Trans Adriatic Pipeline

Critical Habitat Assessment

NON-TECHNICAL SUMMARY

The Trans Adriatic Pipeline (TAP) project traverses Greece, Albania and Italy. The project area of influence (AOI) falls entirely within the Mediterranean Basin biodiversity hotspot as identified by the Critical Ecosystem Partnership Fund (CEPF). This document provides a project-wide technical assessment of the extent of, and qualifying criteria for, the critical habitats that are relevant to the TAP project.

Individual Environmental and Social Impact Assessments (ESIAs) were produced for project infrastructure in Greece, Albania and Italy, with the latter two also addressing the crossing of the Adriatic Sea, The ESIAs comply with the legislative frameworks of TAP's host countries, the European Union (EU) regulatory impact assessment and environmental framework, and the European Bank for Reconstruction and Development (EBRD) Performance Requirements (2008 edition).

The following performance requirements and standards are now being applied to the project specifically in relation to biodiversity: EBRD Performance Requirement 6 (PR6) 2014, European Investment Bank (EIB) Environmental and Social Handbook 3, 2013, and International Finance Corporation (IFC) Performance Standard 6 (PS6) 2012. Detailed guidance on critical habitat assessment is provided by the IFC Guidance Note 6 (accompanying PS6) and the EBRD Guidance Note on PR6, which were used to guide development of the critical habitat assessment methodology.

This Critical Habitat Assessment (CHA) report relates to the assessment of critical habitat only and focuses on the onshore and offshore pipeline corridor, compressor stations in Greece and Albania, the pipeline receiving terminal in Italy and new or upgraded access roads, primarily in Albania. The CHA has been developed using information provided by the ESIAs for each host country, including all addenda, targeted stakeholder engagement activities and additional biodiversity field studies undertaken since publication of the ESIAs.

Each performance standard has subtle differences in the definition of potential critical habitat triggers. The TAP CHA has therefore adopted a consolidated list of critical habitat criteria that generally reflect the more stringent requirements in any areas of discrepancy. For the purposes of this assessment, the approach outlined in Guidance Note 6 (IFC, 2012) was followed whereby the assessment of ecosystem services is conducted separately to the critical habitat assessment. Ecosystem services criteria were not addressed as part of this report.

The fulfilment of *one* of the following criteria is enough to qualify habitat as critical:

- **Criterion 1:** habitat of significant importance to Critically Endangered, Endangered or Vulnerable species, as defined by the International Union for the Conservation of Nature (IUCN) Red List of threatened species and in relevant national legislation
- **Criterion 2:** habitat important to the survival of endemic or restricted-range species, or unique assemblages of species
- **Criterion 3:** habitat supporting globally significant migratory and/or congregatory species
- **Criterion 4:** highly threatened or unique ecosystems
- **Criterion 5**: areas associated with key evolutionary processes

- **Criterion 6:** habitat of key scientific value.

All candidate biodiversity features within the AOI were assessed in detail to determine whether they triggered critical habitat. Reflecting the Lender performance requirements and TAP's desire to demonstrate best practice, the precautionary approach has been applied when assessing and qualifying critical habitats.

Based on screening of approximately 215 terrestrial or aquatic biodiversity features known to occur or potentially occurring within the project AOI, 61 biodiversity features were identified that could qualify for critical habitat under the adopted criteria: 15 mammals, seven birds, three amphibians, one reptile, 13 freshwater fish, two freshwater invertebrates, eight vascular plants, nine ecosystems and three areas of evolutionary importance.

Based on screening of approximately 188 marine biodiversity features known to occur or potentially occurring within the project AOI, three Annex I habitats (*Posidonia oceanica* seagrass beds, reefs and submarine leaking gas structures[1]), certain species within two lesser-order taxonomic groups (sponges and cnidaria) and seven higher-order species (European eel, bottlenose dolphin, striped dolphin, fin whale, Cuvier's beaked whale, Risso's dolphin and loggerhead turtle) were identified that could qualify for critical habitat.

The mitigation hierarchy was applied to avoid and actively mitigate potential impacts to biodiversity features identified in the CHA through minimisation, rehabilitation and offsetting. Specific mitigation measures are outlined in detail in the Ecological Management Plan (EcMP) and Supplementary Ecological Assessment (SEA), which also assesses the significance of any residual impacts on these features. The Biodiversity Offsets Strategy (BOS) describes the project's overall approach to biodiversity offsets and outlines how these could be developed to address the residual impacts identified. The BOS also makes provisions for cases where additional (indirect) conservation measures may be required for indeterminate impacts. A key objective of the BOS is to achieve net gain for critical habitat and no net loss for priority biodiversity features, including natural habitat, through direct and indirect offset measures.

Areas qualifying as critical habitat are illustrated in the overview and detailed figures in Appendix 6.

[1] This is a habitat type listed in Annex 1 of the EU Habitats Directive and refers to natural underwater vents rather than man-made structures.

CONTENTS

1 INTRODUCTION 9
1.1 Report purpose 9
1.2 The TAP project 9
1.3 Environmental context of the project area 10
1.4 Applicable standards 13
1.5 Scope of this report 14
2 METHODOLOGY 15
2.1 Definition of critical habitat 15
2.1.1 European Bank for Reconstruction and Development 15
2.1.2 International Finance Corporation 15
2.1.3 European Investment Bank 16
2.1.4 Consolidated critical habitat criteria 17
2.2 Criteria 1 to 3 methods 19
2.2.1 Step 1: Prepare a list of candidate species 19
2.2.2 Step 2: define spatial units of analysis 22
2.2.3 Step 3: obtain or calculate the global EOO, AOO, population size and/or number of known sites 27
2.2.4 Step 4: calculate the proportion of the global or national population represented by the units of analysis 28
2.2.5 Step 5: determine critical habitat tiers 28
2.3 Criterion 4: highly threatened or unique ecosystems 34
2.4 Criterion 5: Key evolutionary processes 36
2.5 Criterion 6: key scientific value 37
2.6 Data sources 37
2.6.1 Greece 38
2.6.2 Albania 38
2.6.3 Italy 39
2.6.4 Future surveys 39
2.7 Stakeholder engagement 41
2.7.1 Stakeholder identification 42
3 TERRESTRIAL CRITICAL HABITAT DETERMINATION 46
3.1 Screening 46
3.2 Criterion 1: threatened species 46
3.2.1 Brown bear 48
3.2.2 Golden jackal 51
3.2.3 Wildcat 52
3.2.4 Otter 53
3.2.5 European eel 56
3.2.6 Aggitis spined loach 58
3.2.7 Greek brook lamprey 58
3.2.8 Pelasgus prespensis 59
3.2.9 Pelagos trout 60
3.2.10 Alburnus vistonicus 60

3.2.11 Oxynoemacheilus pindus 61
3.2.12 Cobitis puncticulata 61
3.2.13 Greater spotted eagle 61
3.2.14 Lesser spotted eagle 62
3.2.15 Booted eagle 62
3.2.16 Black kite 63
3.2.17 Montagu's harrier 63
3.2.18 Eagle owl 64
3.2.19 Dalmatian pelican 64
3.2.20 Albanian pool frog 65
3.2.21 Fire-bellied toad 65
3.2.22 Four-lined snake 66
3.2.23 Macedonian crested newt 66
3.2.24 Thick-shelled river mussel 67
3.2.25 Turcorientalia hohenackeri 67
3.2.26 Mountain tea 67
3.2.27 Yellow monk's-hood 68
3.2.28 Deadly nightshade 69
3.2.29 Albanian lily 70
3.3 Criterion 2: endemic / restricted range species 71
3.3.1 Aggitis spined loach 72
3.3.2 Greek brook lamprey 72
3.3.3 Devoll riffle minnow 72
3.3.4 Osum riffle minnow 73
3.3.5 Pelagos trout 73
3.3.6 Alburnus vistonicus 73
3.3.7 Oxynoemacheilus pindus 73
3.3.8 Pelasgus minutus 74
3.3.9 Alburnoides sp. volvi 74
3.3.10 Barbus macedonicus 74
3.3.11 Cobitis puncticulata 74
3.3.12 Turcorientalia hohenackeri 74
3.3.13 Dianthus formanekii 75
3.3.14 Dianthus tenuiflorous 75
3.3.15 Verbascum dingleri 75
3.3.16 Mountain tea 76
3.3.17 Albanian lily 76
3.3.18 Serpentine false-brome 76
3.3.19 Albanian pool frog 76
3.4 Criterion 3: migratory / congregatory species 77
3.4.1 Military tunnel 8 78
3.4.2 Pirogosh Cave 78
3.4.3 Additional DMUs for congregatory bats 78
3.5 Criterion 4: highly threatened or unique ecosystems 79
3.5.1 Pseudo-steppe with grasses and annuals of the *Thero-brachypodietea* 81
3.5.2 Wooded dunes with maritime pine (*Pinus pinea*) and/or *Pinus pinaster* 82
3.5.3 Mediterranean temporary ponds 82

3.5.4 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* 82
3.5.5 (Sub-) Mediterranean pine forests with endemic black pine 83
3.5.6 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*alno-padion, alnion incanae, salicion albae*) 83
3.5.7 Mediterranean pine forests with endemic Mesogean pines 84
3.5.8 Asperulo-Fagetum beech forests 84
3.5.9 Luzulo-Fagetum beech forests 85
3.6 Criterion 5: key evolutionary processes 85
3.6.1 Macedonian and Western Crested Newt Interaction Zone 85
3.6.2 Vithkuq-Ostrovice Serpentine Outcrops 85
3.6.3 Prespa Lakes 86
3.7 Criterion 6: key scientific value 86
4 MARINE CRITICAL HABITAT DETERMINATION 87
4.1 Overview 87
4.2 Screening 89
4.2.1 Marine ornithology 90
4.3 Criterion 1: threatened species 91
4.3.1 Algae 92
4.3.2 Flowering plants 94
4.3.3 Sponges and cnidarians 94
4.3.4 Bony fish 99
4.3.5 Turtles 100
4.3.6 Mediterranean monk seal 101
4.3.7 Cetaceans 102
4.4 Criterion 2: endemic / restricted range species 102
4.4.1 Mediterranean deep-water kelp 103
4.4.2 Adriatic Fucus 103
4.4.3 Adriatic sturgeon 103
4.4.4 Canestrini's goby 103
4.4.5 Mediterranean monk seal 104
4.4.6 Migratory fish 105
4.4.7 Turtles 107
4.4.8 Marine mammals 108
4.5 Criterion 4: highly threatened or unique ecosystems 111
4.6 Criterion 5: key evolutionary processes 113
4.6.1 Evolutionarily Distinct and Globally Endangered (EDGE) species 113
4.7 Criterion 6: key scientific value 114
5 CONCLUSIONS AND IMPLICATIONS FOR THE TAP PROJECT 116
5.1 Next steps and recommendations 117
6 REFERENCES 118

TABLES

Table 2-1: Offshore AOI and DMUs 26
Table 2-2: Quantitative thresholds of Tier 1 and 2 critical habitat 28
Table 2-3 Comparison of the Red List of Ecosystems criteria and the factors taken into account when identifying EU Annex 1 Priority Habitats. 35
Table 2-4 Critical habitat assessment stakeholders 43

Table 3-1 Critical habitat triggers under Criterion 1 46
Table 3-2 DMUs for brown bear in Greece and Albania 48
Table 3-3: Golden jackal DMUs in Greece and Albania 51
Table 3-4: Otter DMUs in Greece and Albania 54
Table 3-5: European eel DMUs in Albania and Greece 57
Table 3-6: Summary of information for mountain tea 68
Table 3-7: Summary of information for yellow monk's-hood 69
Table 3-8: Summary of information for deadly nightshade in Albania 70
Table 3-9: Summary of information for Albanian lily 70
Table 3-10: Critical habitat triggers under Criterion 2 71
Table 3-11: Summary of information for *Festucopsis serpentini* 76
Table 3-12: Critical habitat triggers under Criterion 3 77
Table 3-13. Habitats considered in this and other biodiversity assessments 79
Table 4-1: Summary of marine critical habitat determination results 88
Table 4-2: Taxa screened out of the marine critical habitat assessment on basis of offshore AOI of project 89
Table 4-3: Critical habitat triggers under Criterion 1 91
Table 4-4 Deepwater habitats/species of CH interest observed in video review (*N.B. all tentative identifications require expert confirmation*) 98
Table 4-5: Critical habitat triggers under Criterion 3 104
Table 4-6: Critical habitat triggers under Criterion 4 111
Table 4-7: Critical habitat triggers under Criterion 6 114

FIGURES

Figure 1: TAP route overview 10
Figure 2: Mediterranean Basin biodiversity hotspot 11
Figure 3: Southwest Balkans priority key biodiversity area (Source: KBA Partnership) 12
Figure 4: EBSAs in the Mediterranean Basin 13
Figure 5: Screening process for protected sites and designated areas 18
Figure 6: Criterion 1 determination flowchart 31
Figure 7: Criterion 2 determination flowchart 32
Figure 8: Criterion 3 determination flowchart 33
Figure 9 Distribution of otter in Albania 55
Figure 10 Critical habitat overview 264
Figure 11 Offshore DMUs 266
Figure 12 Large carnivore DMUs in Greece 268
Figure 13 Large carnivore DMUs in Albania 276
Figure 14 DMUs for aquatic species in Greece 281
Figure 15 DMUs for aquatic species in Albania 292
Figure 16 DMU for avifauna in Greece 294
Figure 17 DMUs for avifauna in Albania 303
Figure 18 DMUs for amphibians and reptiles in Greece 307
Figure 19 DMUs for amphibians and reptiles in Albania 316
Figure 20 DMUs for freshwater invertebrates in Greece 320
Figure 21 DMU for vascular plants in Albania 325
Figure 22 DMUs for vascular plants in Greece 327

Figure 23 DMUs for endemic species in Albania 330
Figure 24 DMUs for endemic species in Greece 334
Figure 25 DMUs for congregatory bats in Albania 341
Figure 26 DMUs for Criterion 4 in Italy 346
Figure 27 DMUs for Criterion 4 in Albania 348
Figure 28 DMUs for Criterion 4 in Greece 352
Figure 29 DMUs for Criterion 5 in Greece 357
Figure 30 DMUs for Criterion 5 in Albania 359
Figure 31 DMUs for grey wolf in Albania 362
Figure 32 DMUs for grey wolf in Greece 364
Figure 33 DMUs for Criterion 3 in Greece 371
Figure 34 Known sensitive deepwater habitat of the Southern Adriatic 389
Figure 35 Deepwater habitat review KP 10-20 391
Figure 36 Deepwater habitat review KP20-30 393
Figure 37 Deepwater habitat review KP30-40 395
Figure 38 Deepwater habitat review KP40-45 397
Figure 39 Deepwater habitat review KP45-50 399
Figure 40 Deepwater habitat review KP50-60 401
Figure 41 Deepwater habitat review KP60-70 403
Figure 42 Deepwater habitat review KP70-80 405

APPENDICES

APPENDIX 1 CANDIDATE SPECIES OF CRITICAL HABITAT TRIGGERS 126
APPENDIX 2 STAKEHOLDER ENGAGEMENT ACTIVITIES 152
APPENDIX 3 TERRESTRIAL BIODIVERSITY FEATURES NOT TRIGGERING CRITICAL HABITAT 198
APPENDIX 4 MARINE BIODIVERSITY FEATURES SCREENED OUT OF THE CRITICAL HABITAT ASSESSMENT 234
APPENDIX 5 SCREENING OF PROTECTED SITES AND DESIGNATED AREAS 239
APPENDIX 6 FIGURES 264
APPENDIX 7 DEEPWATER HABITAT REVIEW 377

1 INTRODUCTION

1.1 Report purpose

This document provides a technical assessment of the extent of critical habitats relevant to the Trans Adriatic Pipeline (TAP) project based on a set of qualifying criteria established by the performance requirements and standards of three financial institutions. As further defined in Section 2.1 of this report, critical habitats are areas of high biodiversity value where stringent requirements must be met if project activities are to be permitted within them (see Section 5). Where compliance with these requirements is not possible, project activities should be avoided. This project-wide critical habitat assessment has been conducted following the development and approval of individual Environmental and Social Impact Assessments (ESIAs) for each of TAP's host countries (Greece, Albania and Italy). It will provide input for the project's overall Ecological Management Plan (EcMP), Supplementary Ecological Assessment (SEA) and Biodiversity Offsets Strategy (BOS).

1.2 The TAP project

The TAP project is a greenfield development comprising the design, construction and operation of an 878 km pipeline (see Figure 1) that will enable Caspian natural gas to be transported to Europe through Greece, Albania and Italy by 2020. Conecting with the Trans Anatolian Pipeline (TANAP) at the Greece-Turkey border, TAP will cross northern Greece, Albania and the Adriatic Sea before coming ashore in southern Italy to connect to the Italian natural gas network.

The pipeline follows a carefully selected route that is designed to minimise risk by seeking to avoid densely populated and environmentally sensitive areas, and by ensuring that it runs through the shortest and shallowest route offshore.

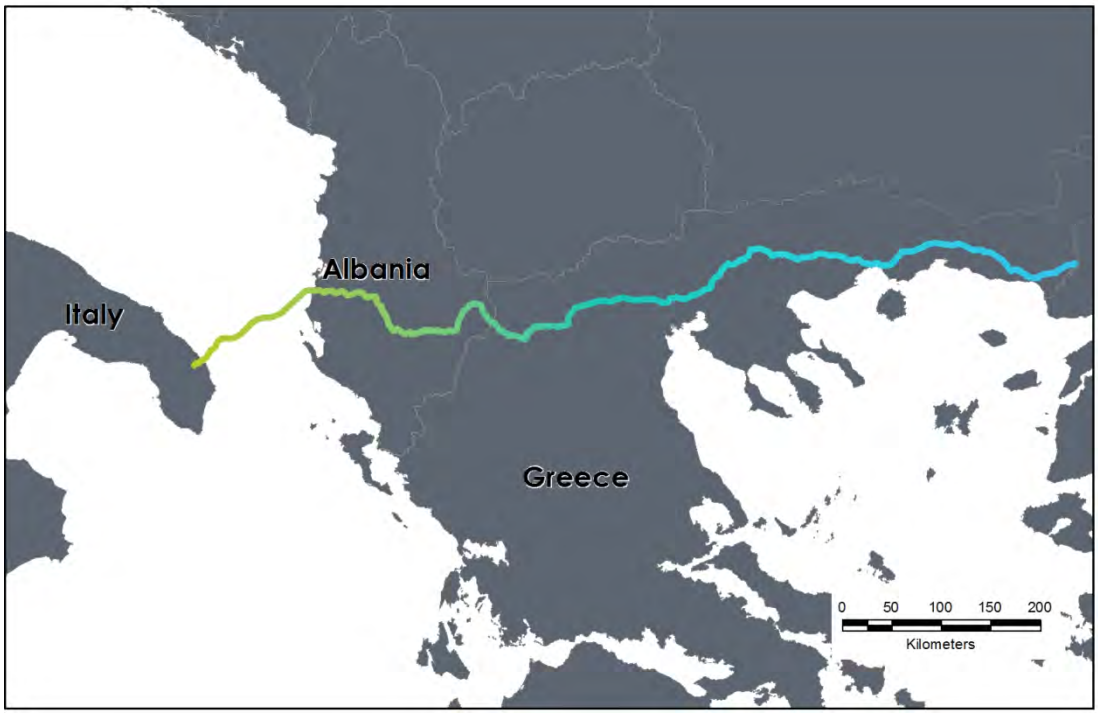


Figure 1: TAP route overview

The pipeline's initial design capacity of 10 billion cubic metres per annum (bcma) can rise to about 20 bcma by increasing the system's compression capacity. The pipeline will span 773 km onshore (550 km in Greece, 215 km in Albania and 8 km in Italy) and 105 km offshore. Its design has been developed in accordance with recognised national and international safety standards.

Early construction works started in 2015 with the building and upgrading of Albanian roads and bridges required to access the pipe-laying sites. Main construction activities commenced in 2016 and the project is designed to be operational in 2020. The project schedule is in full alignment with upstream developments. This means that exact timings will depend on the Shah Deniz Stage 2 development in the Caspian Sea and construction of TANAP.

1.3 Environmental context of the project area

The project area of influence (AOI[2]) is located entirely within the Mediterranean Basin biodiversity hotspot[3], as identified by the Critical Ecosystem Partnership Fund (CEPF)[4]. The Mediterranean Basin biodiversity hotspot is the second largest in the world.

[2] The project AOI encompasses environmental and social receptors that may be impacted directly or indirectly by project activities. It is defined individually for each receptor but is necessarily broader than the physical footprint of the project. More information on the project AOI is provided in the EcMP.

[3] Globally, the 36 identified biodiversity hotspots represent the Earth's most biologically rich and threatened areas. To qualify as a hotspot a region must a) contain at least 1,500 species of vascular plant as endemics and b) have lost at least 70% of its original habitat.

[4] A joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank.

Covering more than two million square kilometres, it stretches west to east from Portugal to Jordan and north to south from northern Italy to Cape Verde (Figure 2). It is the third richest hotspot in the world in terms of its plant diversity (*Mittermeier et al. 2004*).

Figure 2: Mediterranean Basin biodiversity hotspot

Evergreen oak trees, coniferous and deciduous forests form the climax vegetation of large areas of the hotspot. Nevertheless, much of this has disappeared due to thousands of years of human settlement and habitat modification that has distinctly altered the climax vegetation (*Tucker and Evans 1997*). Today, the most widespread vegetation type is the hard-leafed or sclerophyllus shrubland known as maquis, maintained by grazing and sporadic fires. Many endemic and restricted-range plants depend on this anthropogenic habitat, meaning that several species are threatened by rural abandonment and changes to land use (*Tucker and Evans 1997*).

Within the Mediterranean Basin biodiversity hotspot, the CEPF has identified 17 corridors incorporating 435 key biodiversity areas (KBAs). One of these, the Southwest Balkans corridor (Figure 3), overlaps with the project AOI in Albania and Greece. This corridor was primarily identified for the unique freshwater biodiversity associated with the Prespa and Ohrid Lake systems (shared between Albania, Greece and FYR Macedonia), the Skadar Lake system (shared between Albania and Montenegro) and the Dojran Lake KBA (shared between FYR Macedonia and Greece). The corridor also includes many coastal KBAs for breeding water birds and endemic plants. Although many of these KBAs are legally protected areas, enforcement and management of the protected areas is inadequate. In addition, many of these protected areas are multiple-use zones and do not effectively conserve the nature found in the KBAs. Hunting and overfishing are the key threats driving biodiversity loss in the corridor. Habitat destruction along the coast is also driven by continued tourism-related building.

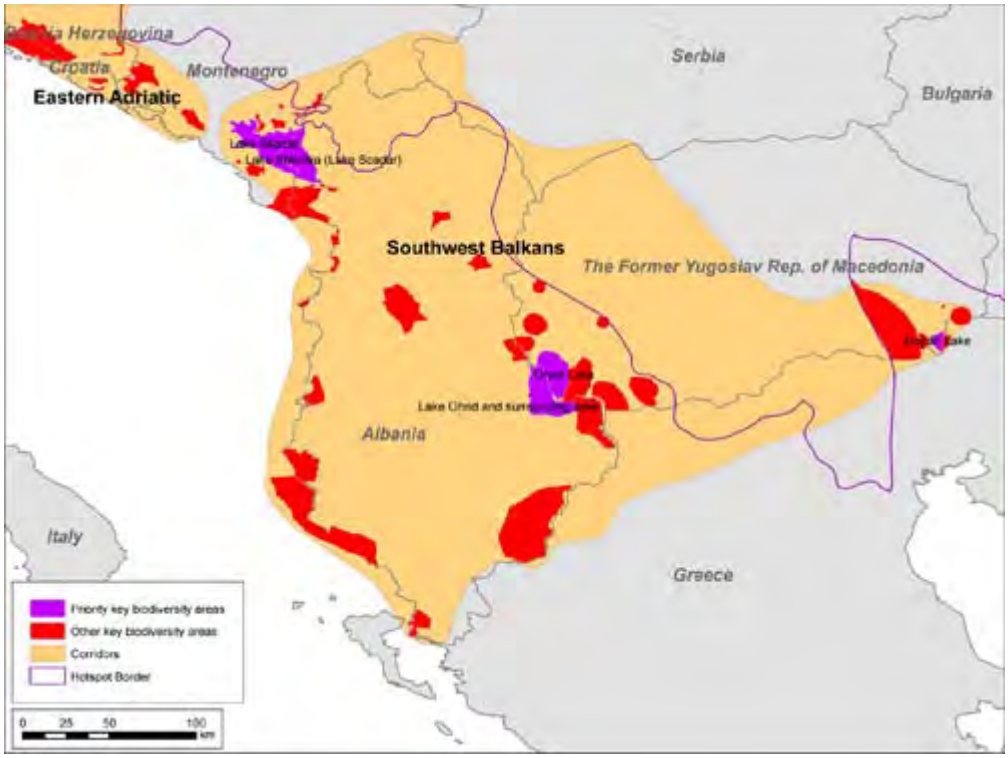


Figure 3: Southwest Balkans priority key biodiversity area (Source: KBA Partnership)

The offshore pipeline route intersects part of the South Adriatic and Ionian Strait Ecologically or Biologically Sensitive Area (EBSA), which is located in the central southern part of the southern Adriatic basin and the northern Ionian Sea (Figure 4). The EBSA is characterised by steep slopes, high salinity and a maximum depth of up to 1500 m. It supports an array of marine megafauna including the striped dolphin (*Stenella coeruleoalba*) and loggerhead turtle (*Caretta caretta*), both of which are listed in Annex II of the Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD) Protocol under the framework of the Barcelona Convention. Benthos (organisms that live on or near the seabed) includes deep-sea cold water coral communities and deep-sea sponge aggregations. Tuna, swordfish and a variety of sharks and rays are also found within the region.

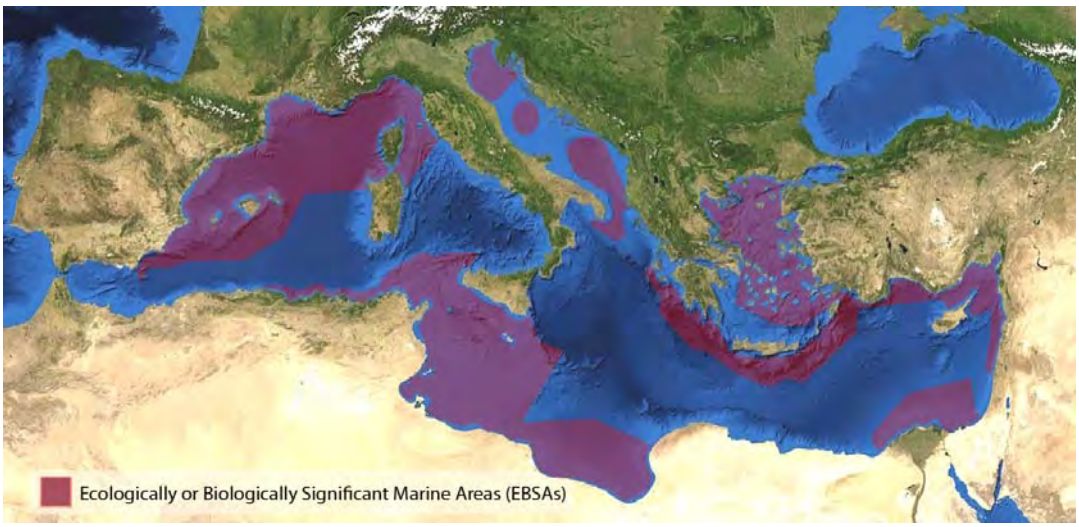


Figure 4: EBSAs in the Mediterranean Basin

1.4 Applicable standards

The legislative framework for each of the three host countries, Greece, Albania and Italy, is described within the respective ESIAs. Each ESIA describes and analyses current laws, planning instruments and regulatory constraints relevant to the project.

To enhance consistency and uniformity across the project, all potential impacts along the pipeline route were also assessed against the European Union (EU) regulatory impact assessment and environmental framework. As best practice, TAP also used the EU framework as a benchmark in Albania. Although Albania is not yet an EU member state, it is an accession country.

During preparation of the ESIAs, TAP voluntarily decided to apply the European Bank for Reconstruction and Development (EBRD) performance requirements (2008 edition[5]) as the main international standards for compliance during the execution of the planned project activities.

TAP is now planning to raise finance from multilateral agencies, export credit agencies and commercial banks. The following financial institution performance requirements and standards are therefore being applied to the project specifically in relation to biodiversity:

- European Bank for Reconstruction and Development (EBRD) Performance Requirement 6 (PR6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources, 2014
- European Investment Bank (EIB) Environmental and Social Handbook – 3 Standards on Biodiversity and Ecosystems, 2013
- International Finance Corporation (IFC) Performance Standard 6 (PS6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources, 2012

[5] Subsequent to the publication of the TAP ESIAs, the EBRD updated its performance requirements in 2014.

1.5 Scope of this report

This report relates to the identification and approximate delineation of critical habitat only. In accordance with critical habitat assessment guidelines, it identifies which areas in the vicinity of the project are considered as critical habitat regardless of whether or not the project may affect them. However, there are some exceptions where a lack of impact pathway has been used to screen out some potential biodiversity features. The assessment of actual potential impacts on these critical habitat triggers will be assessed separately in the Supplementary Ecological Assessment (SEA).

Performance requirements and standards relating to natural[6] and semi-natural[7] (also referred to as modified[8]) habitats (as opposed to critical habitat), including priority biodiversity features[9] that do not qualify as critical habitat, are addressed by the project-wide SEA. The SEA links closely to the Ecological Management Plan (EcMP) which focuses on specific mitigation and monitoring measures for key biodiversity features, as well as defining roles and responsibilities for wider ecological management as part of TAP's Environmental and Social Management System (ESMS). Requirements relating to biodiversity offsets[10] and compensation are addressed in the project-wide Biodiversity Offsets Strategy (BOS), as informed by the assessment of impacts in the SEA.

This report focuses on the pipeline corridor (both onshore and offshore), compressor stations (Greece and Albania), pipeline receiving terminal (Italy) and new or upgraded access roads (primarily in Albania). TAP's ESMS includes an Additional Land Take Procedure, which describes the process that must be undertaken before creating any new areas of disturbance. This procedure includes a requirement for the Contractor to undertake a field survey and subsequent environmental and social assessment, which must be reviewed by TAP before approval for disturbance is given. This internal process is required to ensure that prior to any additional land disturbance, the risk of encountering areas of high biodiversity value (including critical habitat) is considered.

[6] Natural habitats are defined as areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition (IFC 2012); and areas where ecological assemblages, function and species composition are mainly attributable to natural evolutionary processes and have not been substantially modified by human activities (EIB, 2013). In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. No net loss is defined as the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimise the project's impacts (IFC, 2012).

[7] Semi-natural habitats are areas where ecological assemblages have been substantially modified in their composition, balance or function by human activities. These ecosystems have often evolved through traditional agriculture, pastoral or other human activities and depend on their continuation. Despite not being natural, these habitats and ecosystems often present high value in terms of biodiversity and ecosystem services (EIB, 2013)

[8] Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition (IFC, 2012)

[9] Priority biodiversity features have a high, but not the highest, degree of irreplaceability and/or vulnerability. Although a level below critical habitat in sensitivity, they still require careful consideration during project assessment and impact mitigation (EBRD GN PR6, 2014).

[10] Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimisation and restoration measures have been taken (IFC, 2012)

2 METHODOLOGY

Detailed guidance on critical habitat assessment is available from the IFC (Guidance Note 6, 2012 'Biodiversity Conservation and Sustainable Management of Living Natural Resources'), with some additional guidance available from the EBRD (Guidance Note to Performance Requirement 6, 2014). Detailed guidance is not available from the EIB. The IFC approach was adapted to fit the other applicable standards as outlined below and used in the preparation of the TAP critical habitat assessment.

The determination of critical habitat is undertaken in isolation of any proposed project activities. The implications of identified critical habitat are discussed in Chapter 5.

2.1 Definition of critical habitat

Critical habitat is an area which contains features that are essential for the conservation of a species or habitat of conservation concern and may require targeted management and protection. Critical habitat may include an area that is not currently occupied by a species but is necessary for its recovery. The sections below list the critical habitat triggers identified in each of the relevant performance standards to define critical habitats, followed by the consolidated list of critical habitat triggers adopted by the TAP project.

