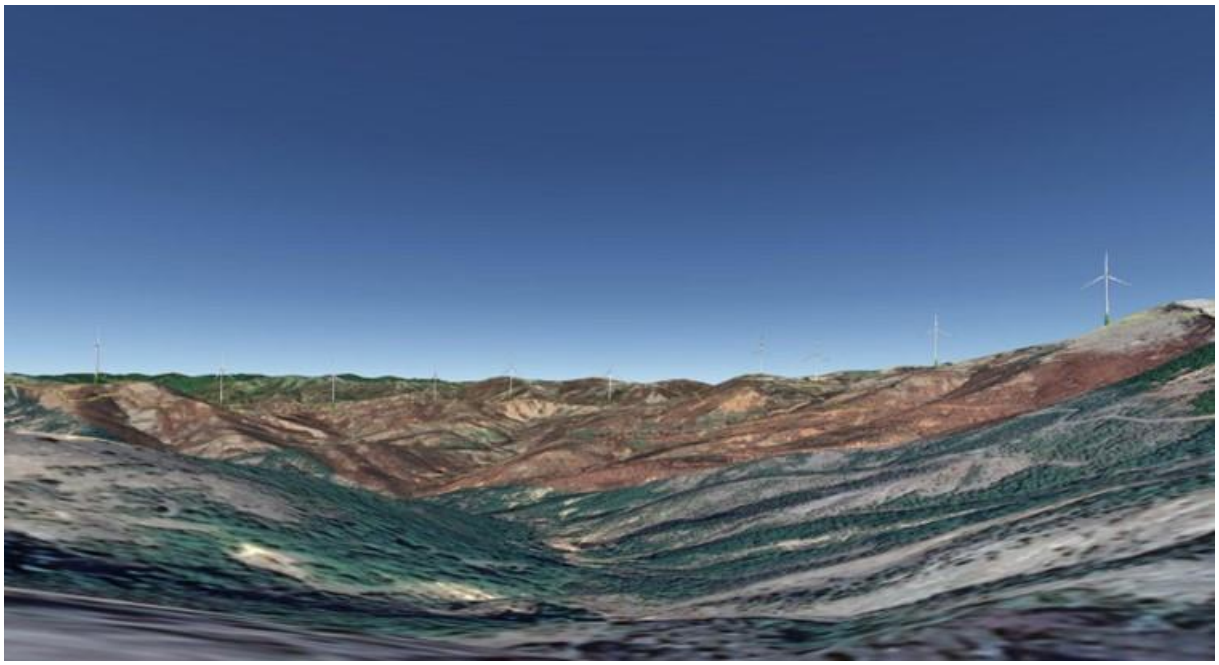


Photo 41 Panoramic view of the northern Polygon, from the plane of W/T15

Photorealistic illustration of Photo 41

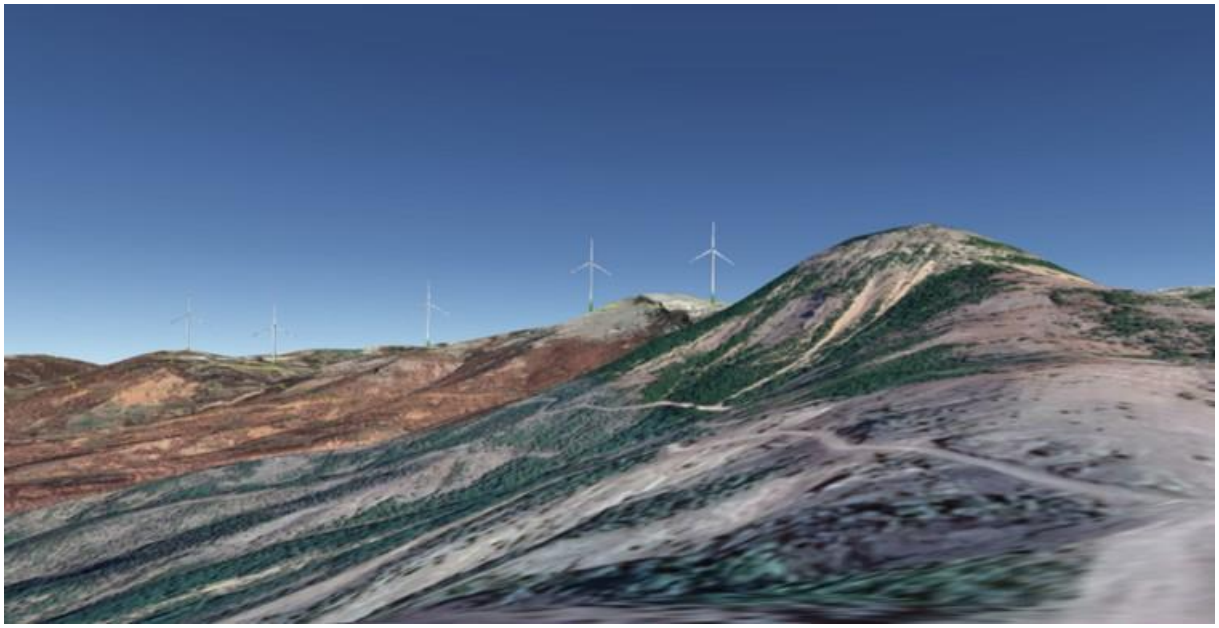


Photo 42 Installation area of W/T17 & 18 of ASPHE

Photo 43 Installation area of W/T 15 and 16