2.1.1 European Bank for Reconstruction and Development

EBRD PR6 (2014a) and Guidance Note (2014b) define critical habitats as the most sensitive biodiversity features, which comprise one of the following:

- highly threatened or unique ecosystems
- habitats of significant importance to critically endangered (CR) or endangered (EN) species
- habitats of significant importance to endemic or geographically restricted species
- habitats supporting globally significant migratory or congregatory species
- areas associated with key evolutionary processes
- ecological functions that are vital to maintaining the viability of biodiversity features described above.

2.1.2 International Finance Corporation

IFC PS6 (2012) defines critical habitats as areas with high biodiversity value, including:

- highly threatened and/or unique ecosystems
- habitat of significant importance to CR or EN species
- habitat of significant importance to endemic and/or restricted-range species
- habitat supporting globally significant concentrations of migratory and/or congregatory species
- areas associated with key evolutionary processes.

However, as outlined in paragraph GN56 of Guidance Note 6 (IFC, 2012), the determination of critical habitat can include other recognised high biodiversity values that are to be evaluated on a case-by-case basis, including the following examples:

- areas required for the reintroduction of CR and EN species and refuge sites for these species (habitat used during periods of stress, e.g. flood, drought or fire)
- ecosystems of known special significance to EN or CR species for climate adaptation purposes
- concentrations of vulnerable (VU) species in cases where there is uncertainty regarding the listing, and the actual status of the species may be EN or CR
- areas of primary/old growth/pristine forests and/or other areas with especially high levels of species diversity
- landscape and ecological processes (e.g., water catchments, areas critical to erosion control, disturbance regimes (e.g., fire, flood)) required for maintaining critical habitat
- habitat necessary for the survival of keystone species
- areas of high scientific value such as those containing concentrations of species that are new and/or little known to science.

Paragraph GN57 of Guidance Note 6 goes on to list internationally and/or nationally recognised areas of high biodiversity value that would likely qualify as critical habitat:

- areas that meet the criteria of the International Union for the Conservation of Nature's (IUCN) Protected Area Management Categories Ia, Ib and II
- UNESCO Natural World Heritage Sites that are recognised for their global outstanding value
- the majority of KBAs that encompass Ramsar sites, Important Bird Areas (IBAs), Important Plant Areas (IPAs) and Alliance for Zero Extinction sites (AZE)
- areas determined to be irreplaceable or of high priority/significance based on systematic conservation planning techniques carried out at the landscape and/or regional scale by governmental bodies, recognised academic institutions and/or other relevant qualified organisations (including nationally-recognised Non-Governmental Organisations, NGOs)
- areas identified by the client as High Conservation Value (HCV) using internationally recognised standards, where criteria used to designate such areas is consistent with the high biodiversity values listed above.

2.1.3 European Investment Bank

EIB Standard 3 on biodiversity and ecosystems (2013) defines critical habitat according to the following attributes:

- presence of CR, EN or VU species, as defined by the IUCN Red List of threatened species and in relevant national legislation
- importance to the survival of endemic or restricted-range species, or unique assemblages of species
- required for the survival of migratory species or congregatory species
- required for the maintenance of biological diversity with significant social, economic or cultural importance to local communities

- required for the maintenance of ecosystem functioning and the provision of key ecosystem goods and services
- key scientific value.

2.1.4 Consolidated critical habitat criteria

As can be noted from the above sections, there are subtle differences between lender standards in relation to the definition of potential critical habitat triggers. The TAP critical habitat assessment has therefore adopted a consolidated list of critical habitat criteria that generally reflect the more stringent requirements in any areas of discrepancy (and therefore, for example, includes consideration of VU species in addition to CR and EN species):

- **Criterion 1**: habitat of significant importance to CR, EN or VU species, as defined by the IUCN Red List of threatened species and in relevant national legislation
- **Criterion 2**: habitat important to the survival of endemic or restricted-range species, or unique assemblages of species
- **Criterion 3**: habitat supporting globally significant migratory and/or congregatory species
- **Criterion 4**: highly threatened or unique ecosystems
- **Criterion 5**: areas associated with key evolutionary processes
- **Criterion 6**: habitat of key scientific value.

The fulfilment of **one** of these criteria is enough to qualify habitat as critical. Additional detail is given in the following sections.

Internationally and/or nationally protected areas and designated sites were not included as critical habitat criteria in their own right. However, all such sites within an ecologically relevant distance[11] of the pipeline and associated infrastructure were screened in relation to their qualifying features and the potential for those features to also occur within the project AOI. A flowchart describing this screening process is provided in Figure 5. The outputs of the screening are presented in Appendix 5.

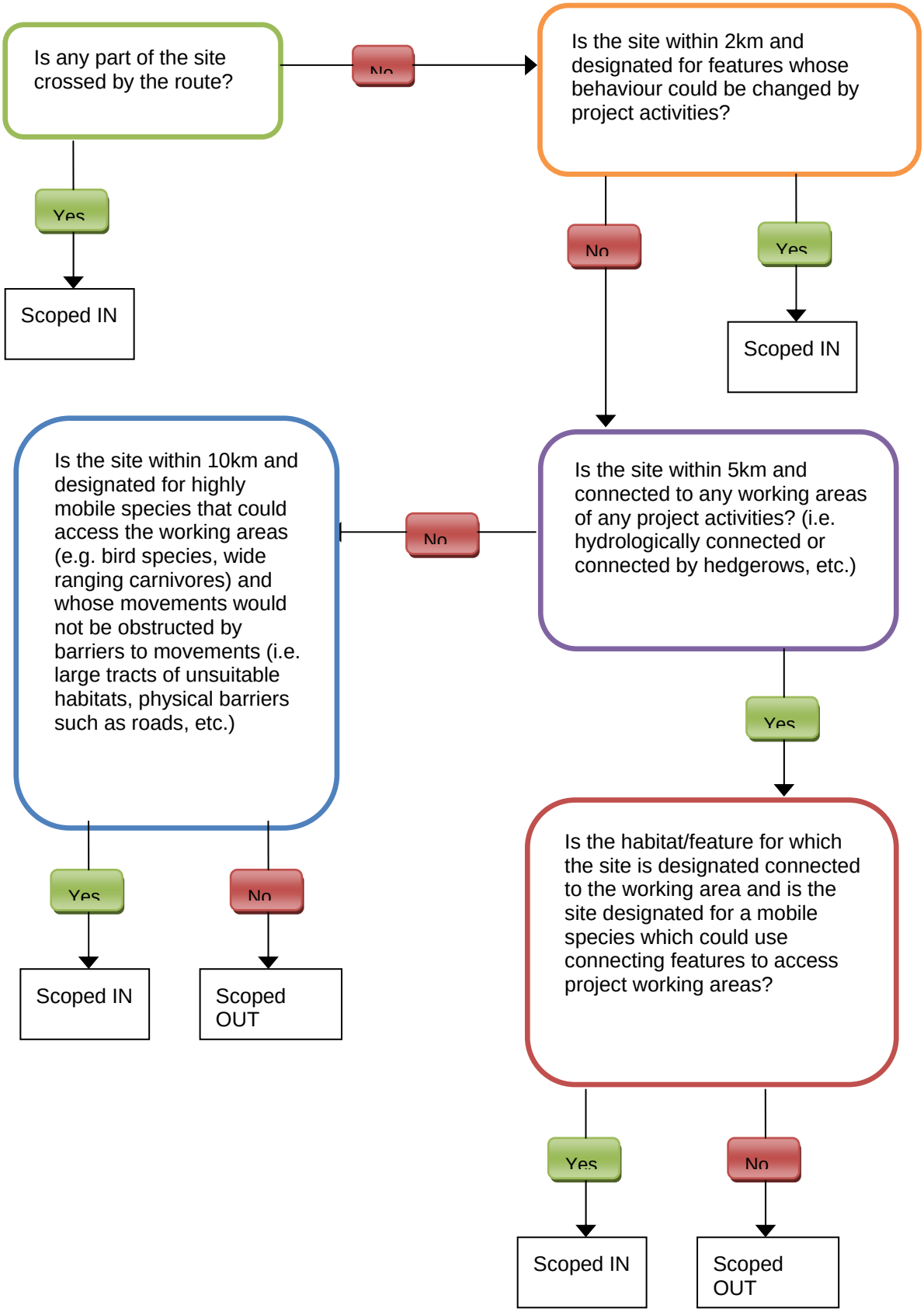
[11] For the purposes of screening distances, the following have been adopted:

2km – adopted for any species, including relatively sedentary fauna such as reptiles and amphibians

5km – adopted for more mobile species such as bats (based on published Core Sustenance Zones for a range of species) and also including wide-ranging species

10km – adopted only for wide-ranging, highly mobile species such as birds and large carnivores

Figure 5: Screening process for protected sites and designated areas



2.2 Criteria 1 to 3 methods

The following steps were followed in assessing candidate species against Criteria 1 to 3:

1. prepare a list of candidate species to include in the assessment
2. identify Discrete Management Units (DMUs, see Section 2.2.2) and define the overall area of analysis
3. obtain or calculate the global extent of occurrence[12] (EOO), area of occupancy[13] (AOO), population size and/or number of known sites for candidate species

   Obtain or calculate:

   a. the EOO, AOO, population size and/or number of known sites of each candidate species within all DMUs collectively
   b. for CR, EN and VU species that are wide-ranging and/or whose population distribution is not well understood, an assessment of the importance of the broader landscape/seascape was made based on literature review and professional judgement
4. calculate the proportion of the global or national EOO, AOO and/or population represented by these results
5. screen outputs against significance thresholds defining Tier 1 and Tier 2 critical habitat (as described in Section 2.2.5).

It is noted that while recommendations in Guidance Note 6 have been referenced as far as possible, this methodology cannot always be easily applied to wide-ranging, data deficient marine species. Efforts have been made to overcome these limitations through the application of best available information, expert judgement and, where required, a precautionary approach.

The methods used at each step are described in more detail below.

2.2.1 Step 1: Prepare a list of candidate species

A large number of species are found within the project AOI. Consequently the first step was to screen all those species present to identify candidate species that might possibly trigger critical habitat under the adopted consolidated criteria. The outputs of this screening process are presented in Appendix 1, Table A1.

2.2.1.1 Criterion 1: threatened species

In relation to threatened species, footnote 11 of IFC PS6 defines threatened species as those listed as such on the IUCN Red List of Threatened Species. If a species has a higher threat listing on a relevant national or regional list, in countries that have adhered to IUCN guidance, the critical habitat determination will be made on a project-by-project

[12] EOO is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a species, excluding cases of vagrancy (IUCN, 2001).

[13] AOO is defined as the area within a species extent of occurrence which is occupied by that species, excluding cases of vagrancy. This measure reflects the fact that a species will not usually occur throughout the full area of its EOO, which may contain unsuitable or unoccupied habitats (IUCN, 2001).

basis in consultation with competent professionals. All three TAP host countries adhere to IUCN guidance on the categorisation of threatened species and the critical habitat assessment has therefore been based on whichever is the highest threat listing (global, regional or national) for each particular species.

The following were reviewed to identify those species that were identified as CR, EN or VU at a global, regional or national level, and which were known or considered likely to be present within the project area of influence:

- Project ESIAs and all associated ecological survey reports
- National Biodiversity Strategy and Action Plan for the three host countries
- IUCN Red List of Threatened Species (iucnredlist.org/)
    - global
    - regional (e.g. 'Mediterranean population', where available)
- Italian Red Lists (iucn.it/liste-rosse-italiane.php) (iucn.it/pdf/Barometro_della_biodiversita_APPENDICE.pdf)
    - vertebrates (Lista Rossa dei vertebrati Italiani)
    - corals (Lista Rossa dei coralllli Italiani)
    - flora (Lista Rossa della Flora Italiana)
    - sponges
- 'Red List of Albanian Flora and Fauna' (nationalredlist.org/files/2015/06/Red-list-of-Albanian-flora-and-fauna-2013-MO-1280-20-11-2013.pdf)
- The Red Data Book of Threatened Animals of Greece (2009)
- EU Habitats Directive:
    - Annex II: Animal & plant species of community interest whose conservation requires the designation of Special Areas of Conservation
- EU Birds Directive
- Barcelona Convention ('Protocol concerning specially protected areas and biological diversity in the Mediterranean')
    - Annex II: endangered or threatened species
    - Annex III: species whose exploitation is regulated

Once a preliminary list of candidate threatened species had been developed, a number of species were excluded following consideration of the below:

- Listed on annexes (such as Barcelona Convention or Habitats Directive) and/or on Red Lists as occurring in Italy and/or Albania, but
    - does not occur in the project area of influence. For example Tortonese's goby (*Pomatoschistus tortonesei*) is listed in Annex II of the Habitats Directive and Annex II of the Barcelona Convention, but is only present in Sicily
    - is a vagrant species. For example, minke whale (*Balaenoptera acutorostrata*) is listed in Annex II of the Habitats Directive and Annex II of the Barcelona Convention but it is only an occasional visitor to the Mediterranean and not listed on either the Italy or Albania Red Lists. Literature review and professional judgement was used to determine whether a species was vagrant.

2.2.1.2 Criterion 2: endemic / restricted range species

Guidance Note 6 (IFC, 2012) provides the following definitions for endemic and restricted-range species:

- **endemic species**: defined as one having ≥ 95% of its global range inside the country or region of analysis (paragraph GN79)
- **restricted-range species:** (paragraph GN80)
  - for terrestrial vertebrates, a restricted-range species is defined as one with an extent of occurrence of 50,000km^2 or less
  - for marine systems, are provisionally being considered those with an extent of occurrence of 100,000 km^2 or less
  - for freshwater systems, standardised thresholds have not been set at the global level. However, an IUCN study of African freshwater biodiversity applied thresholds of 20,000 km^2 for crabs, fish and molluscs and 50,000 km^2 for odonates. This can be taken as approximate guidance, although the extent to which it is applicable to other taxa and in other regions in not yet known.
  - for plants, restricted-range species may be listed as part of national legislation. Plants are more commonly referred to as 'endemic' and the definition provided above would apply. Particular attention should therefore be paid to endemic plants of smaller countries which are likely, by definition, to be globally rarer and therefore of higher overall priority.

For the purposes of the TAP critical habitat assessment, species that were either known as being endemic (e.g. amphibians listed on the Italian Red List for vertebrates as being endemic) or species suspected as being endemic to the region as indicated by their common name (such as Mediterranean monk seal (*Monachus monachus*)) were considered for this criterion.

2.2.1.3 Criterion 3: migratory / congregatory species

IFC Guidance Note 6 defines migratory and congregatory species in the following way:

- **migratory species**: any species of which a significant proportion of its members cyclically and predictably move from one geographical area to another (including within the same ecosystem).

  Migratory species were identified by review of literature and online databases (such as the Global Register of Migratory Species[14]), and through professional judgment.

- **congregatory species**:
  - species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis
  - species that form colonies
  - species that form colonies for breeding purposes and/or where large numbers of individuals of a species gather at the same time for non-breeding purposes (e.g., foraging, roosting)

[14] groms.de

- species that move through bottleneck sites where significant numbers of individuals of a species pass over a concentrated period of time (e.g., during migration)
- species with large but clumped distributions where a large number of individuals may be concentrated in a single or a few sites while the rest of the species is largely dispersed (e.g., wildebeest distributions)
- source populations where certain sites hold populations of species that make an inordinate contribution to recruitment of the species elsewhere (especially important for marine species).

Congregatory species were identified by review of literature and online databases, and through professional judgment.

2.2.2 Step 2: define spatial units of analysis

The scale at which the critical habitat determination takes place depends on underlying ecological processes for the habitat in question and is not limited to the footprint of the project. At the advice of the project Lenders, this critical habitat assessment has been undertaken at the scale of Discrete Management Units (DMUs). GN65 describes a DMU as an area that has a definable boundary (ecological or political) within which the biological communities *have more in common with each other than they do with those outside the boundary*. A DMU may or may not have an actual management boundary (e.g. a legally protected area) but could also be defined by some other sensible ecologically definable boundary (e.g. a catchment, an intact patch of forest within patchily modified habitat).

The DMU concept is intended to ensure that critical habitat assessment is conducted at an ecologically relevant scale, which is often much larger than the project's direct footprint. The whole of a DMU containing critical habitat-qualifying biodiversity features is considered to be critical habitat for those features, even if the qualifying features are only found in a portion of the DMU. However, it should be noted that the assessment of impacts and mitigation measures that will determine if a project can meet the applicable performance standards will focus only on the parts of the DMU where the critical habitat-qualifying features are found.

For each species qualifying for consideration under Criteria 1 to 3, the relevant DMUs were first identified. DMUs may be similar for many species but, if appropriate, different DMUs were defined for each candidate species. A variety of data sources including satellite imagery, GIS maps of physical and biological features (such as topography, watersheds, vegetation types, etc.) and human landscape features (such as settlements, roads, etc.) were reviewed. Taxon-specific surveys were commissioned by TAP and carried out as part of the project biodiversity baseline to determine which species occur within the project AOI and where they are distributed within this area. The surveys were spatially and temporally limited, therefore these results alone cannot give a full picture of how a particular species may be using the area. As such, distribution and habitat use (including feeding area, breeding sites, dispersal corridors, etc.) at a landscape/seascape scale were determined for some species through a combination of literature review, consultation with relevant experts and survey data.

2.2.2.1 *Terrestrial and freshwater DMUs*

A number of terrestrial and freshwater DMUs were identified across the project's terrestrial AOI. Some correspond to protected areas while others were defined on purely ecological terms. The DMUs are described in more detail in Chapter 3 in relation to the individual candidate species which they support.

For some species, such as those that are wide-ranging and/or whose population distribution is not well understood, it may not be possible or appropriate to identify a DMU (or set of DMUs) that includes all known occurrences of that species; it may not be appropriate to apply the DMU concept at all. In this case, critical habitat can be identified at the landscape level.

Fauna species

This Critical Habitat Assessment has been undertaken separately to the ESIA, but used the information from the ESIA to focus attention on areas where critical habitat trigger species were present or potentially present. This involved both the primary data and secondary data collected for the ESIA, plus the opinion of the in-country experts collecting and interpreting the ESIA data. This was then built on by RSK through repeated/detailed baseline surveys (such as those for large carnivores) and further desk-top assessments in 2015.

Where trigger species were known, or likely, to be present (based on habitat suitability and the presence of field signs nearby or historic records), attempts were made to define appropriate, relevant and usable DMUs. DMUs were assigned based on habitats present, species survey data, an understanding of the project and the opinion of the in-country experts who collected the data (all specialists were involved in defining DMUs), building on the importance already assigned to the areas in the ESIA.

The DMUs were extended (east to west) along the length of relevant pipeline route to ensure that all areas of potential critical habitat needing to be scoped in to the assessment were captured. The DMUs then extended north and south to capture suitable, contiguous habitat. Where possible, changes in land-use marked the boundary of the DMU (i.e. where habitats became unsuitable, sub-optimal or not considered 'critical' to the survival of the focus animals). Sometimes boundaries were marked by main roads or large rivers. In areas where the habitats were homogenous/contiguous for significant distances, information regarding the home-ranges of the species involved was used to define sensible-sized DMUs relative to the project.

It is possible, and no doubt could be justifiable in some instances, to expand the size of the DMUs in a northerly and southerly direction to increase the area of the DMUs (the authors are confident that the east-west portions of the DMUs are adequately captured). However, there were often barriers to movement or changes of land-use (making the DMU harder to define as 'discrete'). In addition, DMUs do not necessarily have to cover the entire home-range of a species concerned or affected. The DMU needs to look at areas that are likely to be 'significant' or 'important' to the trigger species. Finally, extending DMUs to encompass vast areas away from the project area has the potential to dilute the importance and focus of the CHA. For instance, with a project of this size, the AOI is small (regardless of mitigation) and so the larger the

DMU, the smaller the proportion of the area being affected. As such, it is much less likely for critical habitat thresholds to be exceeded and areas of importance for trigger species could potentially be discounted. For example, the entire Dinaric-Pindos complex could be considered a DMU for large carnivores. However, it would not be appropriate for a CHA (or any impact assessment) to consider an area of this size as a DMU.

Some DMUs are relatively close together but have not been included as a single DMU. This has been based on primary data, barriers to animal movements and distinct changes in the habitats occupied by species. For instance, DMU 1 and DMU 2 for golden jackal in Greece are separated by c.20 km, which some may consider close. However, calling/howling surveys did not identify any jackal territories extending in the direction of either DMU. It is noted that the entire area was not surveyed in detail, but howling surveys tended to provoke responses from some distance away and so it is likely that jackals would have responded if present. In addition, there are roads, rivers and areas of urbanisation between the two DMUs. Furthermore, the two DMUs are centred on optimal jackal habitats (riparian forests and lowland wetlands) which are not represented between the two DMUs. As such, it was considered appropriate to consider the two DMUs as distinct 'populations' and undertake the CHA accordingly. Similarly, DMUs 3 and 4, both large DMUs and relatively close together, are assigned to very different and discrete habitat types (a lake and a river/delta respectively). It was therefore considered appropriate to consider the DMUs separately rather than aggregate them.

Flora species

The DMUs for vascular plants were determined using the field surveys from the TAP ESIA baseline surveys in 2011, ESIA amendment surveys and subsequent ecological surveys, including those undertaken by RSK in 2015-16. The DMUs were based on the habitat parcels in which the plant species was found. The habitats along the ESIA study area had been mapped as part of ESIA and subsequent surveys. Mapping was based on phytosociological association and typically referred to EU Annex 1 habitats (EU Directive 92/43/EEC) and any relevant in-country habitat classification systems. Each habitat parcel with an occurrence of a plant species that was a potential critical habitat trigger was taken as the DMU for that population of the species. Where the habitat extended beyond the TAP ESIA study area, aerial images and EEA mapping were used to map the full extent of the DMU.

2.2.2.2 Offshore DMUs

For the marine environment, two different project aspects with the greatest potential to impact critical habitat were considered separately in order to define the spatial extent of the offshore AOI:

- **underwater noise and vibration**: this may be generated from the construction of a cofferdam at the Albanian landfall. Underwater noise may be generated from the use of percussive and/or vibro-piling techniques, and therefore has the potential to impact receptors (particularly marine mammals, turtles and fish) that are sensitive to underwater noise. The site-specific underwater noise modelling and assessment indicates that any notable impacts on marine mammals, turtles

and fish (i.e. mortality, injury, permanent and temporary auditory damage) will be mitigated by the Marine Mammal Mitigation Protocol (MMMP) and its 500 m mitigation zone. However it is predicted that some weak behavioural responses may occur as far as 38 km from the noise source. This distance was therefore used on a precautionary basis when considering underwater noise impacts.

- **sediment plume**: a temporary flotation channel will be dredged by a cutter suction vessel at the Albanian landfall to allow access for the nearshore pipelay barge. A smaller trench will be dug to bury the pipeline from KP2 to KP7. Modelling of possible worst-case sediment plume for the Albania ESIA reported distances of up to 7.3 km along the coast (expanded to 10 km for a precautionary consideration of impacts) and 1.5 km perpendicular to the shore.

A conservative 50 km zone either side of the offshore pipeline route was selected as the offshore AOI, within which the seascape-wide DMUs were identified. In reality, as discussed above, even underwater noise impacts are not expected to extend that far. However this distance is consistent with the approach advised for the project offshore Cumulative Impact Assessment (CIA) screening.

It should be noted that both of these impacts were only deemed applicable to a limited number of species, as there is not considered to be a pathway for significant impacts to several taxa. For example, impacts of underwater noise are not considered relevant to a number of taxa such as sponges, algae and cartilaginous fishes. Similarly, a temporary sediment plume was not considered relevant for highly mobile species such as marine mammals, cartilaginous fish and turtles.

It is difficult to ascribe rigid ecological boundaries to the marine environment that might be defined more easily for onshore environments (e.g. forests and river catchments). Furthermore, the marine environment contains many wide-ranging species with poorly surveyed, studied and in some cases understood population distributions. The pragmatic application of IFC GN6 was therefore used to identify three generic seascape DMUs, broadly based on the two key limiting factors in the marine environment; depth and light (Figure 11 in Appendix 6).

Depth and light are used widely in the classification of marine zones as they drive the ecological processes that can occur in an area and, in turn, the abundance and distribution of species within it. In this sense, they form sensible ecological boundaries (as per note GN65 in the IFC GN6) and have therefore been used to delineate marine DMUs. This approach has been adapted from that taken for the South Stream Pipeline Critical Habitats Assessment[15].

These DMUs were deemed to be sensible units of analysis appropriate to all marine biodiversity features being considered, while incorporating the offshore AOI and providing spatial context to the assessment process.

It should be noted each of the three DMUs below includes both the surface waters and entire water column (that contain pelagic organisms including fish, and air-breathing turtles/marine mammals) as well as benthic (seabed) habitats and organisms (such as sponges, coral, echinoderms and benthic fish).

[15].south-stream-transport.com/media/documents/pdf/en/2014/07/sstbv_bg_esia_133_web_en_298_en_20140725.pdf

- **coast** (0-30 m deep). This DMU is characterised by shallow coastal habits with well-developed benthic communities that are able to support significant photosynthetic activity and can be dominated by plants/algae, as demonstrated by the presence of seagrass at the Italian landfall. The Albanian coast, however, was not characterised by seagrass communities, and supports bioturbated soft-sediment communities.
- **nearshore** (30-100 m deep). This deeper habitat is characterised by much lower levels of light where photosynthetic activity is very limited (an arbitrary lower limit of 100m has been selected as this represents the approximate depth beyond which there is no significant light penetration in the Mediterranean). Coralligenous habitats, the majority of which are usually found within water depths of 30-70 m, are characteristic of this zone in the Italian nearshore, although these habitats have not been confirmed from the Albanian nearshore. The Albanian nearshore was characterised by soft-sediment (sand or muddy sand) communities, sometimes with seapens (*Pennatula* sp.).
- **offshore** (more than 100 m deep). The pipeline route extends through Italian and Albanian waters, to depths in excess of 800 m. Deep-sea environments such as this are generally characterised by fine sediment, low energy and stable conditions. The habitat survey of the pipeline route revealed soft sediments (often with bioturbation) and occasional visible biota such as sessile (Octacorallia) and motile (e.g. echinoderms) invertebrates, and fish such as skates (Rajidae) This DMU includes surface waters of the offshore environment, as well as entirely aphotoic deep-sea habitats.

Each species in the candidate list for critical habitat screening was considered separately using professional judgement and publicly available scientific information to determine in which DMU(s) it is known or could occur. For example, seagrass and algae were considered as only occurring in the coast and nearshore DMUs, given restrictions on photosynthetic activity beyond 100 m depth. Similarly, exclusively deep-water species (e.g. coral *Lophelia pertusa*) were only considered as occurring in the offshore DMU. Highly mobile species (e.g. pelagic fish and marine mammals) were determined to potentially occur in all three DMUs. Where little or no information was available on depth distribution (e.g. for several sponge species), a conservative estimate was made of occurrence in all three DMUs.

Table 2-1: Offshore AOI and DMUs

Depth (m)	Seascape DMU (50 km buffer either side of pipeline)	Area (km^2)				
		Area of each DMU in Italian waters	Area of each DMU in Albanian waters	Sediment plume (10 km buffer)	Underwater noise (38 km buffer)	Entire Adriatic Sea
0-30	Coast	198	629	101	460	18,497
30-100	Nearshore	869	1,207	52	830	48,097
100+	Offshore	4,029	4,139	n/a (buffer does not reach this	1,096	70,517

				DMU)		
Total		5,096	5,975	154	2,387	137,111

Worked example calculations of EOO under Criterion 1

Seagrass Mediterranean tapeweed (*Posidonia oceanica*)

Occurrence in DMUs: Coast (yes); Nearshore (yes, possibly); Offshore (no)

Conservative estimated total area of occupancy in the Adriatic is therefore **66,593 km^2** ('coast' total for Adriatic: 18,497 km^2 + 'nearshore' total for Adriatic 48,096 km^2).

Estimated total area that has the potential to be affected by sediment plume (10 km buffer): 153 km^2 ('coast' DMU: 101 km^2 + 'nearshore' DMU: 52 km^2)

% of EOO that DMU covers (based on worst-case temporary 10 km sediment plume)

= 153 / 66,593 x 100 = 0.23%

= the total potential area of Mediterranean tapeweed occurrence potentially subject to impact (i.e. within the AOI) represents 0.23% of the total available in the Adriatic Sea (i.e. <10%, as applicable to Criteria 1 to 3)

Estimated total area that has the potential to be affected by underwater noise (38 km buffer): this impact N/A to Mediterranean tapeweed.

2.2.3 Step 3: obtain or calculate the global EOO, AOO, population size and/or number of known sites

2.2.3.1 Obtain input data

For many species, estimates of population size and/or population density are neither published nor feasible to calculate at a global, national or unit of analysis level. In this case, EOO or AOO can provide a surrogate for population size. This was the case for most of the candidate species in the current critical habitat assessment. Estimates of EOO/AOO were derived from the IUCN Red List and other publicly available data.

In instances where specific population data is not readily available e.g. wide-ranging marine species with poorly understood distributions, a review of IUCN data, public reports and recent, peer-reviewed literature was undertaken and combined with professional judgement to determine the global range and presence of species within the Mediterranean, and where possible, Adriatic Seas.

2.2.3.2 Estimate population size of each candidate species within all DMUs intersected by the project AOI collectively

For species for which adequate data were available (such as the brown bear), the population size within the DMUs was estimated by dividing the collective area of the DMUs by the known home range of an individual animal. Contingency was built in to account for small overlaps in individual home ranges and the inclusion of known

dispersal corridors, which obviously support a greater than normal number of individuals at certain times of the year. This step was achieved through close collaboration with local species experts.

2.2.4 Step 4: calculate the proportion of the global or national population represented by the units of analysis

The proportion of the global (or national) population represented by the units of analysis was calculated based on the estimates of population and/or distribution derived following the process described above. Hence, if the global range of a species covers 1,000 km^2 and 100 km^2 of this range is included within the DMUs, the proportion is 10%.

For some highly mobile marine species with wide-ranging distributions that are too large and poorly defined to map (e.g. the north-east Atlantic and Mediterranean region), the outputs of Step 3 were then considered contextually in relation to the area (km^2) of any/all of the DMUs in which the species was expected to occur.

2.2.5 Step 5: determine critical habitat tiers

Guidance Note 6 (IFC, 2012) recognises that critical habitat can be categorised based on relative vulnerability (degree of threat) and irreplaceability (rarity or uniqueness). Hence for Criteria 1 to 3 there are two levels or 'tiers' of critical habitat: Tier 1 and Tier 2. These are defined by quantitative thresholds expressed as percentages of global and national population sizes, or of proportions of known species ranges or distributions, as described in Table 2.2.

Tier 1 critical habitat contains a greater proportion of a qualifying species' population or range than Tier 2 critical habitat and so is consequently more important for that species. Nonetheless, Tier 1 and Tier 2 habitats require the same degree of assessment to determine if PS6 performance requirements can be met; the same PS6 requirements apply regardless of tier. It should be noted that project impacts in Tier 1 critical habitats are not usually considered offsetable (GN108). If is is deemed likely that a measurable adverse impact is not offsetable, it implies a project alternative (e.g. another route or technological solution) would need to be found. It is likely that in Tier 1 critical habitat a much greater degree of confidence would be required that mitigation actions would be sufficient to meet PS6/PR6 requirements than in Tier 2.

Table 2-2: Quantitative thresholds of Tier 1 and 2 critical habitat

Tier 1	Tier 2
1) Criterion 1: threatened species	
a) Habitat required to sustain ≥ 10 % of the global population of a globally-listed CR or EN species/subspecies where there are known, regular occurrences of the species and where that habitat could be considered a discrete management unit for that species. (b) Habitat with known, regular occurrences of globally-listed CR or EN species where that habitat is one of 10 or fewer discrete	(a) Habitat that supports the regular occurrence of a single individual of a globally-listed CR species and/or habitat containing regionally- important concentrations of a globally-listed EN or VU species where that habitat could be considered a discrete management unit for that species/ subspecies. (b) Habitat of significant importance to

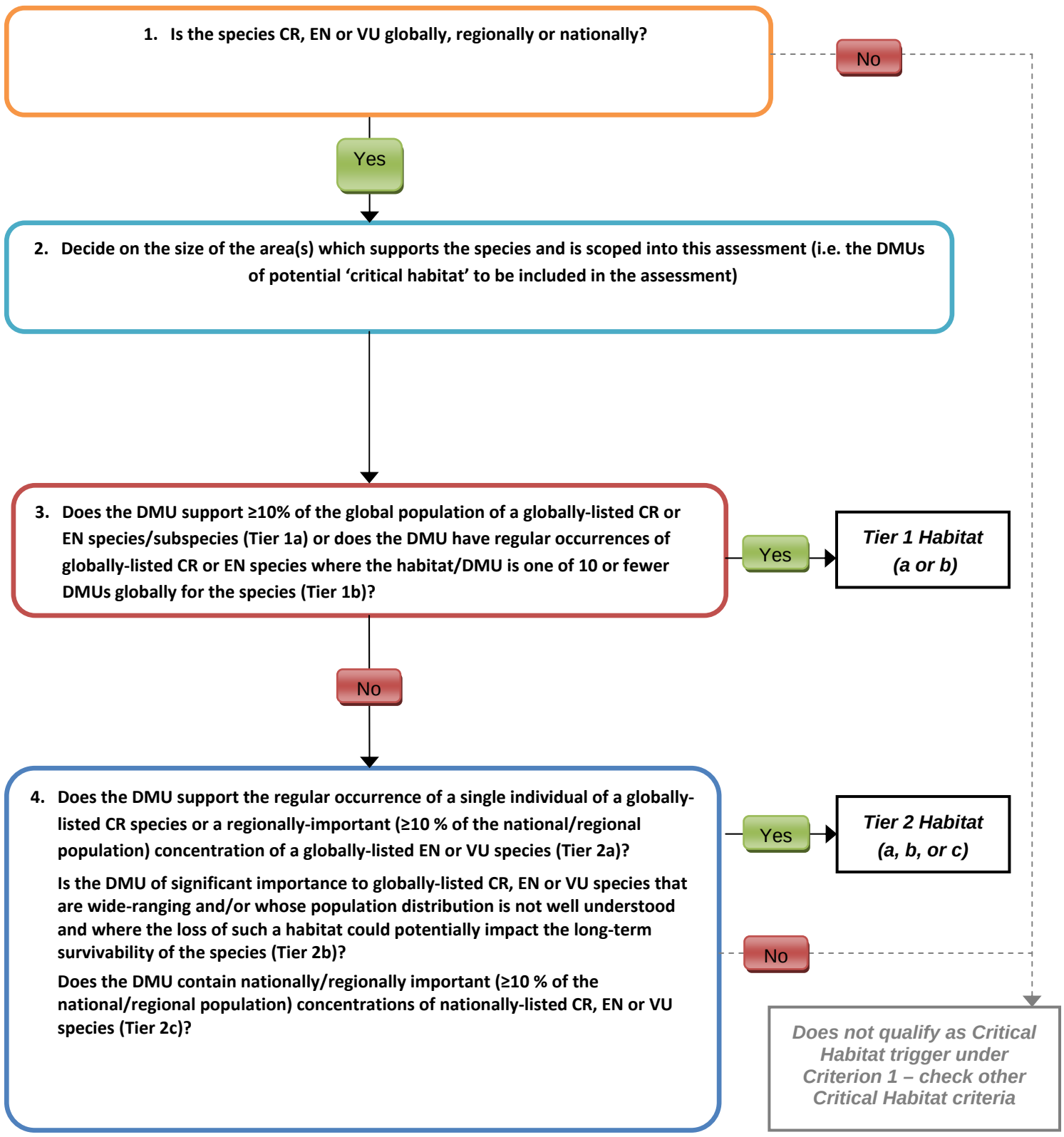
management sites globally for that species.	globally-listed CR, EN or VU species that are wide-ranging and/or whose population distribution is not well understood and where the loss of such a habitat could potentially impact the long-term survivability of the species. c) Habitat containing nationally/regionally important concentrations of nationally-listed CR, EN or VU species. In this instance, an important concentration is taken to be ≥ 10% of the national or regional population.
2) Criterion 2: endemic / restricted range species	
(a) Habitat known to sustain ≥ 95 % of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species (e.g., a single-site endemic)	a) Habitat known to sustain ≥ 1 % but < 95 % of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species, where data are available and/or based on expert judgment.
3) Criterion 3: migratory/congregatory species	
(a) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 95 % of the global population of a migratory or congregatory species at any point of the species' life cycle where that habitat could be considered a discrete management unit for that species.	(a) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 1 % but < 95 % of the global population of a migratory or congregatory species at any point of the species' lifecycle and where that habitat could be considered a discrete management unit for that species, where adequate data are available and/or based on expert judgment. (b) For birds, habitat that meets BirdLife International's Criterion A4 for congregations and/or Ramsar Criteria 5 or 6 for Identifying Wetlands of International Importance. (c) For species with large but clumped distributions, a provisional threshold is set at ≥ 5 % of the global population for both terrestrial and marine species. (d) Source sites that contribute ≥ 1 % of the global population of recruits.

Neither EBRD nor EIB define tiers of critical habitat. Within PR6 (EBRD), the concept of 'priority biodiversity features' (PBFs) is used to refer to threatened habitats, vulnerable species and significant biodiversity features identified by a broad set of stakeholders, such as IBAs. Some of these are already captured within the project's consolidated critical habitat triggers, such as vulnerable species. All PBFs are discussed in detail in the SEA.

Several flowcharts have been developed to better illustrate the assigning of tiers to critical habitat triggers (Criteria 1 to 3) within the project area of influence (Figure 6 to

Figure 8). The results of the calculations described in Sections 2.2.3 and 2.2.4 were run through each flowchart. All DMUs containing species that met critical habitat thresholds at the collective scale were considered to be critical habitat for the qualifying species. Carrying out the analysis collectively rather than for each DMU individually is precautionary and provides a more appropriate assessment of biodiversity risk for such a large-scale project.

Figure 6: Criterion 1 determination flowchart



Questions

Q. Do we have adequate/sufficient survey and distribution data to define this (or are we working on a precautionary principle for some species)?

Note – areas can be defined by political/geographical boundaries or boundaries of a protected area. They can also be defined as Discrete Management Units (DMU) "*an area with a definable boundary within which the biological communities and/or management issues have more in common with each other than they do with those in adjacent areas*" e.g. three forested mountain ranges could constitute three DMUs for brown bears. A watershed could be a DMU. An area of steppe grassland surrounded on all sides by forest could be a DMU.

Q. Are there reliable global/regional population estimates available? If not, Area of Occupancy data can be used (AoO is calculated by multiplying number of occupied tetrads in a uniform grid that covers the entire range of a taxon by the size of the tetrad). If these data are not available, we will need to explore other options, including specialist opinion, to determine the proportion of the global population potentially affected by the project.

Figure 7: Criterion 2 determination flowchart

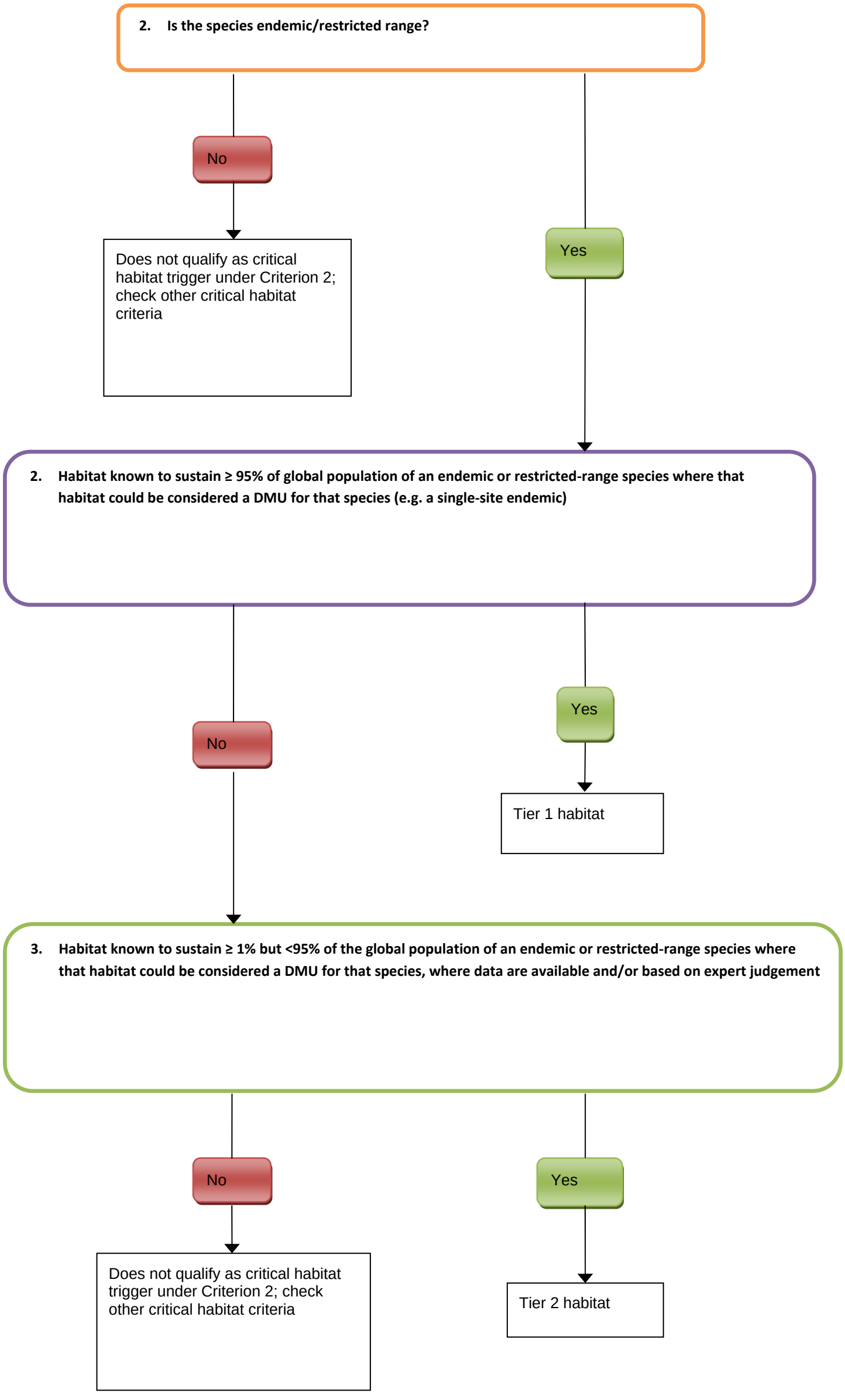
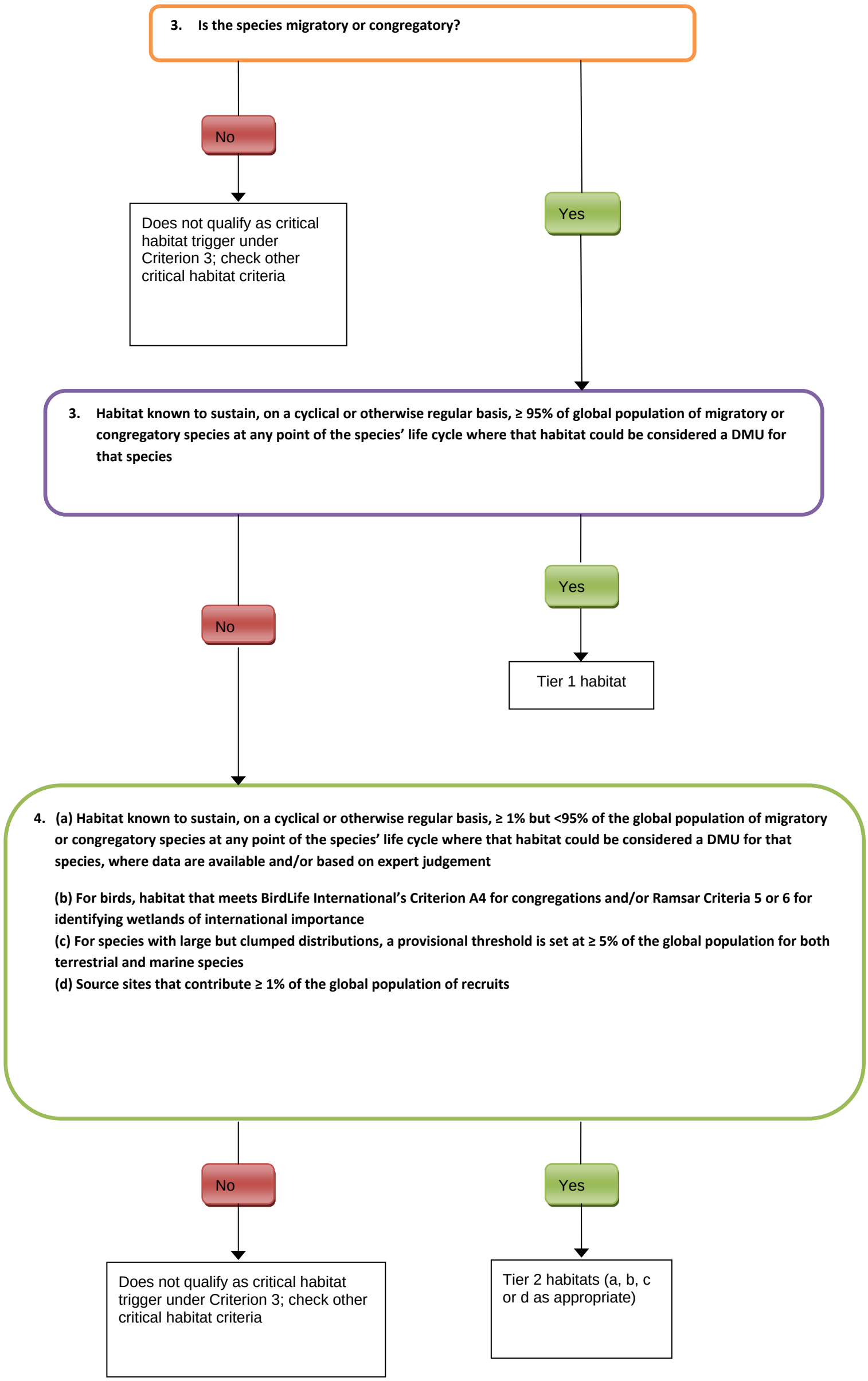


Figure 8: Criterion 3 determination flowchart



2.3 Criterion 4: highly threatened or unique ecosystems

Guidance Note 6 (IFC 2012) defines highly threatened or unique ecosystems as

- at risk of significantly decreasing in area or quality
- with a small spatial extent and/or
- containing unique assemblages of species including assemblages or concentrations of biome-restricted species.

The ERBD PR6 also identifies ecosystems that meet the IUCN Red List of Ecosystems criteria[16] of CR or EN as triggering critical habitat under this criterion. A comparison of the Red List of Ecosystems assessment and the processes to identify EU priority habitats is given in Table 2.3.

Examples of unique ecosystems include:

- sites that hold a significant proportion of species whose distributions are restricted to that bioregion or one of its ecoregions
- ecosystems that replace each other along a steep altitude gradient
- species particular to karst systems, sinkholes and subterranean river systems
- *Posidonia* beds
- reefs
- submarine structures made by leaking gases

DMUs for habitats were based on a combination of the ESIA mapping of habitat polygons supplemented with post-ESIA botany survey data along the TAP AOI, including the 500 m buffer. Habitat parcels for EU Annex 1 habitats were grouped together to form the basis of the DMU for each habitat. These habitat parcels were expanded where the habitat was continuous with a Natura 2000 site where the habitat under consideration was also a reason for the designation of the Natura 2000 site. The expanded DMU encompassed the entire Natura 2000 site as detailed mapping of habitats within the protected areas is not available. This creates an over-estimate of the total area of the Annex 1 habitat but this conservative approach was considered appropriate given the level of information available.

The criteria in the IFC Guidance Note 6 overlap strongly with the process used to identify the EU Priority Habitats in Annex I of the Habitats Directive. Priority habitats within Annex 1 were identified as '*habitat types in danger of disappearance and whose natural range mainly falls within the territory of the European Union*'. The assessments are based on the hierarchical classification of European habitats developed by the Corine biotopes project which has been revised and altered by various panels of experts. These habitats were automatically included for assessment under this criterion. Additional EU Annex 1 non-priority habitats were screened in where literature data, the project ESIA or project consultations identified triggers from the above criteria relating to the decline in habitat area, limited extent of occurance or notable assemblages of species.

[16] iucnrle.org/, accessed 01 December 2016.

Table 2-3 Comparison of the Red List of Ecosystems criteria and the factors taken into account when identifying EU Annex 1 Priority Habitats.

IUCN Red List of Ecosystems Criteria (Bland *et al.* 2016)	Annex 1 Priority Habitat	Annex 1 Habitat (non-priority) and Greek protected habitats
A: quantitative evidence of declining distribution A1: over last 50 years A2: over a future 50 year period *CR ≥ 80% decline* *EN 50-79% decline* *VU 30-49% decline* A3: Since 1750 *CR ≥ 90% decline* *EN 70-89% decline* *VU 50-69% decline*	Habitats listed as priority habitat are expected to decline without action	Decline not sufficient to trigger priority status.
B: restricted distribution Condition 1: restricted distribution. Condition 2: Evidence of ongoing or future decline, threat or few locations *B1 Small EOO AND threats* *B2 Small AOO AND threats* *B3 Very small (generally fewer than 5) AND prone to the effects of human activities or stochastic events within a very* *short time period = VU*	Percentage cover and areas of habitats taken into account in triggering priority status.	Suffiicently widely distributed not to trigger priority status.
C: abiotic degredation Observed or predicted decline relative to the amount of decline required until collapse	Not evaluated	Not evaluated
D: biotic disruption Observed or predicted decline relative to the amount of decline required until collapse	Not evaluated but lists of endangered species taken in to account	Not evaluated but lists of endangered species not sufficient to trigger priority status
E: probability of collapse Applied using a process-based ecosystem simulation model *CR ≥ 50% in 50 years* *EN ≥ 20% in 50 years* *VU ≥ 10% in 100 years*	Not evaluated	Not evaluated
RESULT	**Assumed to meet critera for CR/EN**	**Highly unlikely to meet criteria for CR/EN**

Based on comparison of the Red List of Ecosystems criteria and the selection process for Annex 1 habitats, the designation of priority habitats is assumed to be sufficient to identify the habitat as meeting the threshold for the threatened categories (critically endangered, endangered). Both these categories trigger critical habitat so further

assessment is not considered necessary. Annex 1 non-priority habitats and Greek protected habitats have been considered under this process and have not achieved priority status. No new attempt has been made in this critical habitat assessment to apply the RLE criteria to the EU habitats as the outcome of any 'rough' assessment is likely to arrive at the same conclusions as the assessment of priority habitats, and with less of the information and expertise available to inform the process.

2.4 Criterion 5: Key evolutionary processes

Guidance Note 6 (IFC, 2012) identifies two key factors defining the presence of key evolutionary processes: the physical features of a landscape or seascape, and subpopulations of species that are phylogenetically or morphologically distinct. A region important to 'key evolutionary processes' would typically be defined by a distinctive land/seascape that has resulted in a high degrees of speciation (e.g. a high degree of habitat heterogeneity in marine areas, such as the Coral Triangle, with a high degree of variation in bathymetry and complex post-glacial history) and/or taxa that are distinct and of special conservation interest because of unique evolutionary history (e.g. endemic seal species in Lake Baikal, or the Caspian Sea). Such areas may typically be geographically isolated in some way (currently or historically), have high levels of endemicity and be highly heterogeneous spatially.

There is considerable overlap between this criterion and Criterion 4. While Criterion 4 is a measure of the ecosystem itself, this criterion is principally defined by the physical features of a landscape that might be associated with particular ecological and evolutionary processes. The significance of structural attributes in a habitat that may influence evolutionary processes will be determined on a case-by-case basis. In the majority of cases, this criterion will be triggered in areas that have been previously investigated and are already known or suspected to be associated with unique evolutionary processes (IFC, 2012). While systematic methods to measure and prioritise evolutionary processes in a landscape do exist, they are typically beyond a reasonable expectation of studies conducted by the private sector. Examples of spatial features associated with evolutionary processes include:

- isolated areas
- landscapes with high spatial heterogeneity, which are a driving force in speciation as species are naturally selected on their ability to adapt and diversify
- edaphic interfaces: specific juxtapositions of soil types (e.g. serpentine outcrops and limestone deposits) which have led to the formation of unique plant communities characterised by both rarity and endemism
- connectivity between habitats ensures species migration and gene flow.

Some of these characteristics are captured in the designation of Key Biodiversity Areas. Because the number of endemic species within the project AOI could not easily be quantified against background levels due to the general lack of distribution data, individual species listed as qualifying features for each designated KBA within the project AOI (see Appendix 5) were assessed under criteria 1 to 3. KBAs were therefore not used as triggers for critical habitat in their own right.

The Mediterranean is included in a biodiversity hotspot, as defined by the Critical Ecosystem Partnership Fund (CEPF)[17]. The hotspot covers the whole of the Mediterranean basin including Europe, Africa and the Middle East. The Mediterranean hotspot includes a high proportion of endemic species in many different taxa. However, the evidence for active evolutionary processes at this large scale is limited, with most identifiable processes occurring on a smaller scale. The majority of the diversity is derived from historic processes relating to migration from different biomes creating species contact zones, low extinction rates during European glaciations and long-established balance between humans and the environment (*Blondel et al. 2010*). *Savic, 2008* states '*With respect to the Balkan Peninsula, we must emphasize that it is characterized by an exceptionally rich and diversified fauna. As regards biodiversity, the Balkan Peninsula is among the most significant regions in Europe and the world. There are a great number of plant and animal species, many of which are of an endemic or relict character, which is a consequence of the specific history of this region (among other factors), especially during the Ice Age*'. Because there is no evidence that the current evolutionary processes in the Mediterranean are higher throughout the whole region when compared to other regions, the hotspot as a whole is not considered as critical habitat for key evolutionary processes.

Guidance Note 6 (paragraph GN94) also notes that Evolutionarily Distinct and Globally Endangered (EDGE) species (as defined by the Zoological Society of London (*zsl.org/conservation/conservation-initiatives/animals-on-the-edge*) should be considered. To date, only four faunal groups have been assessed for EDGE:

- mammals
- amphibians
- birds
- corals.

Any areas associated with key evolutionary processes were screened using expert advice and appropriate mapping.

2.5 Criterion 6: key scientific value

There are overlaps between this criterion and Criteria 4 and 5. For the purposes of the current critical habitat assessment, key scientific value is taken to refer specifically to species that are new and/or little-known to science.

2.6 Data sources

This critical habitat assessment has been developed using information provided by the ESIAs (including any and all addenda) for each host country, targeted stakeholder engagement activities (see Section 2.7) and additional biodiversity field studies undertaken since publication of the ESIAs until the end of Q3 2017. These are

[17] cepf.net/where_we_work/regions/europe_central_asia/mediterranean/Pages/default.aspx

described per host country and for offshore (i.e. marine waters of both Albania and Italy) in the following sections.

2.6.1 Greece

The following biodiversity surveys have been undertaken in Greece since March 2015:

- surveys for early-flowering plants such as alpine plants in high-altitude areas
- surveys for threatened flora species that may require additional mitigation before, during or post-construction, such as species requiring translocation or seed collection for use in reinstatement
- large carnivore surveys (brown bear, wolf and golden jackal) in areas of the pipeline corridor and/or in proximity to access roads, mapped as potentially suitable habitat
- surveys to identify where wildlife currently cross the pipeline corridor in order to identify locations where rapid reinstatement and other measures may be required
- otter surveys
- fish surveys at three watercourses identified in the ESIA as supporting threatened and/or highly endemic fish species
- bird surveys
- surveys for European ground squirrel.

2.6.2 Albania

The following biodiversity surveys have been undertaken in Albania since November 2013:

- general pre-construction ecological walkthrough to ground-truth areas of the project that were not surveyed in detail as part of the ESIA and to confirm sites of ecological sensitivity
- surveys for early-flowering plants such as alpine plants in high-altitude areas
- surveys for threatened flora species that may require additional mitigation before, during or post-construction, such as species requiring translocation or seed collection for use in reinstatement
- bat surveys of military tunnels, caves and other potential ‘underground’ roost sites close to the pipeline corridor and/or access roads
- large carnivore surveys (brown bear and wolf) in areas of the pipeline corridor and/or in proximity to access roads, mapped as potentially suitable habitat
- surveys to identify where wildlife currently cross the pipeline corridor in order to identify locations where rapid reinstatement and other measures may be required
- otter surveys
- aquatic ecology surveys for pipeline and/or access road crossings of sensitive watercourses (RV1 and RV2, as defined in the ESIA)
- breeding bird surveys at Grykederdhja Semanit-Pishe Poro (KP206 to KP209), and Petova Reservoir (KP191.4–191.8)
- migratory bird surveys at KP206 to KP209

- surveys to identify important feeding areas for pygmy cormorant (*Microcarbo pygmaeus*) and little egret (*Egretta garzetta*).

2.6.3 Italy

The following biodiversity surveys have been undertaken in Italy since publication of the ESIA:

- 'Pre-construction Ecological Monitoring' (ERM, 2016) covering migratory birds, breeding birds, amphibians, reptiles and botany.
- Remotely operated vehicle (ROV) surveys of bioconstructions at five areas in the Italian nearshore area (1 to 15 km from coast) of the TAP project (June 2016). This recorded habitat information and was able to identify some encrusting biota to species level, although many taxa were identified only to genus, family, or higher classifications (e.g. 'encrusting algae' and 'calcareous algae').
- Seagrass surveys (geophysical and ROV) in the microtunnel exit area, Italian nearshore (June/July 2016). These surveys focused on detailing the quality and extent of seagrass growth but also noted broad observations of other biota (e.g. foliose algae, filamentous algae, holothurians, echinoids and fish). A further dive survey was undertaken in June 2017 which confimed the findings of the 2016 survey.
- sediment grab sampling (including analysis of benthic macrofauna), Italian nearshore area and vibro-core samples for particle size analysis for suspended solids modelling (November 2016)
- phytoplankton (as part of water quality survey) in the Italian nearshore area (November 2016)
- geophysical survey of entire TAP route in Italian waters (December 2016), the data is to be interpreted from a habitats perspective.

2.6.4 Future surveys

Further surveys or studies relevant to biodiversity are underway or planned as follows (with additional detail provided in the section below):

- loggerhead turtle presence/ absence nesting surveys, Albania landfall Q3 2017
- benthic habitat survey of Albania landfall/nearshore area (2017)
- A broad review of seabed geophysical data (2012/13) was carried out by an RSK geophysicist experienced in pipeline routing and identification of sensitive environmental features, to identify any areas for potential further investigation, such as pock marks and gas seeps (Q3 2017)
- A deep-water habitat review was then undertaken comprising a literature review, a review of TAP-commissioned environmental survey data (including video imagery) and TAP-commissioned geophysical data as reviewed above. The outputs are summarised in Appendix 7 and inform the need for further investigation of benthic habitat features and species (Q3 2017).
- As deemed necessary and informed by the above review, a further review of 2012/13 geophysical data by OGS ecologists will be undertaken
- fish ecology survey of Italian nearshore area (2017/2018)
- Turbidity monitoring in the microtunnel exit area, Italian nearshore (monitor installed 2016, monitoring ongoing). These surveys focus on characterising the

ambient variability of turbidity that seagrass beds in the Italian coastal waters are currently exposed to.

2.6.4.1 *Rapid ecological assessment*

Rapid ecological assessments of all critical habitat, PBFs and protected areas will enable potential impacts to be verified or identified and appropriate mitigation and monitoring requirements selected for each location and species. All monitoring and survey work will be recorded and reviewed to enable significant residual impacts to be verified to identify the need for intervention measures or biodiversity offsets. Site files will be created for each critical habitat DMU, PBF and protected area and contain the rapid assessment documentation. Both the rapid assessment and site file management tool are described within the Environmental and Social Management Plan (CAL00-RSK-601-Y-TTA-0002) and the Ecological Management Plan (CAL00-C5577-640-Y-TTM-0002).

2.6.4.2 *Herpetofauna*

Species-specific amphibian and reptile surveys will be completed within areas identified as critical habitat in advance of clear and grade activities. Newt surveys will be undertaken along transects in DMUs with a focus on habitat features of importance to newts, such as ponds. All water features will be surveyed for Albanian pool frogs within the relevant DMUs. Transect surveys will be undertaken to record four-lined snake numbers in the relevant DMUs.

2.6.4.3 *Freshwater fish*

In Greece, freshwater fish surveys will be undertaken in Tier 1 DMUs before work commences on open-cut watercourses crossings, Surveys for the Aggitis spined loach and Greek brook lamprey will be conducted using electro-fishing techniques and the work undertaken by an NGO. The European eel is a cryptic, often elusive species that is particularly difficult to survey for effectively. The fact that none may be recorded by a survey does not necessarily mean they are not present. TAP is therefore working on the assumption that they are potentially present within all identified DMUs. Furthermore, pre-construction surveys undertaken at this stage for other Tier 1 fish species (*Pelagus prespensis, Alburnoides devolli* and *Alburnoides fangfangae)* would be highly unlikely to yield any additional information that would change previous advice concerning potential impacts and mitigation measures.

2.6.4.4 *Marine surveys in Albania*

Following a technical review of existing geophysical data for the Albanian offshore route in spring 2017, water and sediment quality sampling (including benthic infaunal sampling) will be undertaken in Albanian waters in Q4 2017 and repeated using a similar scope post-construction. The following parameters will be tested at 20 sampling stations, in addition to drop-down video at specific locations identified during the geophysical data review.

The following water quality parameters will be sampled for at five stations with samples taken at three depths per station.

- **chemical–physical**: temperature, salinity, pH, dissolved oxygen, chlorophyll a (fluorescence), transparency (Secchi disk) and turbidity.
- **organic matter and nutrients**: Total Organic Carbon (TOC), nitrate (N-NO3), nitrite (N-NO2), ammonium (N-NH4), orthophosphate (P-PO4), Total Nitrogen (TN), Total Phosphorus (TP) and total dissolved inorganic nitrogen (computed as sum of N-NO3+N-NO2+N-NH4).
- **solvents**: benzene, methylbenzene, ethylbenzene, m+p-xilene, o-xilene, chlorobenzene, 1,1,1-trichloroethane, 1,2-dichloroethane, trihalomethanes, methylene chloride, tetrachloroethylene, trichloroethylene, trichloroethane,1,2-dichloropropane and vynil chloride.
- **hydrocarbons**: hydrocarbons C6 – C10, hydrocarbons C10-C40 and Polycyclic Aromatic Hydrocarbons (PAH).
- **Heavy metals**: As; Cd; Cr; CrVI; Cu; Hg; Ni; Pb; Zn; Fe; Al; V; CrVI.
- **Phytoplankton**.

The following benthic sediment parameters will be sampled for at 20 stations:

- granulometry
- organic matter and nutrients: total organic matter, total carbon, total nitrogen and total phosphorus.
- hydrocarbons: benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, indenopyrene, anthracene, fluoranthene, naphthalene, total PAH.
- heavy metals: Cd; Ni; Pb; As; Total Cr; Cu; Hg; Zn; Fe; Al; V; Cr VI
- macrozoobenthic communities (three replicate samples per station)

The following parameters will be sampled for at five stations:

- **pesticides**: aldrin, alfa–hexachlorocyclohexane, beta-hexachlorocyclohexane, gamma-hexachlorocyclohexane, DDT, DDD, DDE, dieldrin and hexachlorobenzene.
- **other chemical components**: tributyltin, polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, polychlorinated biphenyls (PCBs) dioxin likes and total PCBs.

2.7 Stakeholder engagement

Guidance Note 6 (IFC, 2012) emphasises that stakeholder engagement and consultation is one of the key means of understanding impacts on biodiversity and identifying responses to such impacts. For critical habitat, stakeholders to consult include affected communities, government officials, academic and research institutions, recognised external experts for the biodiversity attributes of concern, and national and international conservation NGOs, as appropriate (paragraph GN12). All stakeholder engagement activities were conducted as part of TAP's overarching ESMS and undertaken in line with TAP's internal policies and procedures.

Additional stakeholder engagement will continue throughout the life of the project.

2.7.1 Stakeholder identification

An initial list of stakeholders with known or likely interest and knowledge regarding biodiversity was identified based on the ESIA stakeholder information for the three countries, supplemented with information from in-country partners. This list is presented below in Table 2.4.

Additional detail on the stakeholder workshops and post-workshop follow-up is provided in Appendix 2.