Photo 44 Installation area of W/T 15 and 16

Photo 45 Installation area of W/T 15 and 16

Photo 46 Installation area of W/T 15 and 16

Photo 47

Photo 48 Panoramic view of the northern polygon

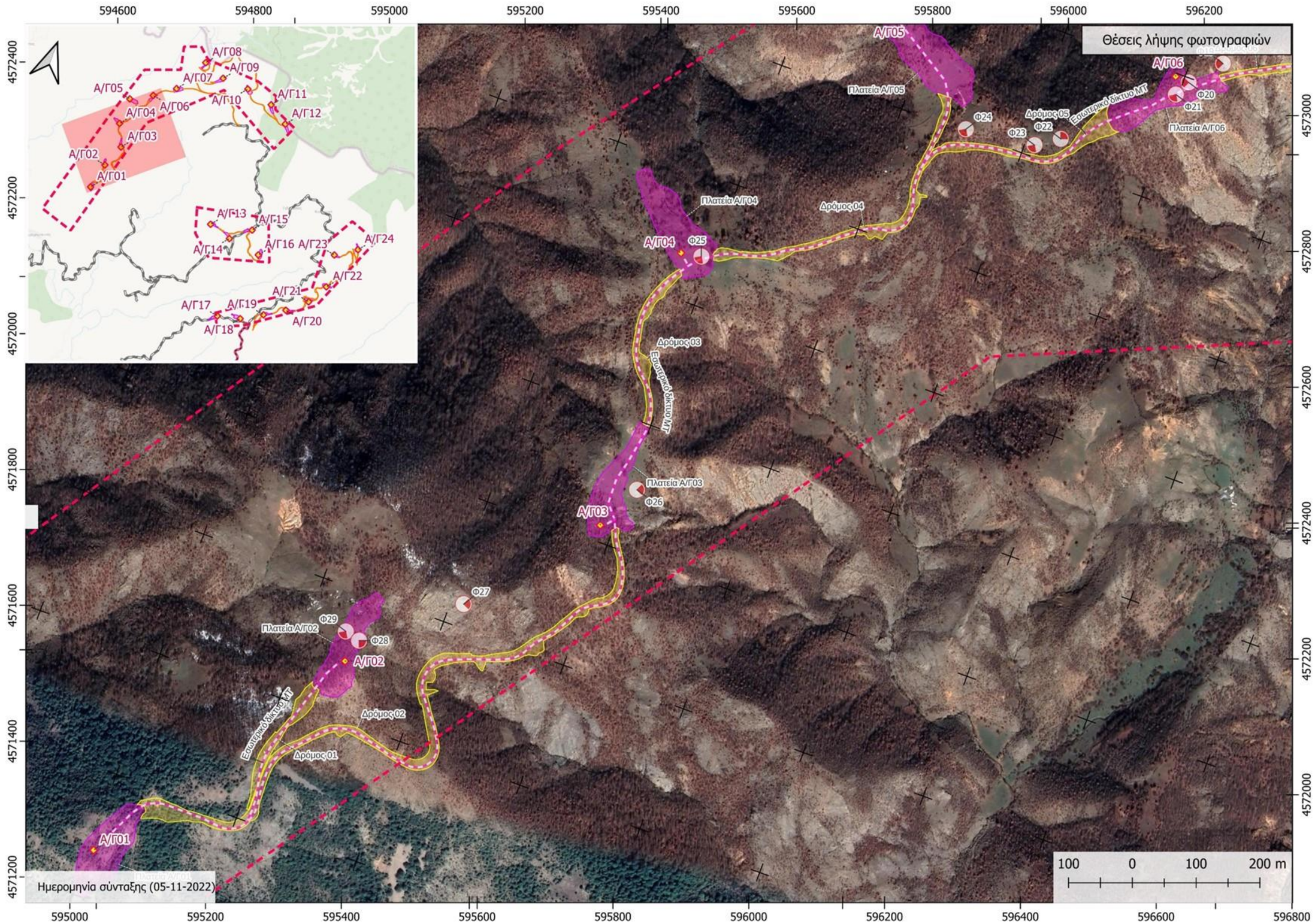
Photo 49 Panoramic view of the northern polygon

Photo 50 Installation area of W/T 13 & 14

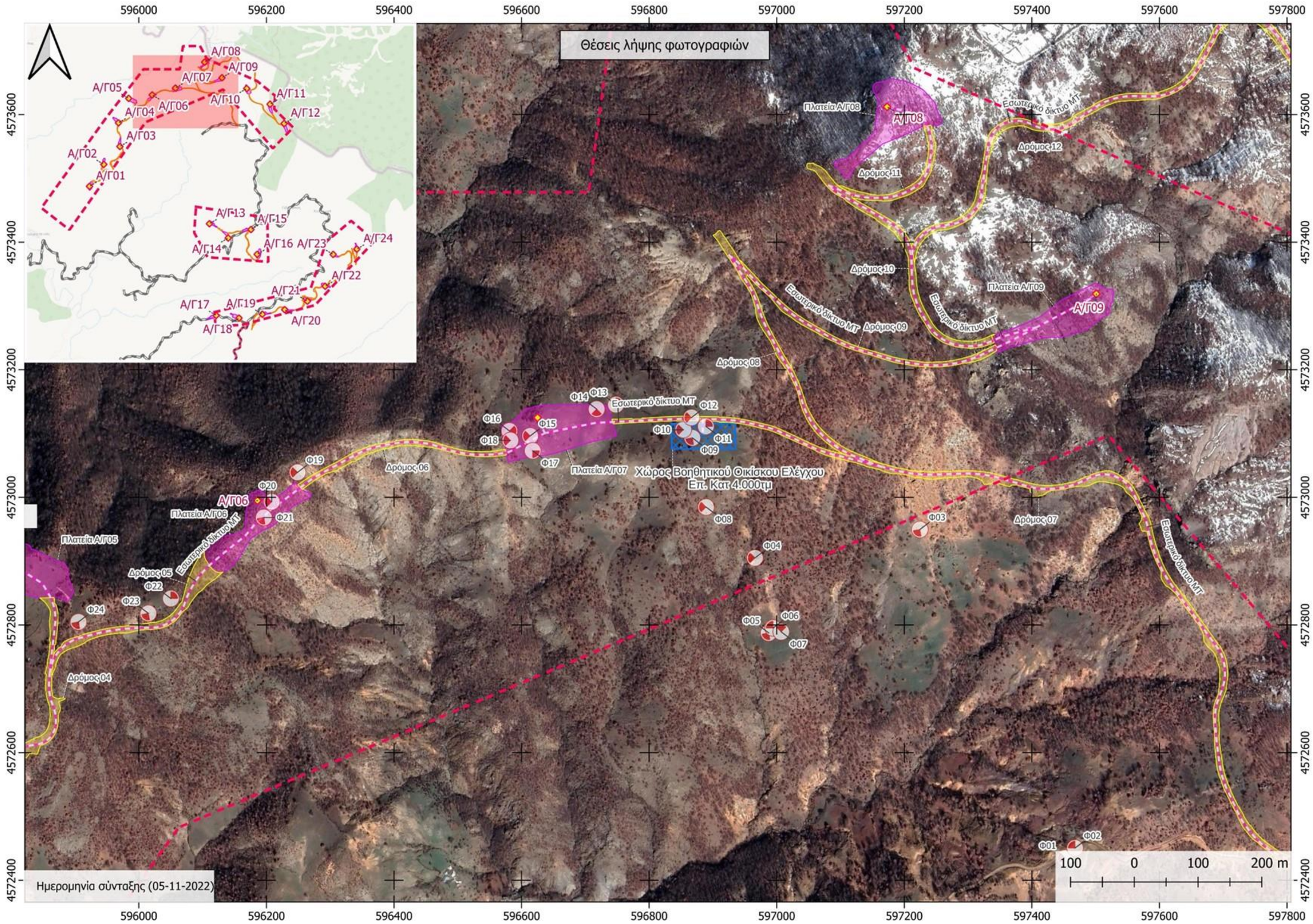
Photo 51 Installation area of W/T 14, 15 & 16