Table 2-4 Critical habitat assessment stakeholders

Stakeholder group	Organisation	Reason for inclusion
Greece		
Regulators	Environmental Authority within the Ministry of Environment, Energy and Climate Change (EYPE/YPEKA)	Key regulatory authority
	• Ministry of Environment, Energy and Climate Change (MEECC) • Special Secretary of Forests; • General Directorate of Development & Protection of Forests and N.R. • Directorate Protection of Forests and N.R.; • Directorate of Aesthetic Forests, Habitat and Hunting Department	Key regulator and departments responsible for biodiversity features such as forests and nature reserves
	• MEECC Special Secretary of Environment and Natural Resources, General Directorate of Development and Protection of Forests and Natural Environment; • Directorate of Aesthetic Forests, National Parks and Game Department	Key regulator and departments responsible for biodiversity features such as forests and nature reserves
National government agencies/departments	Agencies responsible for economic sectors (urban planning/local development, hunting, fishing, labour, forestry)	Responsible for hunting, fishing and forestry
Regional government agencies/departments	General Directorate of Development Planning, Environment and Infrastructure	May be involved in strategic planning affecting biodiversity features
	Directorate of Environment and Spatial Planning	
	Department of Environment and Hydroeconomy	
	General Directorate of Spatial Planning and Environmental Policy	
	General Directorate of Forests and Rural Affairs	Responsible for forestry
	General Directorate of Forests and Rural Affairs	Responsible for forestry
Local government agencies/departments	Management Body of National Park Forest of Dadias - Leykimis - Soyfliou	Responsible for protected areas
	Management body of National Park of Delta Evros	
	Management body of Delta Nestos Vistonidas -Ismaridas	
	Management body of Lakes Koronia and Volvi	
Albania		
Regulators	Ministry of Environment	Key regulator responsible for biodiversity

	Directorate of Biodiversity and Protected Areas, Ministry of Environment	Regulator for biodiversity
	National Agency of Protected Areas (NAPA)	Regulator for protected areas
	National Environment Agency (NEA)	Regulator
Regional government agencies/ departments	Regional Environment Agency Berat	Regional regulators
	Agriculture Directory Fier	
	Korce Regional Forestry Authority	
	Berat Directorate of Forest Services	
	Fier Regional Forestry Authority	
	NAPA Korce	
	NAPA Berat	
	NAPA Fier	
	Fisheries bodies – Fier district	
NGOs - international/national	EDEN (Environmental Center for Development Education and Networking)	Key community development organisation with a good network and knowledge of biodiversity
	Protection and Preservation of Natural Environment in Albania (PPNEA) - IUCN member	Key stakeholders for biodiversity
	INCA (Institute for Nature Conservation in Albania) (IUCN affiliated)	
	Institute for Environmental Policy in Albania (Instituti i Politikave Mjedisore)	
	Ekolevizja (alliance of environmental NGOs, including EDEN)	
	Regional Environmental Center	
Research institute	Tethys Research Institute	Marine research
	Albanian Ornithological Society	Bird research
	Albaforest	Forestry research
NGOs - local	Association of Private Forests and Pastures	Ecosystem service users
	Crossborder Nature	Key source of information on wolves and bears
	Sea Turtles / Herpetofauna	Key stakeholder for marine biodiversity values
Albania/Italy		
NGOs - international/national	Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic (NETCET)	Biodiversity values of the Adriatic
Italy		
Regulators	Ministry of Environment, Land and Sea Protection	Key ministry responsible for biodiversity

Regional government agencies/departments	Local government representatives of the Apulia Region	2 of the municipalities in the region are within the project AOI
	Agency - urban planning	May be involved in strategic planning affecting biodiversity features
	Agency -local development	
	Agency -fishing	Ecosystem services
	Agency -agriculture	
NGOs - local	Ecologisti Democratici Salento - ECODEM Salento (Democratic Environmentalists Association of Salento - environmentalist political association)	Biodiversity stakeholders
	ARPA Puglia for Nature	
	Legambiente Puglia (environmental organisation)	
Technical bodies	Olive growers	Ecosystem services
Other	Fishermen	Ecosystem services

3 TERRESTRIAL CRITICAL HABITAT DETERMINATION

3.1 Screening

Based on the screening of approximately 215 terrestrial or aquatic biodiversity features known to occur or potentially occurring within the project AOI (see Table A1, Appendix 1), 39 species (31 animals and eight vascular plants) were identified that qualify for critical habitat under the adopted criteria 1, 2 or 3. Some of these also trigger criteria 4, 5 or 6, along with other features described elsewhere in this document. All candidate features have been subject to assessment. Those that are considered to trigger critical habitat are reported in the following sections. Terrestrial biodiversity features assessed as not triggering critical habitat are reported in Appendix 3.

3.2 Criterion 1: threatened species

Tble 3.1 lists the species qualifying as critical habitat under Criterion 1. Additional detail is provided in the following sections.

Table 3-1 Critical habitat triggers under Criterion 1

Latin name	Common name	Conservation status	Tier of critical habitat	Rationale
Mammals				
Ursus arctos	Brown bear	IUCN LC Greece EN Albania VU Italy CR	Tier 2	Subsection (b)
Canis aureus	Golden jackal	IUCN LC Greece EN Albania EN	Tier 2	Subsection (a)
Felis silvestris	Wildcat	IUCN LC Albania EN	Tier 2	Subsection (b)
Lutra lutra	Otter	IUCN NT Greece EN Albania VU Italy EN	Tier 2	Subsection (b)
Avifauna				
Aquila clanga	Greater spotted eagle	IUCN VU Albania CR Greece EN	Tier 2	Subsection (a) and (c)
Clanga pomarina	Lesser spotted eagle	IUCN LC Greece EN	Tier 2	Subsection (c)

		Albania CR		
Hieraaetus pennatus	Booted eagle	IUCN LC Greece EN	Tier 2	Subsection (a)
Milvus migrans	Black kite	IUCN LC Greece CR	Tier 2	Subsection (c)
Circus pygargus	Montagu's harrier	IUCN LC Greece CR Italy VU	Tier 2	Subsection (c)
Bubo bubo	Eagle owl	IUCN LC Albania CR	Tier 2	Subsection (c)
Pelecanus crispus	Dalmatian pelican	IUCN VU Albania CR	Tier 2	Subsection (a) and (c)
Freshwater fish				
Anguilla anguilla	European eel	IUCN CR Italy CR	Tier 2	Subsection (a)
Cobitis punctilineata	Aggitis spined loach	IUCN VU Greece EN	Tier 1	Subsection (a)
Eudontomyzon hellenicus	Greek brook lamprey	IUCN CR Greece CR	Tier 1	Subsection (a)
Pelasgus prespensis	-	IUCN EN	Tier 1	Subsection (b)
Salmo pelagonicus	Pelagos trout	IUCN VU Greece VU	Tier 2	Subsection (b)
Alburnus vistonicus	-	IUCN CR	Tier 1	Subsection (a)
Oxynoemacheilus pindus	Pindus stone loach	IUCN VU	Tier 2	Subsection (d)
Cobitis puncticulata	Brown spined loach	IUCN EN	Tier 1	Subsection (a)
Amphibians and reptiles				
Bombina bombina	Fire bellied toad	IUCN LC Greece EN	Tier 2	Subsection (a)
Elaphe quatuorlineata	Four-lined snake	IUCN LC Albania VU	Tier 2	Subsection (a)
Pelophylax shqipericus	Albanian pool frog	IUCN Albania EN	Tier 2	Subsection (b)
Triturus macedonicus	Macedonian crested newt	IUCN LC Greece EN	Tier 2	Subsection (a)
Freshwater invertebrates				
Unio crassus	Thick-shelled river mussel	IUCN EN	Tier 2	Subsection (a)
Turcorientalia hohenackeri	-	IUCN VU	Tier 2	Subsection (b)

Vascular plants				
Sideritis raeseri	Mountain tea	IUCN not assessed Albania EN	Tier 2	Subsection (a)
Aconitum lamarkii	Yellow monk's-hood	IUCN not assessed Albania CR	Tier 2	Subsection (a)
Atropa belladonna	Deadly nightshade	IUCN not assessed Albania CR	Tier 2	Subsection (a)
Lilium albanicum	Albanian lily	IUCN not assessed Albania EN	Tier 2	Subsection (a)

3.2.1 Brown bear

3.2.1.1 Identification of DMUs

The DMUs for brown bears were based on the following: (primary) presence data, collected over several years for the ESIA and to inform the EcMP, secondary data relating to species numbers in the region and average home-ranges, and the opinion of in-country experts. This information was then used together with aerial photos to identify discrete blocks of suitable, often contiguous, habitat which would most likely cover (conservatively) the home ranges of all the animals affected. In addition, in accordance with Guidance Note 6, the DMUs were identified as those areas with a definable boundary, within which the biological communities and/or management regimes have more in common with each other than they do with those in adjacent areas. For example, brown bears were confirmed to be using a wooded mountainside surrounded by agricultural/modified/developed land in Albania. As such, the particular DMU for bears in this area (DMU 5 in table 3.2, see Figure 13) was defined as the entire wooded mountain stretch (not just the area directly crossed by the pipeline route) as this was an ecosystem supporting the bears and comprising completely different habitats to the surrounding land types.

This approach was also applied to the identification of DMUs for golden jackal, wildcat and grey wolf (see sections below).

Five DMUs in Albania and four in Greece have been identified, which likely form parts of permanent brown bear (*Ursus arctos*) home ranges. Some of these are apparently important all year round and some have seasonally importance. DMUs are listed in Table 3.2. and mapped in Figure 12 and Figure 13 (Greece and Albania respectively) in Appendix 4.

Table 3-2 DMUs for brown bear in Greece and Albania

RSK ID	Approximate area in km^2	Corresponding KPs*
Albania – 60km^2 in total		

RSK ID	Approximate area in km^2	Corresponding KPs*
1	3	0 - 2
2	1	21 - 23
3	6	62 - 66
4	29	70 - 79
5	21	119 - 129
Greece – 647 km^2 in total		
E	267	430 - 453
F	161	495 - 502
G	38	533 - 535
H	181	538 – 549
Total: approximately **707 km²**		

*It should be noted that the DMUs are not confined just to the pipeline Right of Way (RoW). The DMUs are defined in terms of ecological units. Therefore, these represent the areas of continuous habitat around the route that bears might use (where the habitat used is obviously different, or subject to different management regimes, than surrounding habitat types and relative to the home ranges of bears).

Population data is available for brown bears as follows (as per the *Action Plan for the Conservation of the Brown Bear in Europe*, 2000, *Brown Bear Action Plan – Albania,* 2007 and *Status, Management and Distribution of Large Carnivores in Europe,* 2012).

- global estimates of European brown bear: c. **50,000** (c. 14,000 outside Russia) within an area of more than 2.5 million km² (800,000 km² outside of Russia)
- Balkan region estimates: c. **2,800** bears in the Alps-Dinaric-Pindos complex (distributed over approximately 44,820 km²)
- regional estimates: c. **3,320** bears in the Alps-Dinaric-Pindos and Rila-Rhodope mountain complexes
- national estimates – Greece: **350-400** bears distributed over approximately 21,500 km²
- national estimates – Albania: **180–200** bears distributed over approximately 5,000 km².

3.2.1.2 Number of bears potentially supported by the DMUs in Albania

Bear distribution data from the Action Plan indicates a mean density of 0.05 bears per km² in Albania. Home-range data for brown bears ranges from 280 km² to 40 km² (data relating to females in similar habitats in Greece). Crude calculations indicate that the number of bears supported by the Albanian DMUs could be:

- three, using the Albanian Action Plan density value;
- 0.2, using the largest home-range value (unlikely to be appropriate for this type of calculation)

- 1.5, using the smallest home-range value (unlikely to be appropriate for this type of calculation).

The numbers above indicate the number of home-ranges likely to be intersected and the number of range-holders likely to be supported. However, bear movements throughout the DMUs also need to be taken into consideration. Given that there are five DMUs separated by some distance, it would not be unreasonable to double this number when considering the number of bears potentially supported at one time or another. Therefore, for the purpose of this assessment it is not unreasonable to assume that six bears could be supported by the DMUs.

This number was discussed with the project's in-country large carnivore expert who considered it appropriate and consistent with findings in the field[18].

Six bears is equal to:

- 0.012% of the global population
- 0.2% of the Balkan region population
- 3.33% of the Albanian population

3.2.1.3 Number of bears potentially supported by the DMUs in Greece

Published studies in Greece showed home ranges of 280 km² to 40 km² (in the Rhodopi Mountains). However, some results published on the Callisto website include home-ranges of bears in the Pindos between 13 km² (summer range of a female) and 507 km² (adult male), with other male ranges varying between 102 km² and 483 km².

Using the Pindos data (those most relevant to the project AOI), the smallest home-range for a female is 13 km² and the smallest for a male is 102 km². The largest home range for a male is 507 km². The largest home range for a female needs to be taken from the Rhodopi study, which was 280 km².

Crude calculations using home-range sizes indicate that the total number of bears in the DMUs combined (i.e. within the 647 km²) could be:

- using the lowest range values - 50 females and six males (unlikely to be appropriate for this type of calculation)
- using the largest range values – two females and one male (also unlikely to be appropriate for this type of calculation).

If habitat quality was considered uniform throughout the 21,500 km² (the geographic distribution of the species in Greece, as noted in Section 3.2.1.1), and this supports 350-400 bears (also as noted in Section 3.2.1.1), then the DMUs (which constitute 3% of the total national area occupied by bears) would support 11 bears (using the median number of 375 bears).

There are four discrete DMUs for bears within Greece, separated by some distance, and the evidence collected from field studies confirms that there are likely to be at least four different bears using each of the DMUs. As such, it is plausible that three females

[18] It should be noted that a different approach was taken when calculating bear numbers in Greece based on the possible number of males and females in each DMU. However, this approach was not considered appropriate for Albania as it would lead to an over-estimation. This is because habitat condition and continuity/connectivity is considered to be much better in Greece.

and one male could be present in each DMU. This would equate to 12 females and 4 males (**16 bears**). This figure was considered appropriate by TAP's in-country large carnivore expert.

This would result in **4%** of the national population being supported by the DMUs.

N.B. the home-range values above indicate that between 15% and 0.8% would be supported.

3.2.1.4 Tier of critical habitat for brown bear

Using the figures above for both Albania and Greece, the DMUs supporting brown bears qualify the DMUs as **Tier 2 habitat** under sub-section (b).

3.2.2 Golden jackal

Golden jackal is listed globally as LC although it is considered EN in both Greece and Albania (where it is considered a pest and is routinely shot by shepherds). Surveys in Greece identified five DMUs as listed in Table 3.3 and mapped in Figure 12. In Albania the species is reported (*Bego, 1997*; *Giannatos, 2004*) as being on the verge of extinction, with possible occurrence in only three lowland wetland locations along the Adriatic Sea. While no specific surveys for golden jackal have been undertaken by TAP in Albania, a number of observations by TAP environmental personnel have been made in the coastal dunes habitat at the western end of the corridor and confirmed by relevant species experts through supporting photographic evidence. A single DMU was subsequently identified within the project AOI in Albania on the basis of the golden jackal's habitat preferences and the fact that the species is listed in the management plan of the Karavasta National Park, located to the north of the Albanian landfall (Table 3.3 and Figure 13). The information available was considered sufficient to identify a potential DMU for golden jackals in Albania and to drive the Critical Habitat Assessment. However, specific surveys of the area will be undertaken following the breeding season in 2017 to ground-truth assumptions and confirm the accuracy of predictions.

Table 3-3: Golden jackal DMUs in Greece and Albania

RSK ID	Approx area in km^2	Corresponding KPs*	Number of territories within each study area
Greece 1	30	0 - 6	6
Greece 2	35	26 - 35	1
Greece 3	162	116 - 129	5
Greece 4	248 (Nestos SAC/SPA)	151 – 161 and 170 - 176	10
Greece 5	67	284 - 295	2
Albania 1	110	190-195	Unknown
Total: **646 km²**			Average group size from literature = 7 (possibly 168 animals supported in Greece)

Population data taken from the *Action Plan for the Golden Jackal in Greece,* 2004, *Current status and distribution of Golden Jackals in Europe, 2012* and the *IUCN Red List* (accessed on 03.06.16)

- regional estimate: figures are vague (due to animal movements and some countries considering the animal as a pest) but approximately 12,000 animals could exist within neighbouring Hungary, Bulgaria and Romania
- national estimates – Greece: 1,000 jackals (with the largest, healthiest and most dynamic population around the Nestos region)
- national estimates – Albania: species restricted to three coastal lowland areas but no national estimates are available.

3.2.2.1 Number of jackals potentially supported by the DMUs in Greece

In baseline studies around the pipeline route, surveys identified 24 jackal territories throughout the DMUs. If the average group size is considered to be seven jackals (although this can be higher in regions like Nestos), then this could equate to 168 animals. Given the size of some of the DMUs (e.g. Nestos SAC/SPA extends a long way from the pipeline route), the entirety of the DMUs has not been surveyed. Therefore, the true number of jackals/territories is quite probably under-estimated here.

168 animals equal:

- 16.8% of the Greek population

3.2.2.2 Number of jackals potentially supported by the DMUs in Albania

It is not possible to estimate the number of jackals within the DMUs in Albania without adequate surveys but it is possible that the DMUs represent >10% of the national population.

3.2.2.3 Tier of critical habitat for golden jackal

The above figure would result in the DMUs qualifying as **Tier 2 critical habitat** under subsection (a).

3.2.3 Wildcat

The wildcat (*Felis silvestris*) is listed as LC on the global IUCN Red List but is listed as EN in Albania. Wildcats are found in a wide variety of habitats, from deserts and scrub grassland to dry and mixed forest. They are absent only from rainforest and coniferous forest. European wildcats are primarily associated with forest and are found in their highest numbers in broad-leaved or mixed forests with low population densities of humans. They are also found in Mediterranean maquis scrubland, riparian forest, marsh boundaries and along sea coasts.

DMUs defined for brown bear in Albania are also defined as DMUs for wildcat (Figure 13). Little information is available regarding the species' population or range in Albania, where it continues to be illegally hunted. Although the IUCN species listing indicates its distribution in Albania is limited to the Greek transboundary region, it was caught on camera traps during the TAP large carnivore surveys within the Vithkuq-Ostrovice

Corine biotope, hence the inclusion of this species within the brown bear DMUs. The DMUs are conservatively assessed as **Tier 2 critical habitat** under subsection (b).

3.2.4 Otter

Surveys in Albania identified otters (VU nationally) using one reservoir, 11 rivers and a drainage channel (13 sites in total) within the project AOI (although breeding was not confirmed during the 2015 field surveys). Surveys in Greece identified otters (EN nationally) using 22 watercourses within the AOI and crossed by the pipeline (although breeding was not confirmed during the 2015 field surveys). DMUs were defined as extending 10 km upstream and downstream of a river crossing in order to encompass home-ranges of two otters (likely the entirety of a female's home-range and part of one male's range). Although otter home ranges vary and depend on prey availability, otter density and water levels, a DMU of 20 km was considered appropriate following a review of published data sources and discussion with an in-country expert[19]. Reservoirs were defined as DMUs in their entirety. DMUs for otters in Greece and Albania are listed in Table 3.4 and mapped in Figure 14 and Figure 15 respectively.

[19] Home range for female otter in Bulgaria found to be 2.2 km (*Georgiev, 2007*)
Otters typically have home ranges containing at least 10 – 20 km of river, stream or lakeside (*McCafferty, 2005*)
Possible 40 km linear section of home range per individual (*Hampshire Biodiversity Partnership, 2000*)

Table 3-4: Otter DMUs in Greece and Albania

Site ID	Site name	Approximate KP	Potential habitat and use by otters
Albania			
1	Devolli and tributaries (Bilisht)	9	Day nesting
2	Devolli River (Zemblaku)	22	Presence confirmed
3	Gjanci water reservoir	22	Key habitat with spraints
4	Dunaveci	52	Presence confirmed
5	Osumi (Vithkuq)	59	Day nesting
6	Osumi (Qender)	104	Presence confirmed
7	Vokopola	122	Day nesting
8	Osumi (Vertop1)	138	Breeding and feeding
9	Osumi (Vertop 2)	140	Presence confirmed
10	Osumi (Otllak)	157	Presence confirmed
11	Semani (Roskovec)	182	Presence confirmed
12	Semani (Mbrostar)	195	Presence confirmed
13	Main drainage channel near the Topojan village	213	Presence confirmed
Greece			
12	Evros River	0	Breeding and resting
13	Provatonas Canal	1	Resting
14	Fytemata stream	13	Breeding and resting
15	Apokrimno stream	42	Resting
16	Lissos River	82	Breeding and resting
17	Chionorema stream	100	Resting
18	Aspropotamos stream	106	Resting
19	Xiropotamos stream	113	Presence confirmed
20	Kosinthos (Xanthis)	136	Resting
21	Nestos River	154	Breeding and resting
22	Tafros Aggitis	205	Breeding and resting
23	Aggitis River	226	Breeding and resting
24	Strymonas River	294	Breeding and resting
25	Axios River	375	Breeding and resting
26	Loudias River/Canal 66	400	Breeding and resting
27	Tafros River	420	Breeding and resting
28	Grammatiko stream	450	Resting
29	Kilada / Kastro Stream	466	Breeding and resting

Site ID	Site name	Approximate KP	Potential habitat and use by otters
30	Gioli Canal	520	Resting
31	Aliakmonas River 1	528	Breeding and resting
32	Aliakmonas River 2	534	Breeding and resting
33	Aliakmonas River 3	539	Resting

3.2.4.1 Number of otters potentially supported by the DMUs in Albania

There have been several large-scale surveys regarding the presence and distribution of otters in Albania during the last 30 years (e.g. *Prigioni et al, 1986* and *Balestrieri et al, 2015*). These surveys showed the otter to be widespread throughout Albania, although distribution was not uniform (see Figure 9).

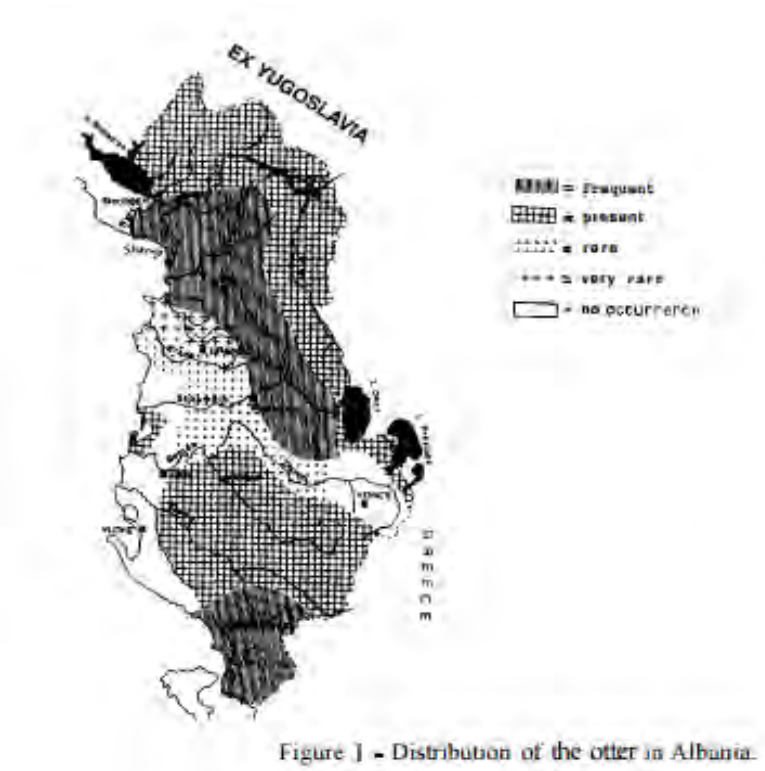


Figure 9 Distribution of otter in Albania

Based on the diagram above, the TAP route passes through areas where otters are known to be 'present' (i.e. not frequent or rare). However, despite these detailed surveys, there are no apparent population estimates for the otter in Albania. Similarly, there are no apparent Area of Occupancy data produced (as there have been for bears and wolves). Therefore, expert opinion (Professor Ferdinand Bego) has been used when determining the tier of critical habitat relating to otters in Albania.

It is assumed that two otters are supported by each DMU and hence 22 otters supported collectively within the project AOI in Albania. This figure is considered to be

well below 10% of the national or regional otter population based on expert opinion and hence the otter DMUs are not considered critical habitat.

3.2.4.2 *Number of otters potentially supported by the DMUs in Greece*

A study conducted in 1983, in northeastern Greece, involved 1000 m of waterway at 52 sites being searched for signs of otters along with a habitat assessment. The findings were that otters were scarce in the west of the study area (Axios and Aliakmon catchments) and most widespread in the east (Nestos catchment and neighbouring rivers). A decline had occurred in this eastern area since 1981, though it was confined to the lowlands. *Gaethlich, M.(1988)* states that 'Western Greece holds a good otter population and this agrees with the results of previous surveys in eastern and north-eastern Greece (*Macdonald and Mason 1982a, 1985*) as well as with evidence coming from the neighbouring Albania (*Prigioni el al 1986*)'. Further studies have found that the species is widespread through much of the country, being especially frequent in the area west of Kavala, the plain of Kiphissos, the Amvrakikos and Mesolongi wetlands, the Aoos-Sarandaporos catchment and in the western Peloponnisos. Fragmentation of populations is apparent in central Greece and around Thessaloniki.

Based on each DMU supporting two otters, the DMUs in Greece could collectively support 44 otters. This figure is considered to be well below 10% of the national or regional otter population based on expert opinion.

3.2.4.3 *Tier of critical habitat for otters*

Otters do not trigger critical habitat in Albania as the DMUs do not support > 10% of the national population of a VU species. However, otter is listed as EN in Greece. hence the DMUs conservatively qualify as **Tier 2 critical habitat** under subsection (b).

3.2.5 European eel

European eel (*Anguilla anguilla*) is listed globally as CR. The species has a ubiquitous distribution throughout its known range occurring in coastal, transitional and freshwaters, and is thought to migrate to the Sargasso Sea in the west central Atlantic to spawn. Within freshwaters, they can be found in both still waters (lakes) and flowing waters (rivers) with their distribution only being limited by physical obstructions to their movements such as waterfalls, weirs, dams, hydropower schemes, etc. Furthermore, eel densities are known to decrease with increasing distance from the tidal limit and increasing altitude. Due to the fact that eels could therefore be found in any of watercourses within the project AOI, and in the absence of any data suitable for clearly defining individual reaches of rivers, the DMUs have been defined as individual whole rivers. There are therefore 15 DMUs that are considered likely to support European eel in Albania and 17 DMUs that are considered likely to support European eel in Greece. These are listed in Table 3.5 and mapped in Figure 14 (Greece) and Figure 15 (Albania).

Table 3-5: European eel DMUs in Albania and Greece

River	Approximate KP	River	Approximate KP
Albania		Greece	
Llabanica stream	0	Fytemata stream (Mega)	13
Ampraku stream	1	Tsai stream	27
Kalivere (Kaline) stream	2	Apokrimno stream (Irini)	42
Devolli river	9	Filiouris river (Lissos)	78
Stropani stream	13	Lissos river (Mavropotamos)	82
Stermort stream	51	Chionorema stream (Bospos)	100
Karavidhja stream	58	Aspropotamos stream	106
Osumi river	59	Meleti stream	107
Ndrenja stream	61	Xiropotamos stream	113
Rrungaja stream	68	Filalos river (Iasmos)	117
Vokopala river	122	Amaxades stream	126
Vërtopi river	133	Kosinthos river (Xanthis)	136
Vodica river	140	Nestos river	154
Zagoria river	145	Channel	165
Semani river	182	Pontolivado stream	175
		Kotsas stream	179
		Doxato channel	222
		Aggitis river	226
		Agios Ioannis river	269
		Belista ditch	284
		Strymonas river	294
		Gallikos river	359
		Axios river	375
		Loudias river	400
		Canal 66 (Tafros)	420
		Aliakmonas	525

3.2.5.1 Tier of critical habitat for European eel

There is an absence of reliable data concerning eel populations in Albanian or Greek rivers. Given that European eel spawn in the Sargasso sea with larvae subsequently drifting across the Atlantic using prevailing currents, it is considered highly unlikely that sufficient numbers reach individual rivers within the project AOI to comprise ≥10% of

the global population and therefore European eel do not qualify as Tier 1 Critical Habitat. However, each of the individual watercourses which comprise a DMU is likely to support the regular occurrence of a single individual of this CR species. This therefore qualifies precautionarily as **Tier 2 critical habitat** under subsection (a).

3.2.6 Aggitis spined loach

The IUCN Red List considers the Aggitis spined loach (*Cobitis punctilineata*) as VU with the justification: 'This species is only known from a single restricted location (extent of occurrence (EOO) <100 km²), the Aggitis stream in the Strymon river basin in northern Greece. There is little information on abundance or population trends'. It is listed as EN in the Greek Red Data Book.

Surveys of the Phillippoi River in 2014 indicated sufficiently high densities of Aggitis spined loach that additional, targeted surveys were designed. Seven sites were surveyed by RSK in 2015 (see Figure 14) and Aggitis spined loach was recorded in each site, indicating a relatively wide range within the Strymon river basin.

3.2.6.1 Tier of critical habitat for Aggitis spined loach

The fact that the species is only recorded in the Aggitis catchment indicates that the DMU supports >10% of the global population. In addition, given the extremely restricted range of the species it is considered extremely likely that the DMU is one of 10 or fewer DMUs globally for the species.

As such, the DMU supporting Aggitis spined loach qualifies as **Tier 1 critical habitat** under subsection (a). Population estimates of the species within the Strymon basin are unknown. However, in the absence of further evidence to the contrary, the DMU must be considered of significant importance for the species.

3.2.7 Greek brook lamprey

The IUCN Red List and Greek Red Data Book cite the Greek brook lamprey (*Eudontomyzon hellenicus*) as CR. The IUCN notes that the species has an estimated extent of occurrence (EOO) <100 km² and area of occupancy (AOO) <10 km².

The Greek brook lamprey has a very narrow distribution in Greece and is only known from two river basins. It is endemic to the lower Strymon river drainages, such as spring-fed streams (Kefalari[20] and Mylopotamos) near Drama (*Barbieri et al., 2015*).

However, the species was recorded at the pipeline crossing point Philippi_3 in 2014 during surveys conducted as part of an ESIA Amendment. The 2015 RSK surveys were subsequently specifically designed to survey for the species.

Anecdotal evidence suggests that despite several surveys from independent projects running throughout central Macedonia (most of these projects relate to the 2000/60EE Directive), the Philippi_3 sampling point (see Figure 14) remains the sole confirmed site in the last 10-15 years for the species.

[20] Referred to as Philippi 3 in the TAP Addendum.

3.2.7.1 *Tier of critical habitat for Greek brook lamprey*

Given the fact that the Greek brook lamprey may now be absent (or at least severely declining) in the Louros basin and is not widely distributed in the Strymon river basin, it is considered likely that the DMU supports >10% of the global population. In addition, given the extremely restricted range of the species, it is considered highly likely that the DMU is one of 10 or fewer DMUs globally for the species.

The DMU qualifies as **Tier 1 critical habitat** under both subsection (a) and subsection (b).

Population estimates of the species within the Strymon basin are unknown. However, in the absence of further evidence to the contrary, the DMU must be considered of significant importance for the species.

3.2.8 Pelasgus prespensis

The IUCN Red list of threatened species lists *Pelasgus prespensis* as EN. The IUCN (2011) records suggest that the species is restricted only to Lake Prespa in north-western Greece, Albania and the former Yugoslav Republic of Macedonia (FYROM). This distribution was compiled by the Mediterranean Endemic Freshwater Fish Red List Workshop (2004).

However, during preparation of the TAP ESIA in Albania, the species was recorded at a location on the Dunaveci stream (Sampling point 5) which is a tributary of the Devolli River. During the RSK aquatic ecology surveys in 2015, a Pelasgus species was also recorded at the sampling site on the Dunaveci stream. Our assumption based on the information from a local expert (Dr Spase Shumka), is that the species captured in the 2015 surveys was *P. prespensis*.

It is stated in the TAP ESIA that '*P. prespensis* is under-recorded in Albania (*Smith and Darwall, 2006*), however should still be viewed as of the highest conservation importance'.

It is considered feasible that *P. prespensis* has spread to the Dunaveci stream following the construction of an artificial channel which connected the Devolli River to Lake Mikri Prespa to allow the use of water for the irrigation of the Korcë plain.

3.2.8.1 *Tier of critical habitat for Pelasgus prespensis*

The IUCN lists *P. prespensis* as restricted to a single location (the Prespa lakes). The findings of the ESIA aquatic surveys indicate that there is a population present in the Dunaveci stream. It is considered likely that the species has colonised the Dunaveci stream via the Devolli River following the creation of artificial channels connected to the Prespa lakes.