Photo 52 Panoramic view of the southern polygon

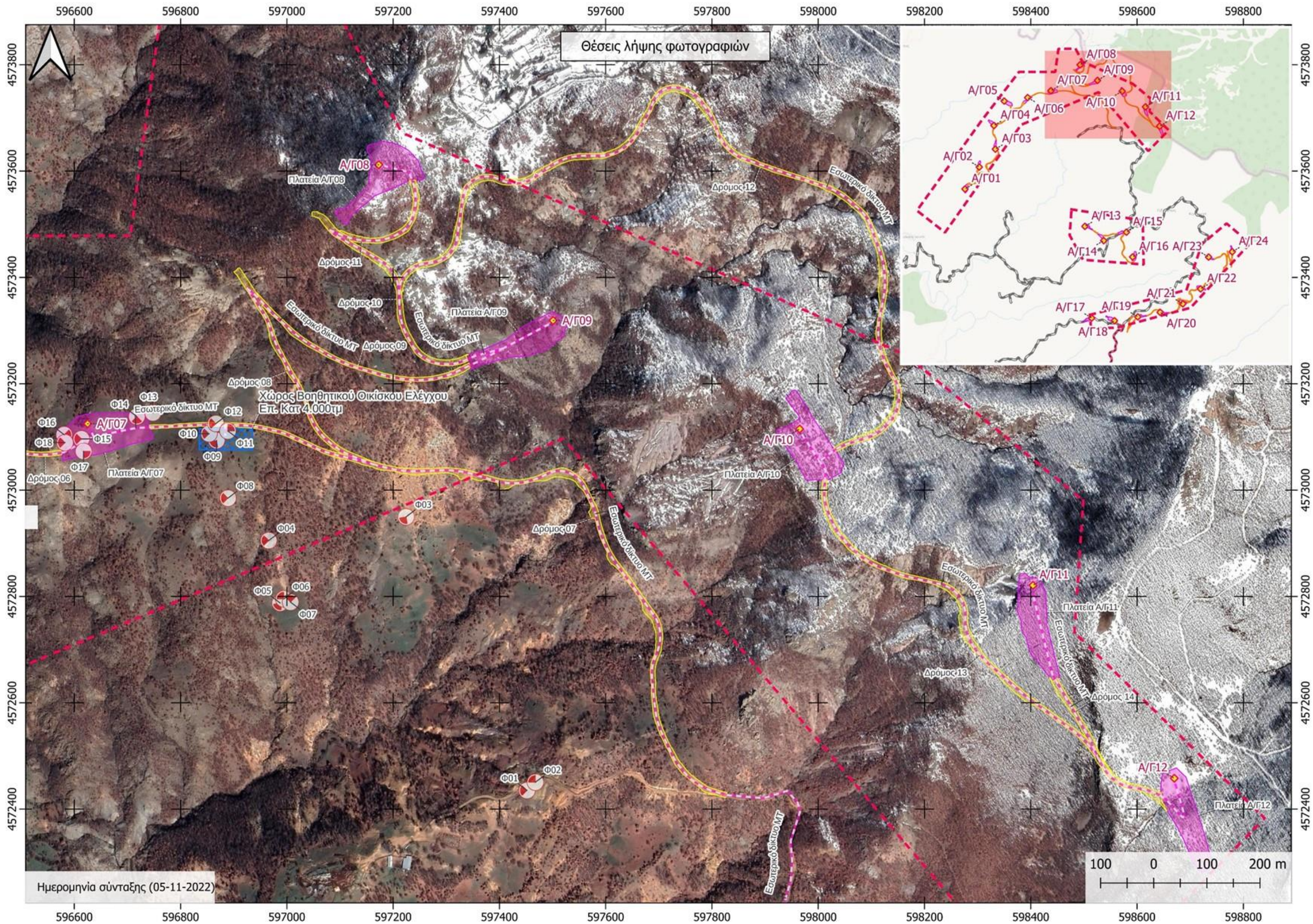
Map 75 Photo locations (North polygon W/T 1, 2, 3, 3, 4, 5 & 6)