The main population of *P. prespensis* is considered to be in the Prespa lakes and therefore the species does not qualify for Tier 1 critical habitat under subsection (a) as the DMU (the Dunaveci stream, see Figure 15) is unlikely to support > 10% of the global population. An important consideration in this assessment is that the Prespa lake has only been connected to the Devolli river for the last 50 years. In addition, the

documented habitat for the species (the littoral zone in lacustrine habitats) is not represented in the small-stream habitat represented in the Dunaveci stream.

However, given the extremely restricted range of the species it is considered highly likely that the DMU is one of 10 or fewer DMUs globally for the species. As such the DMU qualifies as **Tier 1 critical habitat** under subsection (b).

3.2.9 Pelagos trout

The IUCN Red list of threatened species lists Pelagos trout (*Salmo pelagonicus*) as VU. The species is endemic to the Aliakmon and Vardar (Axios) river basins. Populations from Stumica drainage possibly represent a distinct species. The full extent of its range is not known due to an absence of reliable surveys targeted specifically on the species.

The species was not recorded in any of the TAP field surveys. However the tributaries of the lower Vardar (Axios), Upper Aliakmon and Strumica drainage are believed to be the current stronghold for this species and have been defined as DMUs (Figure 14). The species preference is known to be the upper reaches of the tributaries where mountain streams provide the required habitat of clear water and lower temperatures.

3.2.9.1 Tier of critical habitat for Pelagos trout

Based on current knowledge, it is assumed that the above DMUs collectively support more than 10% of the global population of Pelagos trout and therefore qualify as **Tier 2 critical habitat** under subsection (a).

3.2.10 Alburnus vistonicus

The IUCN Red List of threatened species lists *Alburnus vistonicus* as CR. The IUCN records (2008) suggest that this species is endemic to Lake Vistonis (a coastal lagoon) drainage.

The full extent of its range is not known due to an absence of reliable surveys targeted specifically on the species. Notwithstanding this, it is believed that the majority of the global population is located in Lake Vistonis drainage with smaller populations being found in the Filouris, Kasinthos and Xiropotamos rivers. These have been defined as DMUs for the species (Figure 14).

Lake Vistonis is not crossed by the pipeline. However the route does cross rivers that drain into the lake.

There is a lack of recent reliable survey data for each of the three aforementioned rivers that would enable population estimates to be provided and then related to global population estimates. Surveys undertaken on each of the rivers and documented in the ESIA, however, suggest that *Alburnus vistonicus* is present in small numbers and it is considered possible that the rivers are used for spawning.

3.2.10.1 Tier of Critical Habitat for Alburnus vistonicus

Surveys undertaken on each of the rivers have shown at least small populations of *Alburnus vistonicus* to be present and there are only four known DMUs for this species globally (based on information available at the time of undertaking this assessment).

The regular occurrence of this CR species within these four DMUs thus qualifies as **Tier 1 Critical Habitat** under subsection (a).

3.2.11 Oxynoemacheilus pindus

The IUCN lists this species as VU. The species only occurs in five to 10 tributaries in the Aoos (Greece), Semani, Shkumbini and Erzeni (Albania) drainages. Of these, only the Semanit river is within the project AOI, in Albania and is therefore mapped as a DMU for the species (Figure 15). Given the restricted number of catchments known to support this fish species, it is considered likely that the Semanit River DMU could support ≥10% of the national/regional population of this species, although there is currently insufficient data available to confirm this.

3.2.11.1 Tier of Critical Habitat for Oxynoemacheilus pindus

Adopting a precautionary approach as outlined above it it is considered likely that the Semanit river qualifies as Tier 2 Critical Habitat under subsection (a).

3.2.12 Cobitis puncticulata

The IUCN lists this species as EN. The species only occurs in three sites: the lower Matiza/Evros river in Greece and Turkey, and two other locations in Turkey. The Evros River is within the project AOI in Greece and has been defined as a DMU for the species (Figure 14). Given the species' limited distribution, it is likely that the Evros River supports ≥10% of the global population although data on the population sizes for each DMU is not available to confirm this.

3.2.12.1 Tier of Critical Habitat for Cobitis puncticulata

Adopting a precautionary approach as outlined above, it it is considered that the Evros River DMU qualifies as **Tier 1 Critical Habitat** under subsection (a).

3.2.13 Greater spotted eagle

The greater spotted eagle (*Aquila clanga*) is classified as VU on the IUCN Red List of Threatened Species (Birdlife 2016). In Albania, it is considered to be CR while in Greece it is listed as EN.

The species is mainly migratory and is non-breeding within Albania, present in the southwest of the country and the northwest of Greece. The global EOO is approximately 8.7 million km^2 and the European EOO is 3.04 million km^2 (IUCN 2016). The global population is estimated to be 3,300–8,800 mature individuals and the European population is estimated to be 1,500–2,100 mature individuals (IUCN 2016).

Within Albania, the Vithkuq-Ostrovice Corine biotope and the Grykedhja-Semanit Corine biotope have been identified as DMUs for the greater spotted eagle (see Figure 17). The species was not recorded during any of the TAP field surveys but is considered likely to occur, based on its known habitat preferences.

The Loutros Forest Special Protection Area (SPA) is traversed by the pipeline (along an existing disturbance corridor) between KP 21 and KP 34, and has been identified as a DMU for the greater spotted eagle (see Figure 16). In 2008, the Loutros Forest was

found to support 47 individuals, representing a significant proportion of the Greek population and certainly >10%. During recent surveys conducted by the EPC Contractor within the Loutros Forest, winter roost sites of at least seven greater spotted eagles were identified within the project AOI.

Given the broad range of the species, it does not qualify as Tier 1 habitat as the size of the DMUs is well under 1% of the global range. However, the DMUs do collectively qualifiy as **Tier 2 critical habitat** under subsection (a).

3.2.14 Lesser spotted eagle

The lesser spotted eagle (*Clanga pomarina*) is classified as LC on the IUCN Red List of Threatened Species (Birdlife 2016) and the European Red List, EN in the Greek Red Data Book (Legakis and Maragou 2009) and CR on the Albanian Red List.

The species is migratory, breeding in Eastern Europe and wintering in sub-Saharan east Africa. The global EOO is approximately 2.63 million km^2 and the European EOO is 1.91 million km^2 (*IUCN 2016*). The global population is estimated to be 44,900-60,500 mature individuals and the European population is estimated to be 32,800–44,200 mature individuals (*IUCN 2016*). The national population of lesser spotted eagle in Greece is estimated to be 70–100 breeding pairs. No national estimates are available for Albania.

In Albania, the Vithkuq-Ostrovice Corine biotope has been identified as a DMU for the lesser spotted eagle, based on habitat preference and historical records (Figure 17). No individuals were observed during the ESIA or post-ESIA surveys.

In Greece the species' range extends across most of the northern half of the country. The Loutros Forest Special Protection Area (SPA) is traversed by the pipeline (along an existing disturbance corridor) between KP 21 and KP 34, and has been identified as a DMU for the lesser spotted eagle (see Figure 16). During recent surveys (*Exergia, 2016*) in the Loutros Forest, at least three territories were confirmed within the DMU (with another two unconfirmed territories provisionally identified). It is therefore possible that the Loutros Forest alone supports 10% of the national breeding population, as the survey only covered a corridor through the designated site. The DMUs collectively qualify as **Tier 2 critical habitat** under subsection (c).

3.2.15 Booted eagle

The booted eagle (*Hieraaetus pennatus*) is classified as LC on the IUCN Red List of Threatened Species (*Birdlife 2016*) but is EN in the Greek Red Data Book (Legakis and Maragou 2009) and the Albania Red List. The species is migratory, breeding in Europe and Asia and wintering in sub-Saharan Africa and the Indian sub-continent. The global EOO is approximately 3.2 million km^2 and the European EOO is 2.25 million km^2 (*IUCN 2016*). The global population is estimated to be 149,000-188,000 mature individuals and the European population is estimated to be 46,300–58,300 mature individuals (*IUCN 2016*). The national population for Greece is estimated to be 70–110 breeding pairs. No national estimates are available for Albania.

In Albania, the Vithkuq-Ostrovice Corine biotope has been identified as a DMU for the booted eagle, based on habitat preference and historical records (Figure 17). No individuals were observed during the ESIA or post-ESIA surveys.

In Greece the species' range extends across most of the northern and eastern parts of the mainland. Two DMUs have been identified for the booted eagle in Greece (Figure 16), the Loutros Forest SPA and Kirki Widlife Refuge, which in intersected by the pipeline corridor between KP 50 and KP 55. During recent surveys of these sites (*Exergia, 2016*), five territories were confirmed with another unconfirmed territory provisionally identified. This is well under 10% of the global population. Hwever, it is possible that the DMU supports more than 10% of the national breeding population as the survey only covered a corridor through the designated sites.

Collectively, the DMUs are considered to qualify as **Tier 2 critical habitat** under subsection (c).

3.2.16 Black kite

The black kite (*Milvus migrans*) is classified as LC on the IUCN Red List of Threatened Species (*Birdlife 2016*), CR in the Greek Red Data Book (*Legakis and Maragou 2009*) and EN on the Albanian Red List. Although the species is one of the most common raptors in the world, the population has declined. The species is mainly migratory, with birds from Europe and northern Asia wintering in sub-Saharan Africa and southern Asia. The global EOO is about 46.7 million km^2 and the European EOO is 7.02 million km^2 (*IUCN 2016*). The global population is estimated to be 1,470,000-1,980,000 mature individuals and the European population is estimated to be 162,000–218,000 mature individuals (*IUCN 2016*). National population estimates are not available for Greece or Albania.

In Albania, the Morava Mountains, Vithkuq-Ostrovice Corine biotope and Grykedhja-Semanit Corine biotope have been identified as DMUs for the black kite, based on habitat preference and historical records (Figure 17). No individuals were observed during the ESIA or post-ESIA surveys.

In Greece, the species' range is limited to three areas for breeding and three areas for non-breeding (*IUCN 2016*). The Loutros Forest SPA (Figure 16) has been identified as a DMU for the black kite, with one territory confirmed during the 2015 RSK surveys (although this territory could not be confirmed during the more recent 2016 survey).

Given the lack of definitive population data or survey results, a conservative approach has been applied and the DMUs are assumed to collectively support >10% of the regional population, thereby qualifying as **Tier 2 critical habitat** under subsection (c).

3.2.17 Montagu's harrier

Montagu's harrier (*Circus pygargus*) is classified as LC on the IUCN Red List of Threatened Species (*Birdlife 2016*) and is CR in the Greek Red Data Book (*Legakis and Maragou 2009*). The species is migratory, wintering in sub-Saharan Africa and southern Asia. The global EOO is approximately 9.42 million km^2 and the European EOO is 3.86 million km^2 (*IUCN 2016*). The global population is estimated to be 266,000-449,000 mature individuals and the European population is estimated to be

109,000–184,000 mature individuals (*IUCN 2016*). The national population in Greece is estimated to be 20– 30 breeding pairs.

In Greece the species' range is a single area in central northern Greece which expands north into Macedonia. A DMU within the Mesopotamia area (Kastoria) has been identified, intersected by the pipeline between KP525 – KP541 (Figure 16). During surveys conducted in 2015 (RSK), four territories were recorded within this DMU. The DMU therefore supports more than 10% of the national breeding population and qualifies as **Tier 2 critical habitat** under subsection (c).

3.2.18 Eagle owl

The eagle Owl (*Bubo bubo*) is classified as LC on the IUCN Red List of Threatened Species (*Birdlife 2016*) and CR on the Albanian Red List.

The global EOO is about 32.0 million km^2 and the European EOO is 7.19 million km^2 (*IUCN 2016*). The global population is estimated to be 250,000–2,500,000 individuals and the European population is estimated to be 36,90060,600 mature individuals (*IUCN 2016*).

This species inhabits mainly rocky country with cliffs and ravines, caves, patches of woodland, scattered trees or groves, generally in undisturbed wilderness areas. Within Albania the Vithkuq-Ostrovice Corine biotope has been identified as a DMU for the eagle owl (see Figure 17). The species was not recorded during any of the TAP field surveys but is considered likely to occur based on its known habitat preferences. There is no evidence of particularly large or high-density populations of the species in Albania. However, applying a highly conservative approach, the DMU could potentially support 10% of the national population and hence qualifies as **Tier 2 critical habitat** under subsection (c)**.**

3.2.19 Dalmatian pelican

The Dalmatian pelican (*Pelecanus crispus*) is classified as VU on the IUCN Red List and CR on the Albanian Red List.

Its global Extent of Occurrence (EOO) is estimated at 12,600,000 km^2 and it is known from 11-100 locations (*Birdlife International, 2016*). The global population is estimated to be 6,700-9,300 mature individuals with 4,350-4,800 of those in the Black Sea and Mediterranean regions.

DMUs have been identified within the project AOI, associated with the following designated and protected areas (see Figure 16 and Figure 17 for Greece and Albania respectively):

- Lake Kastoria
- Evros Delta SPA/Ramsar
- Potamous Filiouris IBA
- Nestos Delta IBA/Ramsar
- Lake Kerkini IBA
- Lake Pikrolimni IBA
- River Axios complex

- Agra artificial lake complex
- Lake Chimaditis and Lake Zazaris IBA
- Prespa Lakes
- Grykedhja- Semanit Corine biotope/Karavasta Lagoon.

Given the broad range of the species, these DMUs do not qualify as Tier 1 habitat as the area in question is well under 1% of the EOO. However, it is likely that the DMUs could collectively support 10% of the national/regional population of this nationally-listed CR species, this qualifying them as **Tier 2 Critical Habitat** under subsection (a) and (c).

3.2.20 Albanian pool frog

The Albanian pool frog (*Pelophylax shqipericus*) is classified as EN on the IUCN Red List. It is an endemic species, distributed along the coast of Albania and Lake Scutaria/Skadar which just crosses the border into Montenegro. The Albanian pool frog is found around a broad range of still or slow-moving freshwater waterbodies including canals, lakes, ponds, ditches, marshes and swamps. It is usually found below 500m and is highly aquatic in its behaviour, tending to spend most of its time in well-vegetated aquatic environments. It is principally threated by the drainage and development of wetlands and pollution of its aquatic habitat with agrochemical and industrial contaminants.

The species was observed during TAP field surveys and the area between KP175 and the coast is classified as part of its range. There are also records (*Jablonski, 2011*) of the species being found less than 5 km north of the pipeline between KP191 and KP194. This area has been identified as a DMU for the species (see Figure 19) with the boundaries of the DMU taken to the the area bounded by the Semani in the north, the Vjosa in the south and the motorways and urban areas of Fier to the east. These features are likely to present significant barriers to movement, effectively creating a 'contained' population within the DMU. The Albanian pool frog is an endangered species with a range of approximately 5000 km^2 across the western side of Albania (*Speybroeck et al, 2016*) and yet its populations are not well understood. A loss of habitat in or around the DMU has the potential to affect the long-term survivability of the species which therefore triggers **Tier 2 critical habitat** under subsection (b).

3.2.21 Fire-bellied toad

The fire-bellied toad (*Bombina bombina*) is classified as LC on the IUCN Red List and EN in Greece.

The species was not recorded during any of the TAP field surveys and there are no recent records from Greece (*Agasyan et al., 2009*), but its range in this country has not been surveyed for many years.

It has a very restricted geographical range in Greece, with the known distribution of the species limited to the marshlands around the Evros River. This area has been identified as a DMU for the fire-bellied toad (Figure 18).

Given its widespread global distribution and very restricted range in Greece, it is not considered likely that the DMU contains 10% of the global EOO of this species. The DMU therefore qualifies as **Tier 2 critical habitat** under subsection (a).

3.2.22 Four-lined snake

The four-lined snake (*Elaphe quatuorlineata*) is classified as NT on the IUCN Red List and VU in the Albanian Red Data Book. It is endemic to Europe, distributed across the south of Italy as well as the coast of the Balkans and Greece. It is present throughout Albania, covering a wide range of habitats such as meadows with broad hedgerows, edges of forests, traditionally cultivated land, and scrubby areas around swamps and lakes. It mainly hunts for warm-blooded animals but can swim and prey on fish. It is principally threated by habitat loss due to the intensification of agriculture and urban development. It is also persecuted by people in many parts of its range.

The range of the four-lined snake covers the majority of Albania and there are also records (*Haxhiu, 1998*) of the species being found at three main sites within the 20 km pipeline buffer. These are located around KP80, KP140 and KP210 (see Figure 19). These areas have been identified as DMUs for the species. The four-lined snake is a nationally vulnerable species present on Annex II and IV of the Habitats Directive and although the range covers most of Albania (*Speybroeck et al, 2016*), the lack of understanding and patchy nature of their populations means that the DMUs and surrounding area across the whole pipeline could support 10% of the regional population.

DMUs for four-lined snake have also been identified in Greece, within the following protected areas: Evros Delta RAMSAR, Potamos Filiouris SCI, Kilada Kompsatou IBA, Porto Lagos, limni Vistonida kai Parakties Limnothalasses complex, Nestos Delta and coastal lagoons complex, River Axios complex, Ethniko Parko limnon Mikris kai Megalis Prespas (national park). These areas have been defined as DMUs (Figure 18). The DMUs collectively qualify as **Tier 2 critical habitat** under subsection (c).

3.2.23 Macedonian crested newt

Macedonian crested newt (*Triturus macedonicus*) is part of the crested newt 'super-species' and was recently separated taxonomically from Italian crested newt (*T. carnifex*) (*Weilstra et al. 2013*). *T. macedonicus* is classified as LC on the IUCN Red List (where it is considered to be a sub-species of the Italian crested newt, *T. carnifex*). It is commonly distributed throughout Albania but is listed as EN in Greece (again as *T. carnifex*).

The Macedonian crested newt is found in deciduous woodlands with close access to permanent water, in the north-western parts of Greece. The species was not observed during any of the TAP field surveys but it may occur in the forested areas between KP370 and KP465, based on known habitat preferences. This area has been identified as a DMU for the species Figure 18). The mapped DMUs are based on the IUCN distribution for *T. carnifex* in Greece, the species from which *T. macedonicus* was taxonomically split. This mapped area includes overlap with the range of another member of the crested newt super-species *T. karelinii* (see Section 3.6). However, as there is likely to be significant overlap of these two species at the edges of their ranges

(and given the different ecological niches), *T. macedonicus* is considered to be present in the areas mapped by the IUCN even where is crosses the geographic boundary shown in recent phyologenetic studies (*Weilstra & Arntzen 2012*). It is not considered likely that the DMU contains 10% of the global EOO of this species, due to its distribution elsewhere in the Balkans (*Weilstra & Arntzen 2012*), but it could conservatively be estimated to support 10% of the national population. The DMU therefore qualifies as **Tier 2 critical habitat** under subsection (a).

3.2.24 Thick-shelled river mussel

The thick-shelled river mussel *Unio crassus* is listed as EN globally and is a qualifying feature for the Filiouris Freshwater KBA and the Kastoria Freshwater KBA. It is known to inhabit clean river ecosystems and lakes, with flowing water and sandy or sandy-gravel bottoms (*Lopes-Lima et al, 2014*). The species is widespread throughout eastern Russia, European Russia, Europe and the Middle East. Its distribution was formerly continuous but is now patchy over most of its range.

The pipeline crosses seven watercourses within the Kastoria KBA and three watercourses within the Filiouris KBA. These have been mapped as DMUs for *Unio crassus* (see Figure 20 in Appendix 6).

Based on the species' range, it is considered highly unlikely that the DMUs support > 10% of the global population. However, they could conservatively support 10% of the national population. In combination, the DMUs therefore qualify as **Tier 2 critical habitat** under subsection (a). Surveys for this particular species have not been undertaken by TAP to date but are proposed for 2017 to support this assessment.

3.2.25 Turcorientalia hohenackeri

The IUCN Red List of threatened species lists *Turcorientalia hohenackeri* as VU. Available records suggest that the species is restricted to just seven locations on mainland Greece and other islands in the Aegean Sea. Surveys for this species were not undertaken as part of the TAP baseline field surveys. However, it is known to occur in two drainage basins which are crossed by TAP (the Nestos and Aggitis). These have been defined as DMUs for the species (Figure 20). It has been assumed for the purpose of this assessment that each of the aforementioned localities contains at least 1% but not more than 95% of the global population of this species, although detailed population data are not currently available to substantiate this.

Populations of *Turcorientalia hohenackeri* occurring in the Nestos and Aggitis drainage basins are likely to be important strongholds for this species. In the absence of detailed survey data, it is assumed that the DMUs collectively support more than 10% of the national/regional population of this species which is listed as vulnerable by the IUCN. The DMUs therefore qualify as **Tier 2 Critical Habitat** under subsection (b).

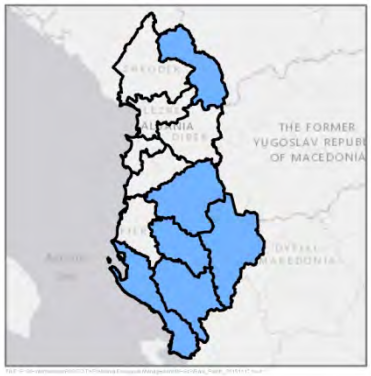
3.2.26 Mountain tea

Mountain tea (*Sideritis raeseri* subsp. *raeseri*) is a perennial species endemic to the Balkans, found in rocky habitats and open grassland. The genus *Sideritis* has a number of similar species and historically the *Flora Europaea* considered it a synonym of *S.*

syriaca. The species *S. raeseri* supsb. *raeseri* is currently accepted as a good taxon. It is well adapted to survive with little water and in shallow soils. It is tolerant of but not confined to serpentine soils.

Table 3.6 presents information on the Albanian distribution of mountain tea. The species also occurs in five regions of north Greece (as *Sideritis raeseri* subsp*. raeseri*), where it is considered to be range-restricted (*Dimopoulos et al 2013*). This sub-species is not considered to be of conservation concern in Greece and is not known within the project AOI in Greece. The species distribution is difficult to determine due to the taxonomic confusion, but probably also occurs in FYR Macedonia.

Table 3-6: Summary of information for mountain tea

Species	*Sideritis raeseri* Boiss. & Heldr.	 Albanian distribution
Family	Lamiaceae	
Albania Status	Endangered (A1c) – listed due to reduction in extent of occurrence	
European Distribution	Endemic to the Balkan peninsula.	
Conservation Notes:	Medicinal species subject to over-collection which is the main reason for its endangered status.	

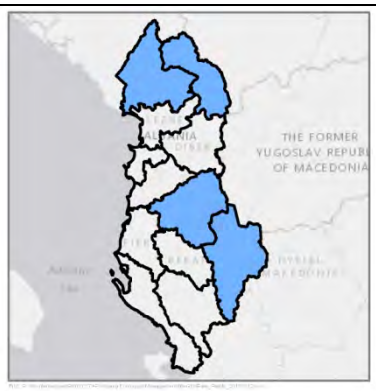
Mountain tea is listed as EN on the *Albania Red List of Wild Flora and Fauna* (2007). The species is widely used to prepare a herbal tea, and as a consequence wild plants are harvested for both local and commercial use. It is regarded as EN under Criterion A1c – population reduction over 70% in 10 years based on a decline in AOO, EOO or loss of quality habitat. Populations of this species are poorly studied, but one report shows populations in the Ostrovice region are already under severe pressure from over-harvesting (*Aneva et al., 2014*).

Surveys identified the presence of mountain tea in the project AOI in Albania. The species occurs within sub-alpine meadows between KP72 and KP97. The DMUs for this species (Figure 21) are collectively estimated to be approximately 2,182 ha. With the information available, it is not considered likely that the DMU contains 10% of the global EOO of this species. However, it is not possible to be confident that the DMU supports less than 1% of the global population. The DMU therefore qualifies as **Tier 2 critical habitat** under subsection (a).

3.2.27 Yellow monk's-hood

Yellow monk's-hood (*Aconitum lamarkii*) is a tall, clump-forming, perennial herb in the *Ranunculaceae* (buttercup) family native to southern Europe and occasionally found in cultivation. It produces spikes of pale yellow flowers in June and July (in Albania). The plant produces a harmful toxin in the leaves. The species is listed as CR in the Albania Red Data list (2007). Table 3.7 presents information on the Albanian distribution of yellow monk's-hood.

Table 3-7: Summary of information for yellow monk's-hood

Species	*Aconitum lamarckii* Rchb.	 Albanian distribution
Family	Ranunculaceae	
Albania Status	Critically Endangered (B1) – listed due to reduction in population sizes	
European Distribution	Centred on south Europe with occurrence in north Africa and central Europe	
Conservation Notes	The species is in widespread use in horticulture.	

Surveys identified the presence of yellow monk's-hood within the TAP AOI in Albania. The species also occurs in north-east Greece, listed under the synonym *Aconitum lycoctonum* subsp. *Neapolitanum* (*Dimopoulos et al., 2013*), but is not known within the TAP AOI. The species is not considered to be of conservation concern in Greece.

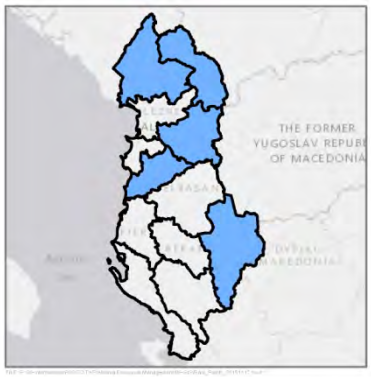
Yellow monk's-hood is regarded as CR in Albania under Criterion B1 – extent of occurrence less than 100 km^2 and fragmented, declining or fluctuating. The species occurs within beech forests from KP70 to KP90 (Figure 21). The DMUs for this species are collectively estimated to be approximately 1,773 ha. The National Herbarium has details of five other populations in Albania as well as the population in the DMU under consideration. Population sizes at these locations are not known. On the assumption that these populations are of a similar size, the DMU would support 17% of the national population.

The species also grows across southern Europe and North Africa, and many populations are known in these countries. Although species numbers at these sites are not known, based on the number of known occurrences Albania supports less than 10% of the global population of this species. This triggers **Tier 2 critical habitat** under subsection (a).

3.2.28 Deadly nightshade

Deadly nightshade (*Atropa belladonna*) is a perennial herb in the *Solanaceeae* family, perhaps most famous for its deadly-poisonous berries. It is listed as CR in the Albania Red Data list (2007). The National Herbarium in Tirana has details of 13 populations of this species; no information on population sizes is are given. Table 3.8 presents information on the distribution of deadly nightshade in Albania. The species also occurs throughout Greece where it is protected by law PD67/81.

Table 3-8: Summary of information for deadly nightshade in Albania

Species	*Atropa belladonna* L.	 Albanian distribution
Family	Solanaceae	
Albania Status	Critically endangered (B2c) – listed because of limited extent of occurrence and fluctuating population numbers	
European Distribution	Centered around the Mediterranean region but throughout Europe	
Conservation Notes:	Collected for medicinal value, the berries of species are deadly poisonous if ingested. The known Albanian distribution is believed to be an underestimate.	

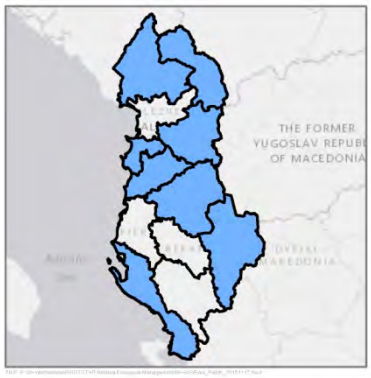
Surveys identified the presence of deadly nightshade in beech forests within the TAP AOI in both Greece (as mapped in Figure 22) and Albania (Figure 21). The DMUs are collectively estimated to be approximately 1,933 ha.

In the absence of reliable population data, the DMU in Albania is assumed to support between 1% and 95% of the global population. This triggers **Tier 2 critical habitat** under subsection (a).

3.2.29 Albanian lily

Albanian lily (*Lilium albanicum*) is a bulbous geophyte endemic to the Balkans. The plant flowers from May to July, producing yellow flowers with the typical appearance of lilies. The species is known to propagate by both seeds and bulbs and typically occurs in the serpentine soils of sub-alpine grasslands (over 1,500 masl). This species is sometimes found in horticultural cultivation, although the origin of cultivated plants is difficult to trace. Data in the National Herbarium in Tirana shows there are 28 known populations in Albania (see Table 3.9), but the current status and size of these populations is unknown. The Albania Red Data list (2007) considered this species to be EN, Criterion A1b – 70% (reduction based on an index of abundance) which was downgraded from 1995 when the species was classified as CR.

Table 3-9: Summary of information for Albanian lily

Species	*Lilium albanicum* Griesb.	 Albanian distribution
Family	Liliaceae	
Albania Status	Endangered (A1b) – listed due to reduction in population sizes. The species was listed as critically endangered in 1995 but the decline in populations has since decreased	
European Distribution	Endemic to the Balkan peninsula.	
Conservation Notes:	This species is associated with serpentine soils and has a restricted range in Albania.	

The species also occurs in four regions of Greece (*Dimopoulos et al 2013*): Northern and Southern Pindos, North Central and North East, with 10 records listed by GBIF. It is

not known within the TAP AOI in Greece and is not considered to be of conservation concern in Greece. The species also occurs in Bulgaria, where it is considered CR and is known only from a single population (*Peev 2011*), and FYR Macedonia.

Surveys identified the presence of Albanian lily in sub-alpine meadows between KP72 and KP97 in Albania (see Figure 29), within DMUs collectively estimated to be approximately 2,182 ha. Population sizes at the 28 recorded locations are not known. On the assumption that these populations are of similar size to the DMU, and still exist, then the DMU would support 3.6% of the national population.

It is possible that there are fewer than 100 wild populations of this species globally. In the absence of population size data, this would make the DMU habitat between 1% and 95% of the global population. This triggers **Tier 2 critical habitat** under subsection (a).

3.3 Criterion 2: endemic / restricted range species

Table 3.10 lists the species qualifying as critical habitat under Criterion 2. Additional detail is provided in the following sections.

Table 3-10: Critical habitat triggers under Criterion 2

No.	Latin name	Common name	Endemism	Tier of critical habitat
1	*Cobitis punctilineata*	Aggitis spined loach	Single location in Greece	Tier 1
2	*Eudontomyzon hellenicus*	Greek brook lamprey	Two river basins in Greece	Tier 1
3	*Alburnoides devolli*	Devoll riffle minnow	Only known from the Devoll River system in Albania	Tier 1
4	*Alburnoides fangfangae*	Osum riffle minnow	Osumi River catchment in Albania	Tier 1
5	*Salmo pelagonicus*	Pelagos trout	South Balkans	Tier 2
6	*Alburnus vistonicus*		Single catchment in Greece	Tier 2
7	*Oxynoemacheilus pindus*		Restricted to Aoos river basin (Greece), Semanit, Shkumbini and Erzeni basins (Albania)	Tier 2
8	*Pelasgus minutus*		Restricted to Lake Ohrid basin (Albania and Macedonia)	Tier 1
9	*Pelasgus prespensis*		Restricted to the Prespa Lakes in NW Greece, Albania and Macedonia	Tier 2
10	*Alburnoides sp. volvi*		Endemic to lakes Volvi and Koronia (including Richios River) and lower stretch of the Strymon River including	Tier 2

			Lake Kerkini (Greece)	
11	*Barbus macedonicus*		Restricted to the Axios, Pinios, Loudias and Aliakmon river basins (Greece and Macedonia)	Tier 2
12	*Cobitis puncticulata*		Occurs in Lower Matiza/Evros river in Greece and Turkey and two other locations in Turkey	Tier 2
13	*Turcorientalia hohenackeri*		Seven locations in Greece	Tier 2
14	*Dianthus formanekii*	n/a	Balkan endemic	Tier 2
15	*Dianthus tenuiflorous*	n/a	Balkan endemic	Tier 2
16	*Verbascum dingleri*		Endemic to Greece	Tier 2
17	*Sideritis raeseri*	Mountain tea	Endemic to Albania	Tier 2
18	*Lilium albanicum*	Albanian lily	Endemic to Albania	Tier 2
19	*Festucopsis serpentini*	Serpentine false-brome	Endemic to Albania	Tier 2
20	*Pelophylax shqipericus*	Albanian Pool Frog	Endemic to Albania	Tier 2

3.3.1 Aggitis spined loach

The Aggitis spined loach triggers Tier 1 critical habitat under Criterion 1, as discussed in Section 3.2.6. The species is only known from a single restricted location (with an EOO of <100 km²), namely Aggitis stream in the Strymon river basin in northern Greece. It is therefore assumed that more than 95% of the global population occurs in the DMU, which also qualifies as **Tier 1 critical habitat** under Criterion 2.