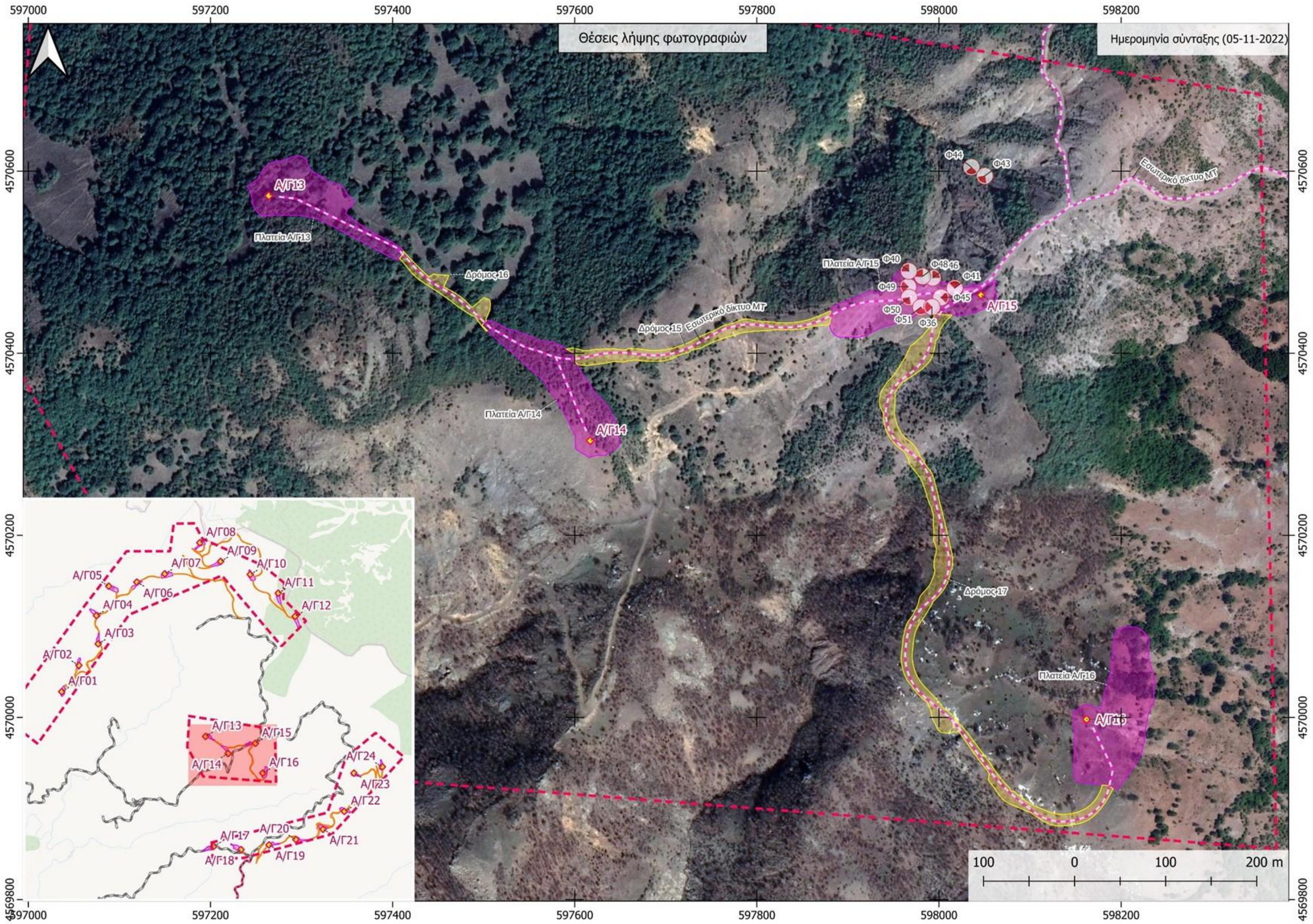
Map 76 Photo locations (North polygon W/T 6, 7, 8, & 9)



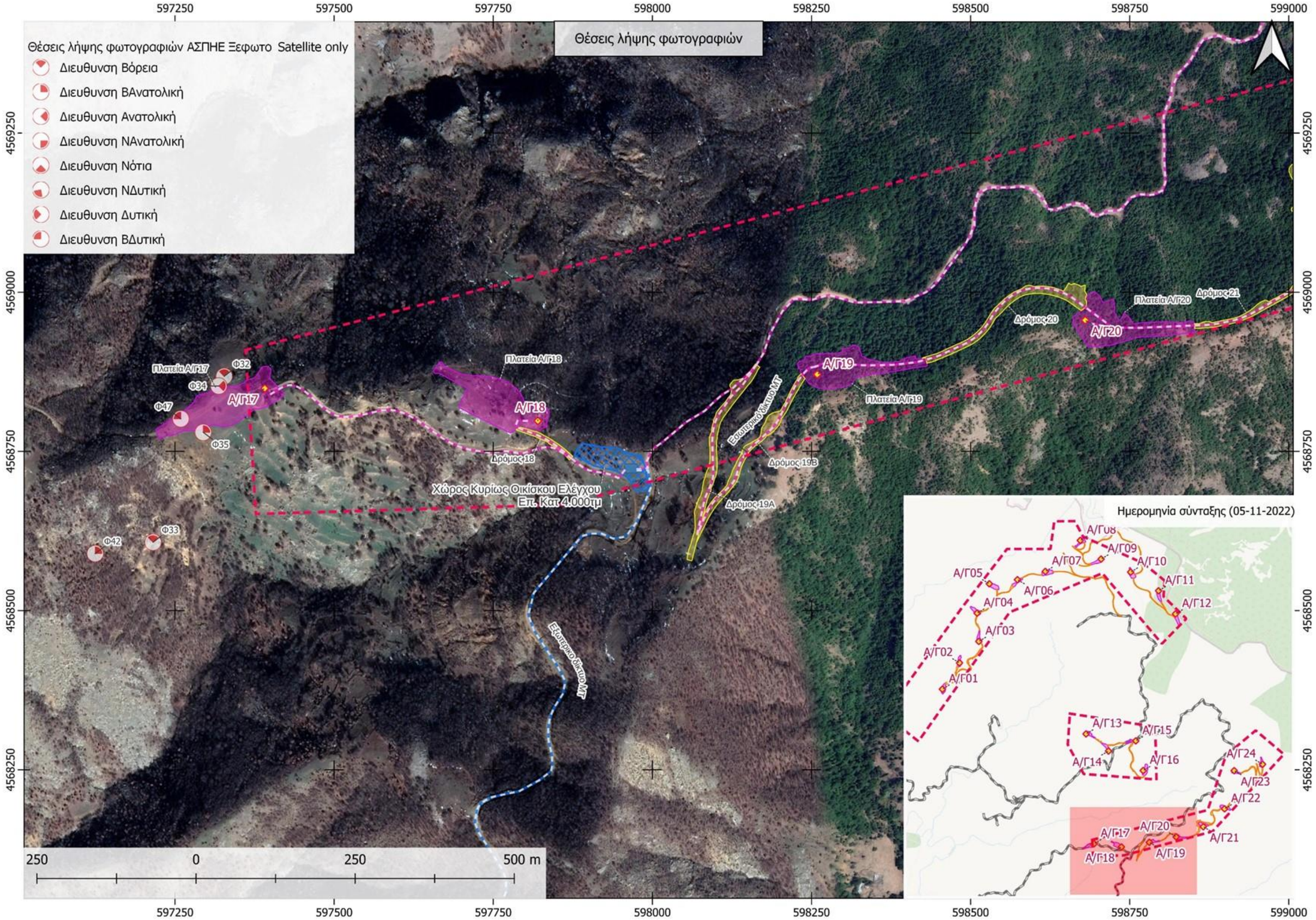
Map 77 Photo locations (North polygon W/T 7, 8, 9, 10, 11 & 12)