3.3.2 Greek brook lamprey

The Greek brook lamprey triggers Tier 1 critical habitat under Criterion 1, as discussed in Section 3.2.7. The species has a very narrow distribution in Greece and is only known from two river basins in the lower Strymon River drainages. As the DMUs support > 95% of the global population of this species, they also qualify as **Tier 1 critical habitat** under Criterion 2.

3.3.3 Devoll riffle minnow

Based on currently available information, including surveys undertaken in 2015, the Devoll riffle minnow (*Alburnoides devolli*) has only been found in the Upper Devoll River system. The full extent of its range is not known due to an absence of reliable surveys specifically targeting the species. Consequently, only one DMU (Figure 15) has been identified and is assumed to be the entire Devoll river system.

The Devoll riffle minnow has to date only been recorded in this one river system in Albania (and indeed the world). The DMU is therefore likely to contain ≥95% of the global population of this species, and qualifies as **Tier 1 critical habitat**.

This species was only formally described in 2010 and therefore its current conservation status has not yet been assessed. It is considered likely that in future this species would at least be considered VU on account of its restricted range, in which case the DMU could also qualify as critical habitat under Criterion 1.

3.3.4 Osum riffle minnow

Based on currently available information, including surveys undertaken in 2015, this species has only been found in the Upper Osum River system in Albania. The full extent of its range is not known due to an absence of reliable surveys to specifically target the species. Consequently only one DMU has been identified and is assumed to be entire the Osum River System, as illustrated in Figure 15.

The Osum riffle minnow has to date only been recorded in this one river system in Albania (and indeed the world). The Osum River system DMU is therefore likely to contain ≥95% of the global population of this species and therefore qualifies as **Tier 1 critical habitat**.

This species was only formally described in 2010 and therefore its current conservation status has not yet been assessed. It is considered likely that in future this species would at least be considered VU on account of its restricted range, in which case the DMU could also qualify as critical habitat under Criterion 1.

3.3.5 Pelagos trout

The Pelagos trout triggers Tier 2 critical habitat under Criterion 1, as discussed in Section 3.2.9. The species is endemic to the South Balkans and only known to occur in three river catchments. Accurate population estimates are not available but it is assumed that more than 1% and less than 95% of the global population occurs in the afore-mentioned river catchments and as such the DMUs also qualify as **Tier 2 critical habitat** under Criterion 2.

3.3.6 Alburnus vistonicus

Alburnus vistonicus triggers Tier 1 critical habitat under Criterion 1, as discussed in Section 3.2.10. As an endemic species, restricted to the Lake Vistonis drainage system, the watercourses crossed by the pipeline that feed into Lake Vistonis could also qualify as **Tier 2 Critical Habitat** under Criterion 2.

3.3.7 Oxynoemacheilus pindus

This species is restricted to four river basins in Greece and neighbouring Albania. Due to a lack of research, data regarding individual population sizes of specific tributaries in which it is found, or indeed the total global population size across all known localities in which it occurs, are not available. Nevertheless, the species is considered to be range restricted (i.e. has a maximum extent of occurrence believed to be < 5,000km^2). As such, it is considered likely that each of the individual DMUs (i.e. the individual

tributaries in which it occurs in the Aoos, Semani, Shkumbini and Erzeni drainages) will sustain ≥1% but <95% of the global population of this species and therefore qualify as **Tier 2 Critical Habitat** under Criterion 2. Additional detailed surveys would be required to provide data to confirm this.

3.3.8 Pelasgus minutus

This species is thought to occur only in the Lake Ohrid basin in Albania and Macedonia and is therefore considered to be range restricted. There are insufficient data to confirm its total EOO or AOO. Adopting a precautionary approach and given that the species EOO is <20,000km^2 with all individuals occurring only in the Lake Ohrid basin, this species qualifies as **Tier 1 Critical Habitat** under Criterion 2.

3.3.9 Alburnoides sp. volvi

This species is currently undergoing taxonomic revision but is currently considered to be a distinct species from other similar species found in the same areas (e.g. *Alburnus volviticus* and *Alburnus vistonicus*) (*Barbieri et al., 2015*[21]). There is an absence of data to accurately assess the distribution of this species (and therefore its EOO or AOO). However, it is reported to be endemic to Lakes Volvi and Korinia (including Richios River) and the lower stretch of the Strymon River (including Lake Kerkini). Each of these DMUs is considered likely to sustain ≥1% but <95% of the global population of this species and therefore qualify as **Tier 2 Critical Habitat** under Criterion 2.

3.3.10 Barbus macedonicus

No data are available on the EOO or AOO for this species. However, the IUCN Red List suggests that it is restricted to the Axios and Pinios river basins in Greece and Macedonia, and the Loudias and Aliakmon river basins in Greece. If each of these is taken as a DMU then each potentially sustains ≥1% but <95% of the global population of this species which therefore qualifies as **Tier 2 Critical Habitat** under Criterion 2.

3.3.11 Cobitis puncticulata

This species qualifies under Criterion 1 (Tier 1a) and is discussed in Section 3.2.12. It should be noted, however, that the species also triggers **Tier 2 Critical Habitat** under Criterion 2, with each of the three DMUs (including the Evros River, within the project AOI) likely to sustain ≥1% but <95% of the global population of this range restricted species (AOO <500 km^2).

3.3.12 Turcorientalia hohenackeri

Turcorientalia hohenackeri triggers Tier 2 critical habitat under Criterion 1, as discussed in Section 3.2.25. The species is endemic to Greece and only known to occur in seven locations. Accurate population estimates are not available but it is assumed that more than 1% and less than 95% of the global population occurs in the Nestos and Aggitis

[21] [21] Barbieri, R., Zogaris, S., Kalogianni, E., Stoumboudi, M. Th., Chatzinikolaou, Y., Giakoumi, S., Kapakos, Y., Kommatas, D., Koutsikos, N., Tachos, V., Vardakas, L. & Economou, A.N. (2015). Freshwater fishes and lampreys of Greece. *Mongraphs on Marine Sciences* 8. 134pp.

drainage systems respectively. The DMUs therefore also qualify as **Tier 2 critical habitat** under Criterion 2.

3.3.13 *Dianthus formanekii*

Dianthus formanekii is endemic to the Balkans and its distribution is considered to be range-restricted. The plant is not listed as a threatened species nationally within the project host countries and has not been assessed by the IUCN. The species typically occurs in grasslands, but also occasionally in open *Juniperus* shrublands. The Flora Hellenica (*Strid and Tan 1997*) lists the species as occurring in 'a few sites in Northern Greece'. The *Atlas Florae Europaea* shows the species is present in two additional sites in FYR Macedonia (*Jalas 1998*).

Surveys identified the presence of *Dianthus formanekii* within the TAP AOI in Greece at approximately KP 544-545. The DMU for this species (Figure 24) is estimated to be approximately 18.26 ha. The species is known from fewer than ten locations and details of these populations are unknown. On the assumption that these populations are a similar size to the DMU, and still exist, then the DMU would support 10% of the global population. This triggers **Tier 2 critical habitat**.

3.3.14 *Dianthus tenuiflorous*

Dianthus tenuiflorous is endemic to the Balkans and its distribution is considered to be range-restricted. The plant is not listed as a threatened species nationally within the project host countries and has not been assessed by the IUCN. In Greece the species grows in open pine forest, deciduous shrub and roadsides between 50 and 1100 masl. It is also reported in Bulgaria and FYR Macedonia (*Strid and Tan 1997*).

Surveys identified the presence of *Dianthus tenuiflorus* within the TAP AOI in Greece at approximately KP 102. The DMU for this species (Figure 24) is estimated to be approximately 1 ha.

The total number of populations of the species is unknown but data searches show that it is likely that there are 50 to 100 locations recorded for this species. Details of these populations are unknown. On the assumption that these populations are of similar size to the DMU, and still exist, then the DMU would support 1 to 2% of the global population. This triggers **Tier 2 critical habitat**.

3.3.15 *Verbascum dingleri*

Verbascum dingleri is endemic to Greece. Its distribution is limited to Northern Greece and it is considered to be 'range-restricted', with all populations occurring within an area of 500 km^2. The plant is not listed as a threatened species nationally within the project host countries and has not been assessed by the IUCN. The species typically occurs in open, rocky grasslands. Little information is available on the extent of occurrence, beyond the fact that the species is rare.

Surveys identified the presence of *Verbascum dingleri* within the TAP AOI in Greece between KP 184 and KP 187. The DMU for this species (Figure 24) is estimated to be approximately 107 ha.

Details of the distribution of this species are not readily available, but references in literature are interpreted to suggest the species is known from between 10 and 50 locations in Northern Greece. Details of these populations are unknown. On the assumption that these populations are of similar size to the DMU, and still exist, then the DMU would support between 2% and 10% of the global population. This triggers **Tier 2 critical habitat**.

3.3.16 Mountain tea

As discussed in Section 3.2.26, mountain tea triggers **Tier 2 critical habitat** under Criterion 2.

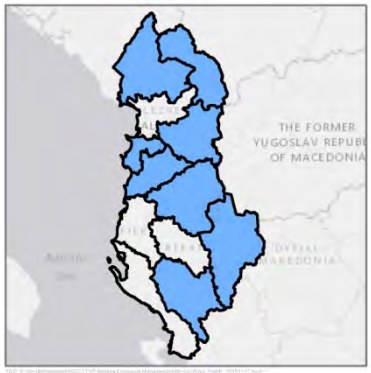
3.3.17 Albanian lily

As discussed in Section 3.2.29, Albanian lily triggers **Tier 2 critical habitat** under Criterion 1.

3.3.18 Serpentine false-brome

Serpentine false-brome (*Festucopsis serpentini*) is endemic to Albania and its distribution is limited to areas of serpentine soils. However, it is not listed as a threatened species in Albania and has not been assessed by the IUCN. The species typically occurs in sub-alpine grasslands (over 1,500 masl) in serpentine soils. Data in the National Herbarium in Tirana shows there are 18 known populations in Albania (see Table 3.11). The current status and size of these populations is unknown.

Table 3-11: Summary of information for *Festucopsis serpentini*

Species	*Festucopsis serpentini* (C. E. Hubb) Melderis	 Albanian distribution
Family	Poaceae	
Albania Status	Not evaluated – however, the species is an Albanian endemic restricted to serpentine soils	
European Distribution	Endemic to Albania	
Conservation Notes:	There is very little information about this species in published literature.	

Surveys identified the presence of *Festucopsis serpentini* within the TAP AOI in Albania between KP 72 and KP 97. The DMUs for this species (see Figure 23) are collectively estimated to be approximately 2,182 ha. Population sizes at the other recorded locations are not known. On the assumption that these populations are of similar size to the DMU, and still exist, then the DMU would support 5.6% of the national, and hence global, population. This triggers **Tier 2 critical habitat**.

3.3.19 Albanian pool frog

As discussed in Section 3.2.20, the Albanian pool frog triggers **Tier 2 critical habitat** under Criterion 1.

3.4 Criterion 3: migratory / congregatory species

Table 3.12 lists the migratory and/or congregatory species qualifying as critical habitat under Criterion 3. Additional detail is provided in the following sections. European eel, greater spotted eagle, lesser spotted eagle, booted eagle, black kite, Montagu's harrier and Dalmatian pelican are assessed under Criterion 1 (Section 3.2) and are not included here.

Table 3-12: Critical habitat triggers under Criterion 3

Latin name	Common name	Conservation status	Tier of critical habitat	Rationale
Bats				
Rhinolophus euryale	Mediterranean horseshoe bat	Congregatory IUCN VU (Med) Greece, Albania & Italy VU	Tier 2	Subsection (a)
Rhinolophus blasii	Blasius's horseshoe bat	Congregatory IUCN VU (Europe)	Tier 2	Subsection (a)
Rhinolophus ferrumequinum	Greater horseshoe bat	Congregatory Italy VU	Tier 2	Subsection (a)
Rhinolophus hipposideros	Lesser horseshoe bat	Congregatory	Tier 2	Subsection (a)
Rhinolophus mehelyi	Mehely's horseshoe bat	Congregatory IUCN VU	Tier 2	Subsection (a)
Miniopterus schreibersii	Schreiber's bat	Congregatory IUCN VU Italy VU	Tier 2	Subsection (a)
Myotis capaccinii	Long-fingered bat	Migratory, congregatory IUCN VU Italy EN	Tier 2	Subsection (a)
Myotis bechsteinii	Bechstein's bat	Congregatory	Tier 2	Subsection (a)
Myotis blythii	Lesser mouse-eared bat	Congregatory	Tier 2	Subsection (a)
Myotis emarginatus	Geoffroy's bat	Congregatory	Tier 2	Subsection (a)
Myotis myotis	Greater mouse-eared bat	Congregatory	Tier 2	Subsection (a)

3.4.1 Military tunnel 8

Former Military Tunnel 8 is located in the Berat region. Surveys identified the following congregatory bat species in the tunnel in 2015. These findings are considered significant for Albania:

- c. 300 Blasius's horseshoe (*Rhinolophus blasii*) / Mediterranean horseshoe bat (*Rhinolophus euryale*)
- c. 500 Schreiber's bat (*Miniopterus schreibersii*)
- c. 400 long-fingered bat (*Myotis capaccinii*)

Global population data are not available for the above species, but based on the numbers of bats observed, Military Tunnel 8 conservatively qualifies as **Tier 2 critical habitat** under subsection (a).

3.4.2 Pirogosh Cave

Pirogosh Cave is listed as a Nature Monument (IUCN category III) and is known for its diversity and assemblage of bats. Surveys identified the following congregatory bat species in Piragosh cave in 2015:

- c. 200 greater horseshoe bat (*Rhinolophus ferrumequinum*)
- c. 150 Mediterranean horseshoe bat (*Rhinolophus euryale*)
- c. 1000 Schreiber's bat (*Miniopterus schreibersii*)
- c. 200 long-fingered bat (*Myotis capaccinii*)

Global population data are not available for the above species, but based on the numbers of bats observed, Pirogosh Cave conservatively qualifies as **Tier 2 critical habitat** under subsection (a).

The location of Military Tunnel 8 and Pirogosh Cave in relation to the pipeline corridor and associated infrastructure are illustrated in Figure 25 [22].

3.4.3 Additional DMUs for congregatory bats

Additional DMUs for congregatory bats were identified in Albania associated with Prespa Lakes National Park (greater horseshoe bat, lesser horseshoe bat), Tomorrit National Park (lesser horseshoe bat, Schreiber's bat, long-fingered bat) and the Vithkuq-Ostrovice Corine biotope (greater horseshoe, Mediterranean horseshoe, Schreiber's bat and long-fingered bat) (see Figure 25). However, no information regarding roosts is available for these sites.

Similarly, DMUs for bats in Greece have been identified, associated with the following protected areas (although no information is available on where any significant roosts may be located within these sites, see Figure 33):

- Mount Kouskouras IBA/SPA/SCI (Schreiber's Bat, Bechstein's bat, lesser mouse-eared bat, long-fingered bat, Geoffroy's bat, greater mouse-eared bat, Blasius' horseshoe bat, Mediterranean horseshoe bat, greater horseshoe bat, lesser horseshoe bat, Mehely's horseshoe bat: all listed as Qualifying Features)

[22] DMUs for congregatory bats were defined either based on a minimum 4km radius from a known roost or as the boundary of a protected area for which the species is listed as a Qualifying Feature

- Lake Volvi National Park/SPA/SCI (Schreiber's Bat, Bechstein's bat, greater horseshoe listed as Qualifying Features)
- Oros Vermio SCI (Schreiber's bat , lesser mouse eared bat, long-fingered bat, Geoffroy's bat , greater mouse-eared bat: listed as Qualifying Features)
- Lake Kastoria protected area complex (greater horseshoe bat, Geoffroy's bat , Schreiber's bat)
- Prespa Lakes (greater horseshoe bat, lesser horseshoe bat)

In the absence of definitive data regarding the location of roosts within these areas, all have been assumed to potentially support > 1% of the global population of the relevant species and therefore qualify as **Tier 2 Critical Habitat** under subsection (a).

Based on literature review, the two protected areas within 5km of the project in Italy are not known to support significant populations of bats. Targeted field surveys undertaken by TAP in Italy have not identified significant populations of bats.

3.5 Criterion 4: highly threatened or unique ecosystems

Nine habitats within the project AOI were determined to trigger critical habitat under Criterion 4, as summarised in Table 3.13 and described in detail in the following sections. Other habitats did not trigger habitat but are considered to be PBFs and assessed in the Supplementary Ecological Assessment (SEA).

Table 3-13. Habitats considered in this and other biodiversity assessments

Habitat Name	Relevant assessment
EU Annex 1 priority habitats assessed as critical habitat	
6220* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	Triggers Critical Habitat
7210* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	Triggers Critical Habitat
2270 * Wooded dunes with *Pinus pinea* and/or *Pinus pinaster*	Triggers Critical Habitat
3170* Mediterranean temporary ponds	Triggers Critical Habitat
91E0*Alluvial Forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion Incanae, Salicion Albae*)	Triggers Critical Habitat
9530 * (Sub-)Mediterranean pine forests with endemic black pine	Triggers Critical Habitat
2250 *Coastal dunes with *Juniperus* spp.	Triggers Critical Habitat
EU Annex 1 habitats (non-priority) identified as priorities by stakeholders and assessed for critical habitat in this document	
9110 *Luzulo-Fagetum* beech forests	Triggers Critical Habitat
9130 *Asperulo-Fagetum* beech forests	Does not trigger critical habitat – assessed as PBF in SEA
9540 Mediterranean pine forests with endemic Mesogean pines	Triggers Critical Habitat
EU Annex 1 habitats (non-priority) habitats identified in project documents but not assessed as critical habitat	
1310 Salicornia and other annuals colonising mud and sand	Not assessed as potential

Habitat Name	Relevant assessment
1410 Mediterranean salt meadows (*Juncetalia maritimi*)	critical habitat triggers – included as PBFs in the SEA
1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)	
2110 Embryonic shifting dunes (*Cakiletea maritimae* & *Ammophiletea*)	
3280 Constantly Flowing Mediterranean Rivers with *Paspalo-Agrostidion Species* and Hanging Curtains of *Salix* and *Populus alba*	
5110 Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (Berberidion p.p.)	
5130 *Juniperus communis* formations on heaths or calcareous grasslands	
5210 Mediterranean arborescent matorral, arborescent matorral with *Juniperus* spp.	
6170 Alpine and subalpine calcareous grassland	
6420 Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	
6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	
6520 Mountain hay meadows	
72A0 Reed beds (*Phragmito-Magnocaricetea*)	
8210 Calcareous rocky slopes with chasmophytic vegetation	
8220 Siliceous rocky slopes with chasmophytic vegetation	
9160 Sub-Atlantic and medio-European oak	
9170 *Galio-Carpinetum* oak-hornbeam forests	
91F0 Riparian mixed forests along the great rivers	
91M0 *Pannonian-Balkanic* turkey oak- sessile oak forests	
924A Thermophilous oak woods of E Mediterranean and Balkans	
9250 *Quercus trojana* Woods	
925A *Ostrya, Carpinus* and mixed thermophilous forests	
92A0 *Salix alba* and *Populus alba* galleries	
92B0 Riparian formations on intermittent Mediterranean watercourses with *Salix* and others	
92C0 *Platanus orientalis* and *Liquidambar orientalis* woods (*Plantanion orientalis*)	
92D0 92D0 Southern Riparian Galleries and Thickets (*Nerio-tamaricetea* and *Securinegion tinctoriae*)	
9340 *Quercus ilex* forests	
9350 *Quercus macrolepis* forests	
2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	

Habitat Name	Relevant assessment
2260 *Cisto-Lavenduletalia* dune sclerophyllous scrubs	
Greek protected habitats identified in project documents but not assessed as critical habitat	
32B0 Annual river communities	Not assessed as potential critical habitat triggers – included as PBFs in the SEA
5340 Garrigues of Eastern Mediterranean	
5350 Pseudomaquis	
6290 Mediterranean subnitrophilous grasslands	
62A0 Eastern sub-mediterranean dry grasslands (*Scorzonetalia villosae*)	
6450 Greek hyper-Mediterranean humid grasslands	
5160 South-eastern sub-mediterranean deciduous thickets	

3.5.1 Pseudo-steppe with grasses and annuals of the *Thero-brachypodietea*

Surveys identified four DMUs which support the EU Priority Habitat 6220*[23] Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea* within the project AOI in Italy (Figure 26). The distribution is taken from the FAO and EU Natura 2000[24].

There are no global estimates for 6220* available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 6220* – 706,122 ha.

Mediterranean estimate (EU only) – 693,747 ha (98% of EU total)

National estimate of 6220* – Italy – 206,756 ha (30% of EU total).

Three areas of pseudo-steppe vegetation are crossed directly by the pipeline but are not identified to a particular vegetation community. On a precautionary basis, these areas are assumed to support 6220*. The DMUs of 6220* are estimated to collectively be approximately 21 ha. This area of habitat is equivalent to:

- <0.01% of the European and Mediterranean extent;
- <0.01% of the Italian extent.

The habitat is identified as a priority habitat by the EU, so is likely to be CR/EN under the IUCN RLE assessments and would trigger **critical habitat** under Criterion 4.

[23] EU Annex 1 habitats are identified using a unique four-character code (e.g. 3110 or 91E0). This code refers to a specific habitat or group of habitats that is defined by the phytosociological and management characteristics. These codes can be compared to other habitat types using the Interpretation Manual of European Union Habitats (European Commission, 2013). When used throughout the text, these habitats are referred to as 'EU habitats' but the reference to the interpretation manual is not included with each occurrence. Further details of these habitats as they apply specifically to the TAP project are provided in the technical annexes of the ESIAs for each country

[24] EU Technical Report 2008 24/24

3.5.2 Wooded dunes with maritime pine (*Pinus pinea*) and/or *Pinus pinaster*

Surveys identified two DMUs which support the EU Priority Habitat 2270* Wooded dunes with Maritime pine (*Pinus pinea*) and/or *Pinus pinaster* in Albania (Figure 27).

There are no global estimates for 2270* available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 2270* – 269,000 ha

Mediterranean estimates of 2270* – 252,000 ha, 94% of total EU resource of this habitat.

National estimates of 2270* – Albania – no figures are given but *Bego et al.* (2013) consider the habitat to be widespread along the coastal region in Albania.

The DMUs of 2270* in Albania are estimated to be approximately 93 ha. This area of habitat is equivalent to:

- <0.01% of the European and Mediterranean extent.

The habitat is identified as a priority habitat by the EU, so is likely to be CR/EN under the IUCN RLE assessments and would trigger **critical habitat** under Criterion 4.

3.5.3 Mediterranean temporary ponds

Surveys identified three DMUs which supports the EU Priority Habitat 3170* Mediterranean temporary ponds; one in Italy (Figure 26) and two in Greece (Figure 28).

There are no global estimates for 3170* available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 3170* – 63,932 ha

Mediterranean estimate (EU only) of 3170* – 61,894 ha (97% of EU total)

National estimates of 3170* – Italy – 3,830 ha (6%); Greece – 1,467 ha (2.2%).

The DMUs are collectively estimated at 571 ha, representing just over 10% of the combined AOO for this habitat type in Italy and Greece. Based on professional judgement, this qualifies as **critical habitat**.

3.5.4 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

Surveys identified one DMU which supports the EU Priority Habitat 7210* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*. This is located in Italy (Figure 26).

There are no global estimates for 7210* available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 7210* – no direct figures are available, but the habitat is considered widespread but rare, and due to land drainage occupies a much reduced area compared to its historic extent.

National estimates of 7210* – the habitat occurs in all regions of Italy, but precise figures could not be found for the total extent of the habitat.

The DMU is approximately 26 ha. In the absence of a national AOO with which to compare, this is conservatively considered to trigger **critical habitat**.

3.5.5 (Sub-) Mediterranean pine forests with endemic black pine

Surveys identified a single DMU in Albania which supports the EU Priority Habitat 9530* (Sub-) Mediterranean pine forests with endemic black pine (Figure 27).

There are no global estimates for 9530* available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 9530* – 269,000 ha

Mediterranean estimates of 9530* – 252,000 ha, 94% of total EU resource of this habitat.

National estimates of 9530* – Albania – approximately 110,000 ha of '*Pine nigra* forest' is present, although semi-natural and plantation forests are not distinguished[25].

The DMU of 9530* in Albania is estimated to be approximately 33 ha.

This area of habitat is equivalent to:

- <0.01% of the European and Mediterranean extent;
- <0.01% of the Albanian extent.

Critical habitat is not triggered for this ecosystem based on areas and extent of occurence. The habitat is identified as a priority habitat by the EU, so is likely to be CR/EN under the IUCN RLE assessments and would trigger **critical habitat** under Criterion 4.

3.5.6 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*alno-padion, alnion incanae, salicion albae*)

Surveys identified a single DMU which supports the EU Priority Habitat 91E0* Alluvial Forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion Incanae*, *Salicion Albae*) in Greece (Figure 28). The habitat type 91E0 is only present in part of this DMU.

There are no global estimates for 91E0* available, but the habitat occurs mainly in Europe.

Mediterranean region estimates of 91E0* – 7% of total EU resource of this habitat.

National Estimates of 91E0* – Greece – supports only 0.6% of the total EU resource of this habitat. The total areas on which these figures are based are not available.

The DMU of 91E0* in Greece is estimated to be approximately 1,326 ha.

In the absence of a national AOO with which to compare, and given the comparatively large area of the DMU, this is conservatively considered to trigger **critical habitat**.

[25] *fao.org/docrep/004/Y2316E/y2316e0d.htm*

3.5.7 Mediterranean pine forests with endemic Mesogean pines

Surveys identified three DMUs which support the EU Annex 1 Habitat 9540 Mediterranean pine forests with endemic Mesogean pines. These are located in Albania (two DMUs, see Figure 27) and Greece (one DMU, see Figure 28).

Habitat 9540 is considered here because it is highly exploited in Greece, so near-natural stands are likely to be of high nature conservation importance in the national context. This was highlighted in stakeholder consultations where wooded habitats were identified as a priority concern.

Global estimates of 9540 – no global estimates are available but estimates place the total area of a larger group of *Pinus halapensis – brutia* group of woodlands at 7 million hectares (*Stevenson, 2001*).

Mediterranean estimate of 9540 – this habitat is centred around the Mediterranean, so a high proportion will be located in this region.

National estimate of 9540 – total areas of these habitats are unknown for Albania and Greece, but are likely to be widespread at mid-elevations on hills and mountains.

The DMUs of 9540 are estimated to be approximately 423 ha in Greece and 328 ha in Albania. In the absence of national AOOs with which to compare these figures, and given the comparatively large collective area of the DMUs, this ecosystem is conservatively considered to trigger **critical habitat**.

3.5.8 Asperulo-Fagetum beech forests

Surveys identified two DMUs which support the EU Annex 1 Habitat 9130 Asperulo-fagetum beech forest. These are located in Greece (see Figure 28).

Habitat 9130 is considered here because it is a continental habitat type at the southern end of its distribution. The habitat is also highly exploited in Greece, so near-natural stands are likely to be of high nature conservation importance in the national context. This was highlighted in stakeholder consultations where wooded habitats were identified as a priority concern.

There are no global estimates for 9130 available, but the habitat occurs mainly in Europe.

European estimate (EU only) of 9130 – 546,066 ha.

Mediterranean estimate (EU only) – 8.6% of EU total

National estimate of 9130 – Greece – 5.8% of EU total.

The DMUs of 9130 in Greece are estimated to be approximately 167 ha.

This area of habitat is equivalent to:

- <0.01% of the European and Mediterranean extent;
- <0.01% of the Greek extent.

Based on professional judgment, critical habitat is not triggered for this ecosystem.

3.5.9 Luzulo-Fagetum beech forests

Surveys identified one DMU which supports the EU Annex 1 Habitat 9110 Luzulo-fagetum beech forest. This is located in Albania (see Figure 27).

Habitat 9110 is considered here because it is a continental habitat type at the southern end of its distribution. The habitat is also highly exploited in Albania, so near-natural stands are likely to be of high importance in the national context. This was highlighted in stakeholder consultations where wooded habitats were identified as a priority concern.

There are no global estimates for 9110 available but the habitat occurs mainly in Europe.

European estimate (EU only) of 9110 – 546,066 ha.

Mediterranean estimate (EU only) – 61,150 ha (11.2% of EU total)

National estimate of 9110 – Albania – the total area is not available, but is listed as 'common between 800 and 1600 m'[26], suggesting it covers some thousands of hectares.

The DMU of 9110 in Albania is estimated to be approximately 1773 ha. In the absence of a national AOO with which to compare, and given the comparatively large area of the DMU, this is conservatively considered to trigger **critical habitat**.

3.6 Criterion 5: key evolutionary processes

None of the species assessed by EDGE are known or likely to be found within the project AOI. However, a number of areas were identified as triggering critical haitat under Criterion 5, as described below.

3.6.1 Macedonian and Western Crested Newt Interaction Zone

There is a single area of overlap for the Macedonian and Western crested newt species (*Triturus meacedonicus* and *T. karelinii* respectively) considered to be important for evolutionary processes. This zone of overlap occurs in central northern Greece, and a single DMU is delimited for this (see Figure 29). The DMU is also delimited as part of the overall DMU for *T. macedonicus* (see Section 3.2.20). Scientific studies have shown that there are significant interactions at the species boundary, with *T. macedonicus* expanding its range into the former territory of *T. karelinii* creating isolation of *T. karelinii* populations and some limited genetic introgression through cross-breeding (*Weilstra & Arntzen 2012*). The DMU which includes this interface of two species is considered to trigger **critical habitat** under Criterion 5.

3.6.2 Vithkuq-Ostrovice Serpentine Outcrops

The rocks that form the Vithkuq-Ostrovice mountains include numerous areas of serpentine outcrops, mixed with silicacous and limestone rocks. This edaphic interface creates unique conditions and gives rise to unique endemic flora and plant assemblages including *Festucopsis serpentinii* (Serptine false-brome) (see Section

[26] fao.org/docrep/007/j2108e/j2108e02.htm

3.3.8). The unusual mineral content of serpentine rock is known to support a high diversity of endemic species and the unique serpentine vegetation communities occur on the serpentine rocks throughout the Balkans, including in Albania (*Brooks 1987*). The serpentine outcrops in the Vithkuq-Ostrovice area were not mapped in detail in the ESIA, although the endemic species *F. serpentinii* was reported from a small number of locations. The DMU is therefore delimited based on the boundary of the designated area that includes the majority of the Vithkuq-Ostrovice area (see Figure 30). This is considered to trigger **critical habitat** under Criterion 5.

3.6.3 Prespa Lakes

The Prespa Lakes, spanning the transboundary area between Greece, Albania and Macedonia, are important for their endemic fish, wintering birds and invertebrates (a group that has not yet been studied in detail within the Prespa Lakes area). All three countries have designated national parks for the lakes and surrounding habitats within their territory. The Prespa Lakes area includes two inter-linked lakes, Macro Prespa and Micro Prespa, and is characterised by tree-dominated wetlands, seasonal freshwater marshes and flooded agricultural lands, permanent rivers and creeks, canals, drainage channels, freshwater springs, subterranean karst and cave hydrological systems. The fauna and flora is characterised by high diversity and a high level of endemism; Prespa Lakes within Albania has been identified as a DMU for critical habitat-qualifying species elsewhere in this report (Figure 30). The lakes play an important role in groundwater recharge and sediment trapping but are currently threatened by eutrophication caused by intensive agriculture practices and the introduction of alien fish species for recreational fishing, which has also contributed to profound modification of the natural ecosystem of the lake. Prespa Lakes is considered to trigger **critical habitat** under Criterion 5.

3.7 Criterion 6: key scientific value

The scientific discovery of two endemic species of fish as recently as 2010 (*Alburnoides devolli* and *A. fangfangae*) suggests that the DMUs supporting these fish trigger **critical habitat** under Criterion 6. These DMUs also trigger Tier 1 critical habitat under Criterion 2 and hence are discussed in more detail in Section 3.3.