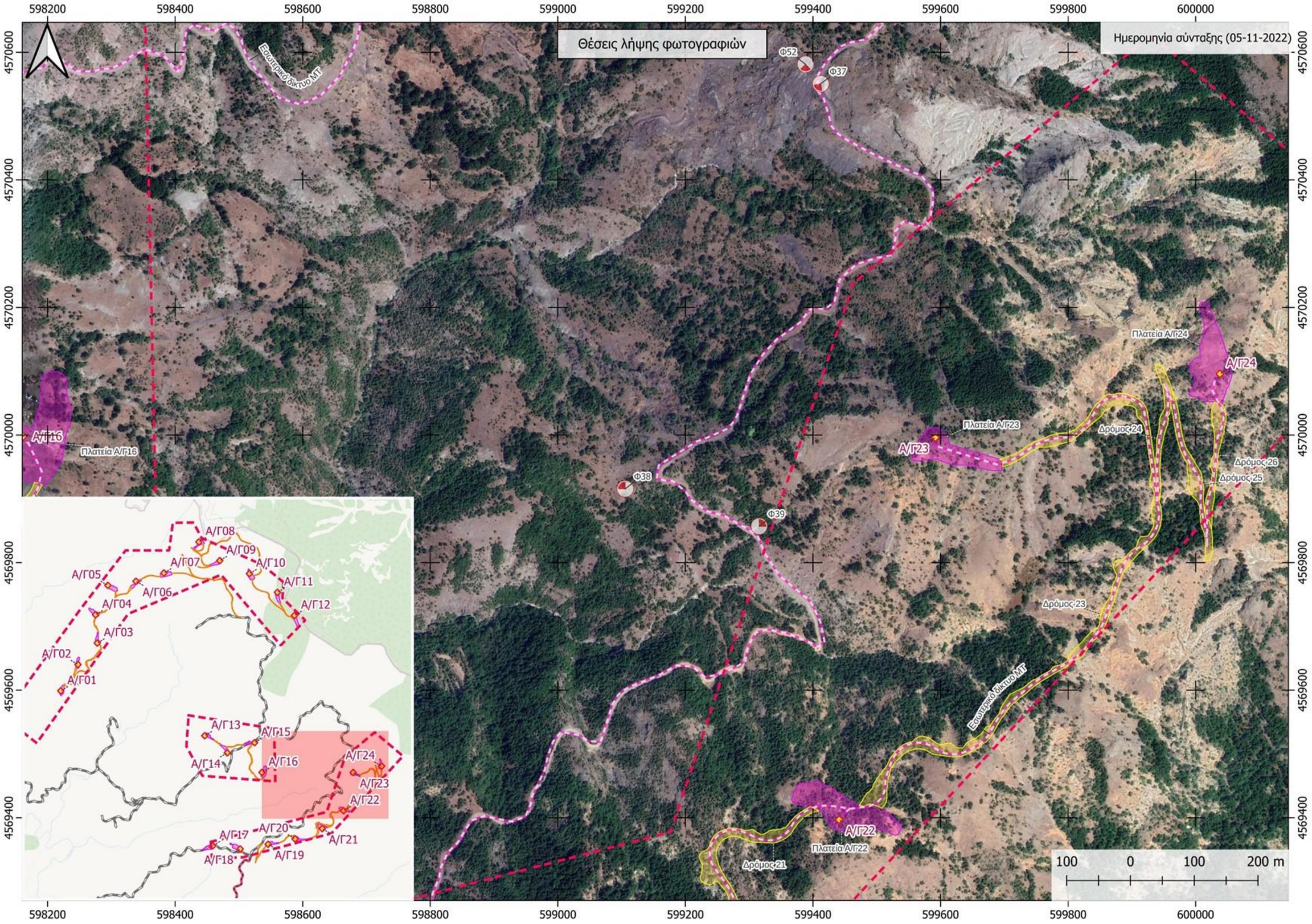
Map 78 Photo locations central polygon (W/T 13, 14, 15 & 16)