4 MARINE CRITICAL HABITAT DETERMINATION

4.1 Overview

Critical habitats are defined based on the presence of high biodiversity values regardless of the likely impacts of a project. However, as outlined in Section 2.2.2.2, due to the highly mobile and wide-ranging nature of many of the marine fauna being considered, spatial units of analysis have been defined in relation to the offshore DMU selection process. The following sections assess all critical habitats relating to the TAP offshore pipeline route.

All critical habitat-qualifying features and the habitats that support them will be incorporated into the project's Ecological Management Plan (EcMP) and, where potential impacts are identified, the mitigation hierarchy shall be applied in accordance with IFC PS6 (2012), EBRD PR6 (2014) and EIB Standard 3 (2013).

Table 4.1 presents a summary of the marine critical habitat determination results for the taxa that have been screened in, as discussed in more detail in the following sections. Note that Table 4.1 does not include those taxa (molluscs, crustaceans, jawless fish, cartilaginous fish) that are described below as not having reasonable pathways for impacts to occur from the project (from suspended sediment and/or underwater noise). The screening of these taxa in such a way does not preclude the assessment from identifying any further marine DMUs as all of these taxa occur within one or more of the seascape DMUs identified for other taxa as critical habitat. Furthermore, as there is no impact pathway for these taxa, they will not require consideration in subsequent mitigation and monitoring plans. Appendix 4 provides further information and screening justifications relating to these taxa.

Table 4-1: Summary of marine critical habitat determination results

<table>
<tr><th>Taxa/habitat</th><th>Criterion 1</th><th>Criterion 2</th><th>Criterion 3</th><th>Criterion 4</th><th>Criterion 5</th><th>Criterion 6</th></tr>
<tr><td colspan="7">Taxa</td></tr>
<tr><td>Sponges[27] (Two species)</td><td>Tier 2</td><td rowspan="9">No Critical Habitat determined</td><td rowspan="2">N/A</td><td rowspan="9">N/A</td><td rowspan="9">No Critical Habitat determined</td><td rowspan="9">No Critical Habitat determined</td></tr>
<tr><td>Cnidaria (numerous)</td><td>Tier 2</td></tr>
<tr><td>European eel</td><td>Tier 2</td><td>Tier 2</td></tr>
<tr><td>Loggerhead turtle</td><td>Tier 2</td><td>Tier 2</td></tr>
<tr><td>Fin whale</td><td>Tier 2</td><td>N/A</td></tr>
<tr><td>Bottlenose dolphin</td><td>Tier 2</td><td>Tier 2</td></tr>
<tr><td>Striped dolphin</td><td>Tier 2</td><td>Tier 2</td></tr>
<tr><td>Cuvier’s beaked whale</td><td>N/A</td><td>Tier 2</td></tr>
<tr><td>Risso’s dolphin</td><td>N/A</td><td>Tier 2</td></tr>
<tr><td colspan="7">Habitats</td></tr>
<tr><td>Posidonia beds</td><td colspan="3" rowspan="2">N/A</td><td>Yes</td><td rowspan="2">No Critical Habitat determined</td><td>No</td></tr>
<tr><td>Reef (inc. bioconstructions[28])</td><td>Yes</td><td>Yes</td></tr>
</table>

[27] N.B. Mitigation and monitoring plans for ‘Reef’ and/or *Posidonia* beds in the EcMP shall also capture requirements for sponges.

[28] Both the coralligenous assemblages and circalittoral oyster beds recorded during the Italian nearshore surveys are bioconstructions. The term ‘bioconstruction’ geologically refers to a ‘*bioconstructed limestone*’ (*Fox, 2005*).

Submarine structures made by leaking gases[29]		Yes		Yes

4.2 Screening

As discussed in Section 2.2.2.2, a large number of taxa identified as being present or potentially present within the project AOI were screened out (see Appendix 4), based on there being no known pathway for impacts to occur. The justification for this is presented in Table 4.2.

Table 4-2: Taxa screened out of the marine critical habitat assessment on basis of offshore AOI of project

Taxon	Rationale/evidence
Impact: underwater noise from temporary piling for construction of a cofferdam at Albanian landfall (maximum distance for weak behavioural responses = 38 km)	
Algae, flowering plants (seagrass)	No evidence of underwater noise impacting algae/flowering plants; no known biological mechanism for this to occur.
Sponges, cnidaria, echinodermata, bryozoa	Although a pilot study has demonstrated that molluscan, echinoderm and bryozoan larvae may be able to detect and respond to some types anthropogenic sound (*Stocks et al., 2012*), there is no evidence that significant, population-level impacts could feasibly occur from temporary sources of noise/vibration as is planned for construction of the cofferdam.
Mollusca	Anthropogenic noise has been shown to negatively impact development and survival of larvae of a mollusc species (*Nedelec et al, 2014*). However, there is no evidence that significant, population-level impacts could feasibly occur from temporary sources of noise/vibration, as is planned for construction of the cofferdam.
Crustacea	While recent laboratory experiments have demonstrated that some types of anthropogenic noise and vibration have the potential to affect the behaviour of crustaceans, such as shore crabs (*Wale et al., 2013*), and hermit crabs (*Roberts et al., 2016*); and the immune responses of spiny lobster (*Celi et al., 2015*), there is no evidence that significant, population-level impacts could feasibly occur from temporary sources of noise/vibration as is planned for construction of the cofferdam.
Jawless fish (lampreys)	Little data is available on lamprey sensitivity, but given their auditory biology and very limited behavioural repertoire it is possible that sound is not relevant to them (*Popper, 2005*).
Cartilaginous fish (sharks &	As hearing non-specialists with no swim bladder, elasmobranchs such as skate species have been considered 'low' sensitivity to underwater noise (*Nedwell et al., 2004*). Shark and ray species are large, usually highly

[29] Structures made by leaking gases are rocks, pavements and pillars <4m high composed of carbonate cement produced by microbial oxidation of gases and include carbonate chimneys, gas seeps and pockmarks (http://jncc.defra.gov.uk/page-1453).

rays)	mobile and capable of swimming away from temporary sources of disturbance.
Impact: suspended sediment (temporary, maximum worst-case precautionary distance from source at Albania landfall of 10 km)	
Mollusca	Independent assessment by the Marine Life Information Network (MarLIN) to increases in suspended sediment for three species of commercially important molluscs report mussels and cuttlefish as being 'not sensitive' (*Wilson, 2008; Tyler-Walters 2008*) and king scallops of 'low' sensitivity (*Marshall & Wilson 2008*).
Crustacea	Independent assessment by the Marine Life Information Network (MarLIN) to increases in suspended sediment for several species of commercially important crustaceans (including brown crab, brown shrimp and a swimming crab) are reported as ranging from 'not sensitive' to 'low' sensitivity (*MarLIN, 2012, various*).
Fish (jawless /cartilaginous /bony)	Most species will be tolerant of naturally high background levels, and/or mobile enough to leave an affected area. The few available MarLIN assessments of fish sensitivity (i.e. a skate species, two goby species and seahorses) to suspended sediment report either a 'very low' sensitivity, or that this impact is 'not relevant' to the species in question (*MarLIN, 2012, various*).

Following this screening, therefore:

- **underwater noise** was only considered a valid potential impact for bony fish, turtles, Mediterranean monk seal, and cetaceans
- **temporary increases in suspended sediment** were only considered a valid potential impact for benthic flora (algae, flowering plants) and fauna (e.g. cnidaria, sponges).
- **the following groups** had no reasonable pathway for either impact (underwater noise, suspended sediment):
    - Mollusca
    - Crustacea
    - jawless fish (lampreys)
    - cartilaginous fish (sharks and rays)

4.2.1 Marine ornithology

Marine ornithological knowledge is rather limited for the Adriatic and Ionian Seas. However, bird populations found in the region include Annex I (Directive 79/409/EEC) species such as the little tern (*Sterna albifrons*) and common tern (*Sterna hirundo*). The offshore TAP pipeline route does not intersect any national or international sites designated for birds. The onshore CHA considers birds in association with the land, while this section focuses purely on birds in an offshore (at sea) context.

Potential impacts on marine ornithological receptors relate to disturbance associated with the movement and presence of construction vessels. In the nearshore works areas marine mammal mitigation will also benefit any birds present through the use of techniques such as soft start piling. Furthermore, there is an abundance of alternative

habitat available for any birds in those locations to be displaced into. Industry best practice marine management measures, such as a Marine Pollution Contingency Plan, an Emergency Response Plan and compliance with relevant conventions (e.g. MARPOL 73/78[30]) will mitigate any potential impacts from construction vessels on birds and other marine ecological receptors.

The Adriatic contains a very high level of vessel traffic comprising tankers containing oil, gas and dry cargo, container ships, ferries, fishing vessels, recreational boats and military vessels. The presence of construction vessels associated with TAP are not considered to significantly alter the baseline levels to which birds in the offshore area are habituated. The habituation of birds to disturbance, including traffic, noise and light is reported to be considerable and is attributed to their adaptability which enables them to accommodate regular disturbance events. This results in their becoming tolerant to a disturbance within a short period of time[31]. Furthermore the proposed rolling construction zone of approximately 2-3km along the offshore route at a rate of 1-2km/day ensures a small spatial extent of offshore works within an extensive, open water area. Any potential impacts on rafting birds will be mitigated through vessel management plans for marine megafauna.

For these reasons marine ornithological receptors have been screened out of the offshore CHA.

4.3 Criterion 1: threatened species

Table 4.3 lists the marine species qualifying as critical habitat under Criterion 1. Additional detail is provided in the following sections.

Table 4-3: Critical habitat triggers under Criterion 1

Latin name	Common name	Conservation status	Tier of critical habitat	Rationale
Sponges				
Axinella cannabina	N/A	Italy EN	Tier 2	Subsection (c)
Axinella polypoides	N/A	Italy EN	Tier 2	Subsection (c)
Cnidarians				
Isidella elongata	Bamboo coral	Italy CR Mediterranean CR	Tier 2	Subsection (c)
Funiculina quadrangularis	Tall sea pen	Italy CR	Tier 2	Subsection (c)
Lophelia pertusa	Deepwater coral	Italy CR Mediterranean	Tier 2	Subsection (c)

[30] *imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx*

[31] *ukmarinesac.org.uk/activities/ports/ph3_2.htm*

		EN		
Madrepora oculata	Zigzag coral	Italy CR Mediterranean EN	Tier 2	Subsection (c)
Pennatula rubra	N/A	Mediterranean VU	Tier 2	Subsection (c)
Various: *Eunicella singularis; Virgularia mirabilis; Dendrophyllia cornigera; Desmophyllum dianthus; Leiopathes glaberrima.*		Italy VU	Tier 2	Subsection (c)
Bony fish				
Anguilla anguilla	European eel	IUCN CR Italy CR	Tier 2	Subsection (a)
Turtles				
Caretta caretta	Loggerhead	IUCN VU Med LC Italy EN Albania EN	Tier 2	Subsection (a), possibly also (b)
Cetaceans				
Tursiops truncatus	Bottlenose dolphin	IUCN LC Med VU Italy NT	Tier 2	Subsection (a), and/or (b)
Stenella coeruleoalba	Striped dolphin	IUCN LC Med VU Albania DD Italy LC	Tier 2	Subsection (a), and/or (b)
Balaenoptera physalus	Fin whale	IUCN EN Med VU Italy VU	Tier 2	Subsection (a), and/or (b)

4.3.1 Algae

As noted in Section 2.6.4, no surveys specifically targeting algae have been conducted as part of the TAP project. However, a number of surveys were conducted that recorded algae, albeit at a resolution that did not allow for identification of lower taxonomic levels (e.g. 'calcareous algae' recorded in June 2016 Bioconstructions survey, Italy nearshore). The following account is therefore based on existing scientific literature for the region and supplemented by what data is available from the June 2016 bioconstructions survey and the June/July 2016 seagrass survey (both from the Italian nearshore).

No species of CR/EN/VU algae occurring in Italy/Albania/Mediterranean is listed on the global IUCN Red List. No species of algae appear to be listed on available national Red Lists for Italy. Six species of algae are currently classed as CR and eight as VU on the Red List for Albania (no EN species of algae are listed):

- the green algae *Codium decorticatum*
- the red coralline algae *Lithophyllum dentatum*
- the coralline algae *Titanoderma (Lithophyllum) trochanter*
- the coralline red algae *Lithophyllum tortuosum* (syn. *Tenarea tortuosa*)
- the green algae *Parvocaulis parvulus*
- Adriatic Fucus *Fucus virsoides*

None of these (or potential synonyms of these occurring in Albanian and/or Italian waters of the Mediterranean) are listed on the global IUCN Red List Assessment. It should be noted that the Albanian landfall consists of a beach and soft substrate, conditions which are generally unsuitable for colonisation by algae, which require hard substrate. It is therefore considered highly unlikely that any of the species would be present at or within the AOI of the TAP landfall.

Codium decorticatum

This species appears to be widespread in the Mediterranean, Atlantic (eastern and western), Indian and Pacific Oceans (*Guiry & Guiry 2017*), with reliable records from locations such as the Atlantic coast of Spain (*Diez et al., 2003*) and Brazil (*de Oliveira-Carvalho et al., 2010*).

Lithophyllum dentatum

This species, a type of maerl, is recorded from the central eastern Adriatic (*Antolic et al., 2013*) but is also reported as having a wide distribution including France, Spain (inc. Canary Islands), Greece, Ireland, Sardinia, Algeria. Morocco and Tunisia (*Guiry & Guiry 2017*).

Lithophyllum tortuosum

This species has been recorded from the eastern Adriatic, wider Mediterranean and eastern Atlantic (*Antolic et al., 2013; Guiry & Guiry 2017*).

Titanoderma (Lithophyllum) trochanter

This species is recorded from the southern part of the eastern Adriatic (*Antolic et al., 2013*) and also Greece, Sardinia and Cyprus (*Guiry & Guiry 2017*).

Parvocaulis parvulus

This species has a global distribution (*Guiry & Guiry 2017*).

These five CR species: *Codium decorticatum, Lithophyllum dentatum, Lithophyllum tortuosum, Titanoderma (Lithophyllum) trochanter* and *Parvocaulis parvulus* are all screened out of this assessment on the following basis;

- the Albania landfall comprises unsuitable habitat for these species;
- they are widely distributed species and do not appear to have an elevated conservation status elsewhere in their ranges.

This means that the questionable CR listings for them in Albania, if correct, are not applicable to this assessment. Based on this, these species are not considered further in the CHA.

Fucus virisoides (CR)

This is an endemic species largely restricted to the northern Adriatic (see text in Section 4.4.2 in relation to Criterion 2, where it is considered to not trigger critical habitat). Given that the Albania landfall is unsuitable habitat for this species and that it is outside of the range of this species, it is not considered further in the CHA.

Of the eight VU listed algae, five are brown algae: *Cystoseira amentacea*, *Cystoseira mediterranea*, *Cystoseira sedoides*, *Cystoseira spinosa* (inc *C. adriatica*) and *Cystoseira zosteroides*. Two are red algae; *Bornetia secundiflora* and *Digenea simplex* and the remaining is creeping chain weed (*Catenella caespitosa*). All species are recorded within the Mediterranean region, with most having wide distribution across the Atlantic and beyond. They are also screened out for the following reasons:

- the Albania landfall comprises of unsuitable habitat for these species therefore it is not considered likely for them to be present in the AOI;
- they are widely distributed species and do not appear to have an elevated conservation status elsewhere in their ranges.

Furthermore had these species remained in the assessment it is considered unlikely that the DMU contains nationally important (≥10 % of the national/regional population) concentrations of these nationally- listed CR or VU species. **Critical habitat is not triggered**.

4.3.2 Flowering plants

Three seagrass species found in the Adriatic, Mediterranean tapeweed (*Posidonia oceanica)*, eelgrass (*Zostera marina*) and dwarf eelgrass (*Z. noltii*), are classed as VU on the Albanian Red List. All three of these species are classed as LC on the global and/or Mediterranean Red Lists, with *Z. marina* listed as DD in Italy. A further Mediterranean seagrass species, slender seagrass (*Cymodocea nodosa)*, is listed as LC by the IUCN globally and regionally.

As noted in the Italian ESIA, two Sites of Community Importance (SCI) (Le Cesine and Palude dei Tamari, 2.3 km north and 3 km south of the landfall, respectively) are designated based on the presence of *Posidonia* beds, which are an Annex I habitat.

TAP commissioned surveys in June/July 2016 at the Italian nearshore area have confirmed the presence of small, isolated patches of Mediterranean tapeweed, alongside dominant stands of slender seagrass at insufficient densities to constitute a bed.

Eelgrass and dwarf eelgrass are widespread in the north Atlantic and have been recorded in the southern Adriatic in Otranto (*Guidetti et al., 2003*) and southern Albania (*Beqiraj et al., 2008*) respectively. Neither species has been recorded at the Albanian or Italian landfalls, despite an intensive seagrass survey effort occurring at the latter, where the slender seagrass dominates. The coastal DMUs are therefore **not considered to be critical habitat** for these species.

4.3.3 Sponges and cnidarians

Robust, targeted surveys of sponge fauna in particular are widely recognised to be extremely problematic, given that many species are small, cryptic, variable in morphology and/or require specialist microscopy techniques for identification. As noted

in Section 2.6.4, no surveys specifically targeting sponges and/or cnidarians have been conducted as part of the TAP project. However, the June 2016 Bioconstructions ROV survey in the Italy nearshore area recorded infrequent and highly localized sightings both of these taxa, albeit at a resolution that did not always allow for identification of lower taxonomic levels.

Areas of sensitive deep-water habitat are mapped in the southern Adriatic (see Figure 34, in Appendix 6). TAP acknowledges the potential for sensitive habitats (e.g. deepwater coral) in deep water along the route, based on existing literature including the ESIAs and the gap analysis (performed as part of the Biodiversity Action Plan process) and more recent geophysical and deepwater habitat reviews.

Work previously undertaken with potential to detect habitats includes:

- geophysical survey of entire route in 2012/13 (conducted by DOF Subsea), including habitat survey (ROV) of features of interest; Fugro also conducted a 2014 geophysical survey of a 4km inshore section of the route abutting the Italian coast;
- review of this 2012-14 geophysical data (in 2015) by OGS of the Italian component of the route specifically with the aim of identifying 'bioconstructions' for further investigation. This identified five locations for further investigation by ROV, all within approximately 15 km of the Italian coast;
- geophysical survey of the entire Italian offshore route in December 2016 (Fugro) with the aim of producing a consistent set of data for the whole of the route that complied with Italian regulatory requirements issued in the consent with regard to identification of locations of possible bioconstructions;
- OGS marine ecologists reviewed the December 2016 data to determine whether bioconstructions in addition to those noted above could be identified using revised regulatory survey data specifications. This study confirmed that no additional areas required ROV investigation. The review also identified two species of sponge;
- a broad review of seabed geophysical data (2012/13) by an RSK geophysicist experienced in pipeline routing and identification of sensitive environmental features. This identified areas for potential further investigation, such as pock marks and gas seeps.

Work commissioned, in the process of being commissioned or underway to better determine the potential for habitats of conservation interest in deeper water offshore includes:

- the outputs of the geophysical data review used to inform the deepwater habitat review detailed below.
- review of 2012/13 geophysical data by OGS ecologists which will be undertaken as required to further investigate the findings of the deepwater habitat review.
- the above reviews will inform the need for further geophysical survey to be commissioned in the event that data gaps are identified, and/or an ROV survey to be commissioned in the event that the route would impinge upon areas where bioconstructions, species or habitat features of interest may be present.

To improve understanding of benthic species and habitats present, or potentially present, in deeper waters along the pipeline alignment, TAP commissioned a deepwater habitat review (September 2017) of all available information on deep water (≥200m) environments relevant to the TAP offshore alignment. This comprised a

literature review, reviews of TAP-commissioned environmental survey data (video imagery) and TAP-commissioned geophysical survey data.

The focus was on Mediterranean deepwater habitat/species within:

- water depths ≥200m (corresponding to the bathyal zone; *WWF/IUCN 2004*), and (where different)
- the South Adriatic and Ionian Strait Ecology or Biologically Significant Marine Area (EBSA)

This covered approximately KP12 (Albanian nearshore, approximately 60m water depth, border of EBSA) to KP80 (approximately 1km landward of Italian shelf break, approximately 100-150m water depth). Areas of hard and/or elevated seabed were of particular interest. The outputs of this review (i.e. identification of known features and habitats in deep waters and their consideration as potential critical habitat) are summarised in Appendix 7. These have been colour-coded (traffic lighted) to inform and focus the need for further surveys in areas of uncertainty.

In summary the literature review identified one broad habitat feature (cold seeps) and six deep water habitat types (cold water coral (CWC) & associated communities, sponge grounds, chimneys (columnar carbonates), pock marks, seapens), black coral (*Antipatharia*) and bamboo coral) with potential to be present along or in proximity to the TAP alignment. All of which, noting the data gaps for these sensitive deepwater habitats, have been precautionarily assumed to occur, or to potentially occur, within the offshore AOI. They are considered in this CHA either individually or within a species group or habitat type. A number of features in deep water (≥200m) and/or of the South Adriatic and Ionian Strait EBSA were identified from TAP geophysical and route investigation surveys for further consideration as, or for supporting, potential critical habitat triggers, including wrecks with possible coral, boulders, small pockmarks and mud mounds, areas of outcropping and possible debris.

These as yet unconfirmed species (coral and seapens) and habitats (considered further under Criterion 4 and 6) identified during the review have been included in the assessment below. A detailed standalone Technical Note is being produced separately to update the gap analysis, identify further data review and surveying requirements, and inform the SEA and EcMP.

Sponges

No species of sponge appear to have been assessed by the global IUCN Red List, and no species is listed on the Albanian Red List. It should be noted that the Albania coast at the landfall consists of a beach and soft substrate, conditions which are generally unsuitable for colonisation by sponges, which require hard substrate. Howver, several species are listed (below) on the Italy Red List. As these species are listed nationally and/or regionally (i.e. not on the global Red List) as CR, EN or VU, the assessment focus is whether the DMU is likely to contain important concentrations of them (≥10 % of the national/regional population).

On the Italian Red List[32] two species of sponge are currently classed as CR, six as EN and four as VU:

***Calyx nicaeensis* (CR)** has been reported from both Italy (Otranto) and Montenegro. It favours *Posidonia* beds and coralligenous habitats and is reported from depths of 5-55 m (but has also been recorded to 400m) in many areas of the Mediterranean (*Cerrano et al., 2013*). There are no *Posidonia* beds within the DMUs in Italian waters and the presence of coralligenous habitat is mapped and contextually limited in its extent. It is therefore considered unlikely that the DMUs contain nationally significant populations of this species.

Honeycomb sponge (*Hippospongia communis*) (CR)

The honeycomb sponge is reported in the north-eastern Adriatic (*van Soest, 2004*) as well as the Aegean, Red Sea, western Mediterranean and in the waters of the Azores. No records were found in the southern Adriatic, suggesting that the DMUs are unlikely to support nationally significant populations of this widely distributed species.

***Axinella cannabina* (EN) and *Axinella polypoides* (EN)**

Remotely operated vehicle (ROV) surveys of bioconstructions in the Italian nearshore area of the TAP project in June 2016 confirmed the presence of the sponges *Axinella polypoides* (at survey Area 1, approximately 15km from the Italian coast) and *A. cannabina (*at survey Area 5, approximately 1-2km from the Italian coast). Unidentified *Axinella* spp. was also recorded at Area 5. The distribution of *A. polypoides* within the Mediterranean, *however, is described as common on coralligenous outcrops (Ballesteros*, 2015).

Axinella cannabina is described as frequent in the Adriatic (*Ballesteros, 2015*), it is also recorded in the western Mediterranean, Aegean and Ionian seas. However, it is feasible that the TAP project area could represent habitat of significant importance/support regionally important concentrations of these EN species. As a precautionary estimate, and assuming the EN listing for Italy only is valid, this therefore **does qualify as Tier 2 critical habitat** for *Axinella cannabina* and *Axinella polypoides* under subsections (a) and (b).

The four VU-listed species of sponge are *Pachastrella monilifera*, *Petrosia ficiformis*, *Poecillastra compressa* and *Suberites carnosus*, all of which are widely distributed within the North Atlantic, and in some cases beyond, and are recorded in the Mediterranean and Adriatic. Given the wide distributions of these species and absence of records found in the southern Adriatic it is considered unlikely that the DMUs contain nationally important populations of these species.

A lack of data on sponges in general, including those on the Italy Red List, and the significant practical limitations involved with adequately surveying this group prevent a more focused assessment. Given that most of these species, if present in the project area, are likely to be associated with bioconstructions and /or seagrass habitats (both of which are concluded as triggering critical habitat), these species will fall within the umbrella (and associated mitigation and management in the EcMP) of bioconstructions

[32] iucn.it/pdf/Barometro_della_biodiversita_APPENDICE.pdf

('reef') and/or *Posidonia* critical habitat regardless of not triggering critical habitat in their own right.

It is considered unlikely that the DMUs contain nationally important concentrations (≥10 % of the national population) of these nationally VU listed species; therefore **critical habitat is not triggered** for these sponge species**.** However it is likely that these species will trigger as priority biodiversity features in the SEA.

Cnidarians

The deepwater habitats of the southern Adriatic Basin are difficult to access and therefore poorly documented. However, the description of the Southern Adriatic Ionian Strait EBSA[33] notes the presence of deep-sea cold-water coral communities.

A single species of cnidaria, the Mediterranean pillow coral (*Cladocora caespitosa*), is EN on the global Red List. It is endemic to the Mediterranean with widely distributed colonies occurring in large banks in a few known locations within the central and northern Adriatic. However, no records of such banks exist for the southern Adriatic (*Casado de Amezua et al., 2015*) and they are therefore screened out of this CHA.

Since the CHA screening in 2016, a number of IUCN listings for cnidaria species that have potential to be present in the project area (based on the deepwater habitat review, September 2017) have changed, see Tabel 4.4 below.

Table 4-4 Deepwater habitats/species of CH interest observed in video review (*N.B. all tentative identifications require expert confirmation*)

IUCN Red List at time of CHA screening (Sept, 2016)					Current regional status (Mediterranean) (Sept, 2017)*
Taxon	Global	Regional	Italy	Albania	
Bamboo coral *(Isidella elongata)*	Not assessed	Not assessed	CR	Not in Alb RL	CR
Zigzag coral (*Madrepora oculata)*	Not assessed	Not assessed	CR	Not in Alb RL	EN
Lophelia pertusa	Not assessed	Not assessed	CR	Not in Alb RL	EN
Pennatula rubra	Not assessed	Not assessed	Not in Italy RL	Not in Alb RL	VU

*as per *Otero et al, 2017: Overview of the conservation status of Mediterranean anthozoans. IUCN, Malaga, Spain*

These species and others identified through the CHA screening process are considered further below:

- bamboo coral (CR regionally and CR on Italy Red List) is recorded in the Mediterranean and north Atlantic (*van Ofwegen, 2004*), although little information appears to be available on the distribution of this species in the

[33] *chm.cbd.int/database/record?documentID=204126*

Adriatic. It is possible that the as yet unidentified solitary anthozoan recorded in Albanian waters from the video images may be bamboo coral.

- zigzag coral (EN regionally and CR on Italy Red List) is a widely distributed species and is found throughout the Mediterranean and North East Atlantic. It has been recorded in the Bari Canyon system of the southern Adriatic (*Sanfilipino et al., 2012*) and within the Otranto Strait (*Angeletti et al., 2014*). The possible cold water coral recorded on the video imagery could be a zigzag coral or possibly *Lophelia pertusa.*
- the deepwater coral *Lophelia pertusa* (EN regionally and CR on Italy Red List) is widespread in deep waters across the North Atlantic (*Hoeksema, 2004*). As noted in detail under Criterion 4 (Section 4.5), it is possible that this species may occur within the project AOI as it has been recorded in the Otranto Strait (*Angeletti et al., 2014*).
- *Pennatula rubra* (VU regionally) is recorded in the Mediterranean and North Atlantic. The underwater images obtained during the TAP survey of the Albanian landfall show sea-pens which have not been identified to species level, and could potentially be *Pennatula rubra.*
- tall sea pen (*Funiculina quadrangularis*) (CR on Italy Red List) has been recorded in the southern Adriatic in proximity to the Albanian coast (*UNEP, 2015*) and throughout the Mediterranean basin and the North Atlantic. The underwater images obtained during the TAP survey of the Albanian landfall show sea-pens which have not been identified to species level, and could potentially be tall sea pens.
- White Gorgonian (*Eunicella singularis*) (VU on Italy Red List) is recorded in the Mediterranean and Adriatic seas between depths of 10-60m. It could therefore potentially be present within the project AOI.
- Slender Sea Pen (*Virgularia mirabilis*) (VU on Italy Red List) has a wide distribution throughout the North Atlantic, Western Europe and the Mediterranean. It has been recorded in the north-east Adriatic.
- Stony Cup Coral (*Dendrophyllia cornigera*) (VU on Italy Red List) is recorded in the Mediterranean Sea, Red Sea and North Atlantic.
- Cockscombe Cup Coral (*Desmophyllum dianthus*) (VU on Italy Red List) has a wide distribution, including the Mediterranean, North Atlantic, the Gulf of Mexico and New Zealand.
- Smooth black coral (*Leiopathes glaberrima*) (EN on Italy Red List) has a wide distribution including the Mediterranean Sea, North East Atlantic and Gulf of Mexico. It is a particularly slow growing and long lived species.

Due to their widespread distribution in deep, cold waters, it is highly likely that they do not qualify as Tier 1 habitat. However, applying the precautionary principle it is possible that, for one or more of these species, the offshore DMU **does qualify as Tier 2 critical habitat**, as a minimum under subsection (a) and possibly under subsection (b)

4.3.4 Bony fish

As noted in Section 2.6.4, no surveys specifically targeting bony fish have been conducted as yet as part of the TAP project. The following account is therefore based largely on existing scientific literature for the region.

A number of Mediterranean species known or likely to occur in the Adriatic are currently classified as CR (or 'Extinct') at either national (Italy, Albania), regional (Mediterranean) or global IUCN Red List assessment level. These include:

- global: Adriatic sturgeon (*Acipenser naccarii*) and European eel.
    - Beluga sturgeon (*Huso huso*), the Adriatic stock of this species is now considered extinct (*Sturgeon Specialist Group, 1996*), and as such is not considered further here.
    - Atlantic or European sturgeon (*Acipenser sturio*) may have previously been found in the northern Mediterranean, but is now only known within the Garonne River, France and is classed as extinct in Italy (*Gesner et al., 2010*). As such it is not considered further here.
- national (Italy): Adriatic sturgeon, European eel.

Adriatic sturgeon

As noted in more detail below under Criterion 2 (Section 4.4) there is only a very small chance that natural-spawned individuals of this species still exist in the wild. The few individuals occasionally captured are thought to originate from aquaculture. IUCN classify it as CR (possibly extinct) stating that the wild population is most likely extinct in Italy, the eastern Adriatic and Albania. Only one potential spawning site <10 km^2 is thought to exist in the River Po (*Bronzi et al., 2011*) which is far beyond the AOI for the project. As such, it is considered that this **does not qualify as critical habitat** for this species.

European eel

It is almost certain that at least one individual of this CR, widespread species will occur regularly in one or more of the DMUs. This would therefore **qualify as Tier 2 critical habitat,** as a minimum under subsection (a) due to it being a migratory species between freshwater and marine environments.

4.3.5 Turtles

Two species of turtle are currently classified as CR on the Red List of Albania, green (*Chelonia mydas*) and leatherback (*Dermochelys coriacea*). In addition, two species (hawksbill, *Eretmochelys imbricata*, and Kemp's Ridley, *Lepidochelys kempii*) are classified as CR under the global IUCN Red List assessment. However, as noted in more detail below under Criterion 3 (Section **Error! Reference source not found.**) all these species are, at best, irregular visitors to the Adriatic, and in most cases extremely rare vagrants. As such, it is considered that this **does not qualify as critical habitat** for these species.

The loggerhead turtle is classed as EN under both the Italy and Albania Red Lists, as well as VU under the global listing. As such, it does **qualify as Tier 2 habitat** under subsection (a) and/or subsection b).

The Adriatic Sea coast is not known to be of importance for turtle nesting activity, with only occasional reports of single individuals in recent years. However, some areas of the coast remain unsurveyed. The selection of a microtunnel construction technique at the Italian landfall means that any turtle nesting habitat will be entirely avoided, while nesting in proximity to the Albanian landfall is considered highly unlikely, based on extensive literature review and stakeholder consultation. Nevertheless nesting turtle surveys are underway in the vicinity of the Albanian landfall. At the time of writing, no sightings of nesting turtles or signs of nesting turtle presence have been recorded. Embracing the precautionary approach, a turtle management plan has been developed

in the EcMP and provisions for turtles are included in the Marine Mammal Mitigation Plan and Marine Traffic Management Plan.