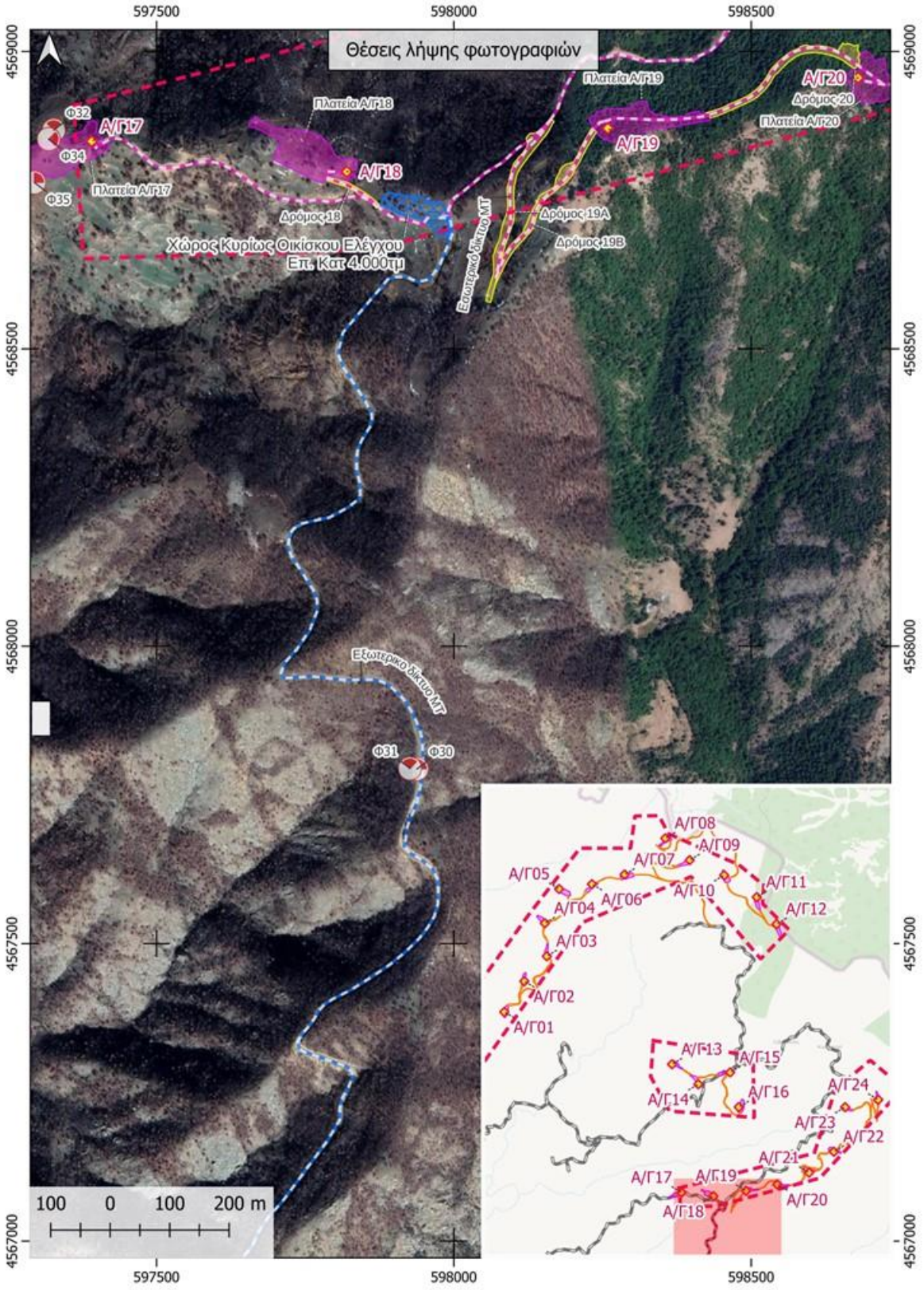
Map 79 Photo locations, southern polygon (W/T 17, 18, 19 & 20).



Map 80 Photo locations (South polygon W/T 22, 23 & 24)



Map 81 Photo locations, southern polygon (W/T 17, 18, 19 & 20)



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16.1 BIBLIOGRAPHY - SOURCES

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17 SIGNATURES ON VISAS

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