A presence / absence marine turtle nesting survey commenced in June 2017, undertaken by local experts from the Herpetofauna Society of Albania and Tirana University who are surveying beaches on and adjacent to the TAP landfall beach for nesting activity of loggerhead turtles. The Albanian regulators were met to introduce the rationale for the programme, identify and acquire any permitting, and to ensure that the survey abides by any required conditions. A copy of the completed report(s) will be made available to regulatory authority(ies).

The survey's primary focus has been on two 'core' areas (1km either side of the proposal TAP landfall). Buffer areas (approximately 2 km north and south of the core areas) have also been surveyed at a lesser frequency. Surveys follow an established and robust methodology developed in line with SWOT (Minimum Data Standards for Sea Turtle Nesting Beach Monitoring). Core areas have been surveyed both at night (for nesting females) and during daylight (for tracks). The frequency of surveys has been staggered so that the start and end of the season (approximately June and September) will have less activity while the greatest frequency will be during the peak season in July and August. For safety, all night surveys involve two people. Standardised data collection sheets have been used to collect data on nesting activity, turtles, nests, etc. RSK will provide technical review of reports and surveys to ensure robust and defensible methodology is followed throughout. The programme consists of at least three days/nights per week for the entire nesting season, recording every nesting activity or attempt on nights monitored. Turtle sightings (marine and onshore), tracks and nesting opportunities are all recorded. Species and, if feasible, the sex of turtles has been identified. Where possible and practical, GPS coordinates on any nesting sites are documented and the nests monitored for activity (hatching or interference). This survey is visual and will not involve any interference with nesting turtles, egg sampling, nest protection, or hatchling assistance. Beach signage has been installed to inform the public of the survey and a contact number provided for the public to report any chance sightings.

4.3.6 Mediterranean monk seal

As noted in Section 2.6.4, no surveys specifically targeting Mediterranean monk seals have been conducted as part of the TAP project. The following account is therefore based on existing scientific knowledge of the region.

The Mediterranean monk seal (*Monachus monachus*) is assessed as CR in Albania, EN globally and DD for Italy. The global population of Mediterranean monk seal is currently estimated at fewer than 700 individuals (*Karamanlidis et al., 2016a*) and their critical habitats are well documented, with the Aegean and Ionian Seas being known hotspots, particularly for breeding (*Lüber et al., 2015*). *Karamanlidis et al. (2016b)* were the first to clearly identify three genetically distinct subpopulations of this species: one in the north Atlantic Ocean, the others in the Ionian and the Aegean. Approximately 350–450 monk seals inhabit the eastern Mediterranean Sea along the coasts of mainland Greece, Cyprus and western and southern Turkey (*Gücü et al., 2004, 2009; Güçlüsoy et al., 2004; Anonymous, 2007*). The monk seal is a coastal species and is known to

remain in close proximity to haul out and pupping sites (*Lüber et al., 2015*) demonstrating high site fidelity (*Gazo et al., 1999*).

Signs of population recovery in the eastern Mediterranean have been recorded recently by monitoring key pupping sites in Greece, with information provided by the Hellenic National Monk Seal Rescue and Information Network (*Anonymous, 2007*), and sporadic extra-limital sightings of vagrant individuals in the eastern Mediterranean Basin from Libya to Croatia and the Balearic Islands (*Karamanlidis et al., 2016 in press*). *Karamanlidis et al. (2016a)* suggest that such sightings in areas, including Albania (*Anonymous, 2012*) and Croatia (*Gomerčić et al., 2011*) are due to this population recovery. However, in the absence of recurrent sightings of different individuals, ongoing monitoring and recovery initiatives, the monk seal should still be regarded as recently extinct in these countries (*Karamanlidis et al., 2016a*). This species is therefore not considered to occur regularly within the area of influence of the TAP offshore pipeline route, but may occasionally transit through it. An estimated maximum of five individuals may be in the Adriatic at any one time (*Rewilding Europe, 2014*). As such, it is considered that this **does not qualify as critical habitat** for this species.

4.3.7 Cetaceans

As noted in Section 2.6.4, no surveys specifically targeting cetaceans have been conducted as part of the TAP project. The following account is therefore based on existing scientific knowledge of the region.

None of the cetacean species that occur in the Adriatic are currently assessed as CR at global, regional or national levels. However, a number are assessed as either EN and/or VU:

- global: fin whale (*Balaenoptera physalus*) EN, sperm whale (*Physeter macrocephalus*) VU
- regional Mediterranean: short-beaked common dolphin (*Delphinus delphis*), sperm whale, both EN; fin whale, striped dolphin , bottlenose dolphin, all VU
- national Italy: short-beaked common dolphin, sperm whale both EN; fin whale VU
- national Albania: short-beaked common dolphin VU.

Of these, as detailed below (under Criterion 3) only bottlenose dolphin, striped dolphin and fin whale occur regularly in the study area, with other species of cetacean being considered non-regular or vagrant/visitor species. It is highly plausible that at least one individual of one or more of the species that occur regularly in the Adriatic (bottlenose dolphin, striped dolphin, fin whale) could occur in one or more of the DMUs. They therefore **qualify as Tier 2 critical habitat,** under subsection (a) and/or subsection (b).

4.4 Criterion 2: endemic / restricted range species

Species identified as being present (or potentially present) within the project AOI were screened to determine whether they met the definition of either endemic or range-restricted species. Species were considered for this if they had a known limited distribution, such as being limited to the Adriatic, or smaller areas. Species found throughout the Mediterranean were generally screened out.

Five species were identified as potentially being endemic/range-restricted and were assessed further as described below.

4.4.1 Mediterranean deep-water kelp

This algae (*Laminaria rodriguezii*) is reported to be widely distributed around the Mediterranean including the Adriatic, North African coast, Turkey and Spain (inc. the Balearics) (*Guiry & Guiry 2016*). It is therefore assumed that the pipeline route does not sustain ≥95% of global population and **does not qualify as Tier 1 habitat**. Furthermore, in the Adriatic this species it is now thought to be restricted to the offshore Croatian island of Palagruža in the central/northern Adriatic (*Žuljevic´et al. 2016*), and therefore the pipeline AOI is highly likely to not sustain ≥ 1% of global population and **does not qualify as Tier 2 habitat**.

4.4.2 Adriatic Fucus

As discussed under Criterion 1 this algae (*Fucus virsoides*) is endemic to the Adriatic, but is reported as occurring mainly in the northern Adriatic (Venice Lagoon to Dalmatia), and has been reported as very rare on the coast of Albania (*Guiry & Guiry 2016*). Based on the Albania landfall being unsuitable habitat for this species and the AOI being outside of the range of this species, it is not included in this assessment.

4.4.3 Adriatic sturgeon

Adriatic sturgeon is noted by the IUCN Red List as being 'Possibly Extinct' in Italy and Albania, and

'*the wild population [in Italy] is most likely extinct as the species almost totally depends upon stocking and there is no evidence of spawning from stocked or wild individuals (the last known natural spawning probably occurred early 1980s). The few animals occasionally captured in the wild are probably from aquaculture origin and were probably released in the last few years. However, there is a slim chance that wild individuals still exist. The population on the eastern Adriatic are also probably extinct in the wild, there is no evidence of natural reproduction since 1990 in Albania. However, there also is a slim chance that wild individuals still exist there. The remaining potential suitable spawning grounds are restricted to very few areas in the Po River [Italy] with an AOO of less than 10 km² (one location). There may still be some wild individuals left, but it is unknown how many there may be; potentially there are less than 250'.* The last record from Albania was in the 1990s, from the Montenegro border (*Bronzi et al. 2011*).

It is therefore assumed that the project AOI does not sustain ≥95% of the global population and **does not qualify as Tier 1 habitat**. Furthermore, given that wild individuals are extremely unlikely to exist within Italian or Albanian waters, it is also assumed that the project AOI does not sustain ≥ 1% of global population and **does not qualify as Tier 2 habitat**.

4.4.4 Canestrini's goby

This fish species (*Pomatoschistus canestrinii*) is listed in the Italian Red List of Vertebrates as endemic. However, the global IUCN Red List records this species as

occurring widely in the Adriatic basin from Italy to Montenegro, and being abundant. It also appears to occur primarily in freshwater/brackish habitat, although it may occur in inshore marine environments. It is therefore assumed that the pipeline route does not sustain ≥95% of global population and **does not qualify as Tier 1 habitat**, nor does it sustain ≥ 1% of global population and **does not qualify as Tier 2 habitat**.

4.4.5 Mediterranean monk seal

The Mediterranean monk seal is of significant conservation concern. In addition to its IUCN listings (see Section 4.3.9) it is listed in Annexes II and IV of the EU Habitats Directive, Annex II of the Barcelona Convention and Annexes I and II of the Convention on Migratory Species, and is included in the citation for the designation of the South Adriatic Ionian Strait Ecologically or Biologically Significant Marine Area (EBSA).

As outlined in Section 4.3.6, this species is not considered to regularly occur within the area of influence of the TAP offshore pipeline route, but it may occasionally transit through it with an estimated maximum of five individuals in the Adriatic at any one time (*Rewilding Europe, 2014*).

The extent of occurrence is approximately 5,000,000 km² and the area of occupancy is 315,000 km² (*Karamanlidis & Dendrinos, 2015*). Assuming an extremely conservative scenario that one or more of the DMUs may support all individuals within the Adriatic at any one time (estimated at fewer than five monk seals), this represents 0.71% of the most recent estimate for global population (fewer than 700 animals) and **does not qualify as Tier 1 habitat** (≥95%) or **Tier 2 critical habitat** (≥1%).

Table 4.5 lists the migratory and/or congregatory species qualifying as critical habitat under Criterion 3. Additional detail is provided in the following sections.

Table 4-5: Critical habitat triggers under Criterion 3

Latin name	Common name	Conservation status	Tier of critical habitat	Rationale
Fish				
Anguilla anguilla	European eel	EN	Tier 2	Subsection (a)
Turtles				
Caretta caretta	Loggerhead turtle	IUCN VU Med LC Albania EN Italy EN	Tier 2	Subsection (a)
Mammals				
Tursiops truncatus	Bottlenose dolphin	IUCN LC Med VU Italy NT	Tier 2	Subsection (a)
Stenella coeruleoalba	Striped dolphin	IUCN LC Med VU Albania DD	Tier 2	Subsection (a)

		Italy LC		
Ziphius cavirostris	Cuvier's beaked whale	IUCN LC Med DD Albania DD Italy DD	Tier 2	Subsection (a)
Grampus griseus	Risso's dolphin	IUCN LC Med DD Italy DD	Tier 2	Subsection (a)

A large number of the taxa screened (all algae; flowering plants; sponges; cnidarians; echinoderms; bryozoans; molluscs and crustaceans) were deemed to be 'not migratory or congregatory', based on inherent biological characteristics such as size, motility, habitat, etc. These were therefore not considered further for this criterion.

4.4.6 Migratory fish

A number of fish species occur in the project AOI at various times of the year and some are considered to be (or likely to be) migratory, based either on their mobility and/or their listing in the appendices of the Convention on Migratory Species (CMS), otherwise known as the Bonn Convention (namely *Appendix I Endangered Migratory Species* and *Appendix II Migratory species conserved through Agreements*)**.** Excepting jawless and cartilaginous fish (for which there is considered to be no reasonable pathway for impacts), this includes:

- Adriatic sturgeon (Atlantic and Beluga sturgeon not considered further as believed to be extinct) (*Appendix II of CMS*)
- European eel (*Appendix II of CMS*)
- Commercially important fish species:
  - European anchovy (*Engraulis encrasicolus*), European pilchard/ sardine (*Sardina pilchardus*) (*Skrivanic and Zavodnik 1973*)
  - Bluefin tuna (*Thunnus thynnus*) (individuals tagged in the central Adriatic have been demonstrated as migrating to the Libyan coast (*Tudela et al., 2011*)
  - other species, e.g. swordfish (*Xiphias gladius*)
  - twaite shad (*Alosa fallax*).

The migratory species found in the project AOI have inherently wide distributions throughout vast areas of the Mediterranean and in many cases the wider Atlantic (e.g. European pilchard, Atlantic bluefin tuna). It is therefore considered that collectively the three DMUs do not support ≥ 95% of the global population for any single migratory fish species (or assemblage of species) and therefore **do not qualify as Tier 1 habitat**.

However, it is feasible that the offshore DMUs might sustain ≥ 1% (but < 95%) of the global population of a migratory fish species, or ≥ 5% of the global population of migratory/congregatory species with large but clumped distributions. Further assessment of these species is therefore provided below.

As noted in more detail under Criterion 2 (Section 4.4) there is only a very small chance that natural-spawned individuals of Adriaric sturgeon still exist in the wild. IUCN classify it as CR (possibly extinct), stating that the wild population is most likely extinct in Italy, the eastern Adriatic and Albania. As such, it is considered that this **does not qualify as critical habitat** for this species.

The European eel is a CR, catadromous species with a sharply declining population throughout its large geographic range. It occurs in all European rivers that drain to the Mediterranean, North and Baltic seas, as well as the Atlantic south to the Canary Islands and within parts of Mediterranean, north Africa and Asia (*IUCN Red List, 2017*). Within the Adriatic it is most notably recorded in the coastal lagoons of Italy (*Capoccioni, et al., 2011*) and Vistonis Lake in Greece (*ICES, 2016*). Given the dramatic stock declines of these species in recent years it is reasonable to assume that the collective area of the offshore DMUs (11,071 km^2) may sustain ≥ 1% (but < 95%) of the global population; this therefore **does qualify as a Tier 2 critical habitat**.

The European anchovy has a complex population structure throughout the Mediterranean Sea and northeast Atlantic within which the genetically distinct populations are managed regionally (*ICES, 2014*). Given its wide geographic distribution that ranges from the North Sea to Morocco, the Mediterranean and its surrounding seas, it is deemed unlikely that the collective area of the offshore DMUs supports ≥ 5% (but < 95%) of the global population. This therefore **does not qualify as Tier 2 critical habitat**.

The European pilchard also has a very wide distribution in the north-east Atlantic, ranging from the North Sea, down to Senegal and the eastern and central Mediterranean (*FAO, 2017*). As with the anchovy it is deemed unlikely that in the context of such a wide distribution, that the combined area of the three offshore DMUs supports ≥ 5% (but < 95%) of the global population. This therefore **does not qualify as Tier 2 critical habitat**.

The Atlantic bluefin tuna is regionally managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT). The eastern stock migrate to and congregate in the Mediterranean. However it is widely documented (*Fromentin & Lopuszanski, 2013*) that they concentrate in the Balearic Sea in the north eastern Mediterranean to spawn. It is therefore deemed unlikely that the collective area of the three offshore DMUs sustains ≥ 5% (but < 95%) of the global population of Altantic bluefin tuna. This therefore **does not qualify as Tier 2 critical habitat**.

The swordfish has a global distribution in temperate and tropical waters within which distinct populations are found. These include the Mediterranean where a distinct population occurs (*Mattiucci et al., 2014*). A single, defined spawning area and season exists in Sicilian waters, extending to the Balearic Islands, Spanish Mediterranean Coast and Ligurian Sea (*Pujolar et al., 2002*) and is the regional hotspot for this species. Considering this, and the extensive distribution of the global population and their highly migratory nature, it is deemed unlikely that the collective area of the three offshore DMUs sustains ≥ 5% (but < 95%) of the global population. This therefore **does not qualify as Tier 2 critical habitat**.

Twaite shad is an anadromous fish found from the British Isles and southern Norway to Morocco and Mediterranean Sea. When at sea adults are usually found in open coastal waters while juveniles favour nearshore and estuarine zones. It is therefore assumed that this species would only be found within the nearshore and coastal DMUs which collectively cover 2,903 km^2. Furthermore this species is known to aggregate near the estuaries of main river systems, as is documented in the northern Adriatic in relation to the rivers Po, Adige and Brenta (*La Mesa et al., 2015*). It is considered unlikely that the collective area of these DMUs supports ≥ 5% (but < 95%) of the global population. This therefore **does not qualify as Tier 2 critical habitat**.

4.4.7 Turtles

All species of marine turtle are well documented as being highly migratory, and all are included in *Appendix I* of the CMS.

As subpopulations of the global population of marine turtle species vary widely in population size, geographic range and population trends, expert opinion is that subpopulations, not global populations, are appropriate units for assessment of their global conservation status (*Casale and Tucker, 2015*). This critical habitat assessment therefore uses IUCN Red List assessments for the Mediterranean subpopulation, where available/applicable, rather than the global Red List to test Criterion 3 triggers (1%, 95%).

4.4.7.1 Loggerhead

The Adriatic is important for loggerhead turtles, despite known nesting activity along its coastline being absent or very low. Numerous studies have indicated the importance of the Adriatic as a foraging ground for all life history stages, and it is one of the few foraging grounds for adult turtles from the major rookery at Zakynthos (Greece). It also supports medium to long-term residence of juveniles with the southern Adriatic in particular known to be an important developmental area for juveniles in the first years of life (*Casale et al., 2012,* and references therein). The eastern Adriatic may be an important migratory corridor for this species (*Lazar et al., 2004*), and more recent tagging of individuals in the northern Adriatic has recorded individuals passing through the TAP AOI to as far away as Egypt, Libya, Tunisia and Sardinia (*Casale et al., 2012*).

While no population estimates are available for loggerheads in the Adriatic their abundance is reflected in the high numbers caught as bycatch; an estimated 11,000 individuals are caught annually predominately by demersal trawlers (*Casale et al., 2012*). The estimated number of mature loggerhead turtles in the Mediterranean Sea is 21,414 (*Casale, 2015*). Based on the above information on loggerheads in the Adriatic, it is considered unlikely that 95% of the Mediterranean subpopulation (20,343 individuals) occurs in one or more of the DMUs at any one time. The DMUs therefore **do not qualify as Tier 1 Habitat**. However, in the absence of conclusive information to the contrary, it is reasonable to assume that that the population of loggerheads occurring in one or more of the DMUs at any one time could be ≥1% of the Mediterranean subpopulation (214 individuals). As such, all three DMUs therefore **do qualify as Tier 2 habitat** for loggerhead turtles.

4.4.7.2 Leatherback

The leatherback turtle does not nest in the Mediterranean and although individuals are known to frequent the region, these may be vagrants originating from the Atlantic (*Casale et al., 2003*). A review of the 30 records found for this species, in the entire Adriatic, suggested the southern Adriatic may be of relative importance for this species; "*the occurrence of the leatherback recorded in the southern Adriatic is up to 1.5 fold higher to that of the entire Mediterranean. That suggests possible relevance of the southern Adriatic Sea as a summer foraging habitat for leatherbacks within the Mediterranean"* (*Lazar et al., 2008*). However the Mediterranean is not considered to represent a subpopulation of leatherbacks, with the only recognised subpopulations in the Atlantic system being in the NW, SW and SE Atlantic (*Wallace et al., 2013*). Given that this species is, at best, only likely to be a relatively infrequent visitor to the southern Adriatic, it is not considered feasible that the DMUs could represent critical habitat, and therefore **do not qualify as Tier 1 or Tier 2 habitat** for this species.

4.4.7.3 Green turtle

A 2004 review of green turtle records in the Adriatic (*Lazar et al., 2004b*), reported only 12 records. As such, the green turtle can be considered a rare vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.

4.4.7.4 Kemp's Ridley

Kemp's Ridley turtles are only known as very rare vagrants in the region: *Insacco and Spadola (2010)* reported a total of only five confirmed records from the entire Mediterranean, with none from the Adriatic. As such, the Kemp's Ridley can be considered an extremely rare vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.

4.4.7.5 Olive Ridley

The first ever confirmed occurrence of the Olive Ridley in the Mediterranean was reported recently, off the eastern coast of Spain (*Revuelta et al., 2015*). As such, the Olive Ridley can be considered an extremely rare vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.

4.4.8 Marine mammals

4.4.8.1 Mediterranean monk seal

As discussed above (Section 4.3.9) this species is considered to be recently extinct in the Adriatic with only occasional sightings of individual vagrants being recorded (*Karamanlidis et al., 2016a*). Significant proportions of monk seal are not known to cyclically or predictably move to, from or within the Adriatic. Despite being listed under Annexes I and II of the Convention on Migratory Species, it is not considered to migrate within the Adriatic on a cyclical or otherwise regular basis.

With the exception of Gyaros Island in the Aegean (*Karamanlidis et al., 2013*) where the species still aggregates in the structure of a colony, all other sub-populations in the eastern Mediterranean are present in fragmented groups of <20 individuals

(*Karamanlidis et al., 2016a*). It is not considered to congregate within the Adriatic on a cyclical or otherwise regular basis and the species is therefore not considered further under this criterion.

4.4.8.2 Cetaceans

A number of whale and dolphin species occur in the project AOI at various times of the year and are considered to be (or likely to be) migratory, based either on their large size and mobility and/or their listing on CMS appendices. A recent review of cetaceans in the Adriatic (*Holcer et al., 2014*) split cetacean species into categories of regular, non-regular, and visitors. These are further considered below.

- Regularly occurring and/or abundant species:
  - **Common bottlenose dolphin** (*Appendix I and II CMS*) is the most widely distributed cetacean species in the Mediterranean, and has been recorded in a range of habitats from far offshore to coastal, although it prefers areas of less than 200 m. The global population has been estimated at 600,000 individuals, with total abundance in the Mediterranean unknown but thought to be in the 'low 10,000s' (*Hammond et al., 2012*; NB conservatively assumed here at 20,000). A minimum population estimate for the entire Adriatic Sea is at least 5000 individuals (*Holcer et al., 2014*). Based on this, the three DMUs do not support 95% of either the global (570,000 individuals) or Mediterranean (19,000 individuals) populations and therefore **do not qualify as Tier 1 critical habitat**. However, it is possible that the DMUs could support at any one time ≥1% of the Mediterranean subpopulation (i.e. over 200 individuals). As such, based on a conservative assumption, the three DMUs **do qualify as Tier 2 habitat** for bottlenose dolphin.
  - **Striped dolphin** (*Appendix II CMS*) is considered the most abundant cetacean species in the Mediterranean and the Adriatic where it is regularly recorded in the southern part of the basin, particularly in areas with depths >600m; only exceptionally is it found in depths <200 m (*Holcer et al., 2014*). Based on an aerial survey in 2010, a population estimate of 15,343 individuals has been proposed for the central-southern Adriatic (*Holcer et al., 2014*). There is no Mediterranean-wide population estimate, but a 1991 estimate for the western Mediterranean was of 117,880 individuals (*Hammond et al., 2008*). The offshore DMU (the species is considered unlikely to occur in the shallower coast and nearshore DMUs) in the southern Adriatic cannot, therefore, represent 95% of the Mediterranean subpopulation, and **does not qualify as Tier 1 critical habitat**. However, in the absence of conclusive information, it is possible that the offshore DMU could support at any one time ≥1% of the Mediterranean subpopulation. As such, conservatively, the offshore DMU **does qualify as Tier 2 habitat** for striped dolphin.
  - **Cuvier's beaked whale** (*Appendix I CMS*) is strongly associated with deeper offshore waters and is therefore considered to be limited to the offshore DMU only. Based on a review of available information, Holcer *et al*. 2007 (in *Holcer et al., 2014*), concluded that the southern Adriatic Sea could be an important habitat for Cuvier's beaked whale. Genetic evidence supports the Mediterranean subpopulation being distinct (*Holcer et al., 2014*). No global or Mediterranean-wide population estimates are available for this species, although estimates are available for two specific areas in the Mediterranean: the Alboran Sea

(1994 individuals) and the Ligurian Sea (85-94 individuals). Based on this information, it is therefore unlikely that the offshore DMU supports 95% of the Mediterranean subpopulation of this species, and therefore **does not qualify as Tier 1 critical habitat.** However, in the absence of conclusive information, it is possible that the offshore DMU could support at any one time ≥1% of the Mediterranean subpopulation. As such, the offshore DMU is conservatively assumed to **qualify as Tier 2 habitat** for Cuvier's beaked whale.

- **Risso's dolphin** (*Appendix II CMS*) has a distinct Mediterranean subpopulation which has been identified using genetic evidence (*Gaspari & Natoli, 2012*). While Risso's dolphin has been recorded on numerous occasions throughout the Adriatic basin, consensus suggests it is only occasionally present in the Adriatic Sea (*Holcer et al., 2014*). Aerial surveys in the southern Adriatic only recorded Risso's dolphin on steep slopes of 600-900m (*Holcer et al., 2014*) and it is widely reported to primarily inhabit deep oceanic and continental slope waters of 400-1,000m deep, and is therefore considered to be limited to the offshore (100m+) DMU only. No global or Mediterranean-wide population estimates are available for this species. However, a preliminary abundance estimate for the southern Adriatic was obtained in 2010 (of 510 individuals), indicating that the southern Adriatic could host several hundred individuals (cited in *Holcer et al., 2014*). A further population estimate in the western Mediterranean is available for an area east of Spain, of 493 individuals (cited in *Holcer et al., 2014*). Based on this information, it is therefore not possible that the offshore DMU supports 95% of the Mediterranean subpopulation of this species, and therefore **do not qualify as Tier 1 critical habitat.** However, in the absence of conclusive information, it is possible that the offshore DMU could support at any one time ≥1% of the Mediterranean subpopulation. As such, the offshore DMU is conservatively assumed to **qualify as Tier 2 habitat** for Risso's dolphin.
- **Fin whale** (*Appendix I CMS*) occurrence in the Adriatic varies from 'regular' in the southern and central Adriatic Sea (*Holcer et al., 2014*) to 'scarce' in the northern Adriatic. Occurrence in the area is attributed to sporadic movements of individuals northwards from the more important habitat in the Ionian Sea further south (*Notarbartolo-di-Sciara, et al., 2003*). Only a single fin whale was recorded in the central Adriatic in aerial surveys in 2010 and 2013 (*Holcer et al., 2014*). There are no accurate abundance estimates for fin whales in the Adriatic or the wider Mediterranean (*Holcer et al., 2014*), but *Panigada and Notarbartolo di Sciara (2012)* proposed that a realistic estimate for the total Mediterranean basin would not exceed 5,000 individuals. This species is most commonly found in deep waters of 400 to 2,500m (*Holcer et al., 2014*) and is therefore considered to be limited to the offshore (100m+) DMU only. Based on this information, it is highly unlikely that the offshore DMU supports 95% of the Mediterranean subpopulation of this species (4,750 individuals), and therefore **does not qualify as Tier 1 critical habitat** for fin whale. Furthermore, it is considered unlikely that the population of fin whales occurring in the offshore DMU at any one time could be ≥1% of the Mediterranean subpopulation of this species (i.e. over 50 individuals), and therefore **does not qualify as Tier 2 critical habitat** for fin whale either.

- Non-regular species:

- **sperm whale** vagrant individuals may be found in the southern Adriatic, but it is not of importance for this species (*Holcer et al., 2014*). Additional reference information is provided in Appendix 4. As such, the sperm whale can be considered a vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.
- **short-beaked** common dolphin (*Delphinus delphis*) may be extinct in the Adriatic (*Holcer et al., 2014*). As such, this species can be considered a vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.

- Visitor species:
  - **long-finned pilot whale** (*Globicephala melas*) only one record of this species in the Adriatic, from 1922. (*Holcer et al., 2014*). As such, this species can be considered a very rare vagrant in the DMUs which therefore **do not qualify as Tier 1 or Tier 2 habitat** for this species.
  - **False killer whale** (*Pseudorca crassidens*) only two Adriatic records, from 1938 and around 1960 (*Holcer et al., 2014*). As such, the false killer whale can be considered a very rare vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.
  - **Humpback whale** (*Megaptera novaeangliae*) occurrences are rare in the Mediterranean, and only two records exist from the Adriatic, in 2002 and 2009 (*Holcer et al., 2014*). As such, the humpback whale can be considered a very rare vagrant in the DMUs which **do not qualify as Tier 1 or Tier 2 habitat** for this species.

4.5 Criterion 4: highly threatened or unique ecosystems

Table 4.6 lists the habitats qualifying as critical habitat under Criterion 4. Additional detail is provided in the following sections.

Table 4-6: Critical habitat triggers under Criterion 4

Name	Scientific value
South Adriatic and Ionian Strait EBSA	Contains important habitat for Cuvier's beaked whale (*Ziphius cavirostris*) and significant densities of other marine megafauna, such as giant devil ray (*Mobula mobula)*, striped dolphin (*Stenella coeruleoalba*), Mediterranean monk seal (*Monachus monachus*) and loggerhead turtle (*Caretta caretta*). Benthos includes deep-sea cold water coral communities, which are rare and slow-growing, and deep-sea sponge aggregations. Yhese are important biodiversity reservoirs and contribute to the trophic recycling of organic matter.
Posidonia oceanica beds	Presence of nearby SCIs designated for this habitat; patchy growth at microtunnel exit.
Reef	Includes endemic Mediterranean habitat (coralligenous assemblages) confirmed; possible presence of as yet unknown deepwater reefs.
Submarine structures made by leaking gases[29]	Possible presence of this rarely recorded habitat in deepwater

Most habitats recorded across the TAP route are widespread and typical of the southern Adriatic Sea, and/or of the wider Mediterranean.

Annex I (*Natural habitat types of community interest whose conservation requires the designation of Special Areas of Conservation*) of the EU Habitats Directive (92/43/EEC) lists priority habitat types. Criterion 4 may be triggered by the sub-criteria 'at risk of significantly decreasing in area or quality', and/or 'with a small spatial extent':

- **the Ionian Strait and South Adriatic EBSA** is crossed by the TAP pipeline within the Offshore DMU. Each of the qualifying features of the ESBA have been individually assessment in detail as part of this CHA but the site as a whole also triggers **critical habitat** under Criterion 4 as a site containing unique assemblages of species, including assemblages or concentrations of biome-restricted species. The individual qualifying features triggering critical habitat are Cuvier's beaked whale, striped dolphin, loggerhead turtle, *Lophelia pertusa*, zigzag coral, cockscombe cup coral, stony coral cup and *Leiopathes glaberrima*.
- ***Posidonia oceanica*** beds are listed as a priority habitat and are a reason for the designation of two SCIs a few kilometres from the Italian landfall: Le Cesine SCI (2.3 km north) and Palude dei Tamari (3 km south). However as noted in the ESIA and confirmed by surveys of the microtunnel exit in June/July 2016 at the Italian nearshore area, *Posidonia* is present only in very small patches alongside dominant stands of the more common, unprotected slender seagrass (*Cymodocea nodosa*). *Posidonia* is not present in the 'meadow' form (greater shoot density and a larger spatial extent) required to constitute Annex I habitat in the nearshore area and evidence indicates that the area of the microtunnel exit is not of high importance to this species. However, based on the presence of nearby SCIs within the project AOI at the Italian landfall this **does qualify as Tier 2 critical habitat.**
- **Reefs** are listed as a non-priority habitat under Annex I, including bedrock, stony and biogenic variants. No specific definition is provided for these but they can be broadly classed by origin, as either biogenic concretions formed by species such as the cold-water coral *Lophelia pertusa*, or of geogenic origin i.e. formed by non-biogenic substrata. A number of parameters are used to assess the 'reefiness' of potentially reef forming species to determine whether or not an aggregation constitutes an Annex I habitat. In the case of biogenic reefs these parameters can include the spatial extent/cover and density of an aggregation as well as its topography/elevation/thickness and persistence.

  Results of the ROV surveys of bioconstructions at five areas in the Italian nearshore area (1-15 km from the coast) in June 2016 confirmed that bioconstructions are present. These are mainly in the form of circalittoral oyster (*Neopychnodonte cochlear*) beds, which are included in EU Habitat type 1170 as Oyster Bank. It forms cobble to small boulder size clumps associated with a very low biodiversity.

  At one site the outcrops were found to be bioconstructions mainly characterised by the endemic Mediterranean habitat of 'rocky outcrops with corraligenous assemblages'. The majority of these were of 'scarce' (59) or 'poor' (37) quality. However, 13 were classed as 'good' and six as 'moderate' quality within the 50 m limit, based on WDF/MSFD criteria.

  For habitats in deep water, the ESIAs acknowledge that the presence of reefs is a possibility (e.g. Albania ESIA Section 6.2.5.3.2. '*There are currently no known white coral reefs in the Albanian offshore environment however this may reflect a general paucity of data'*). Deepwater coral communities are cited within

the designation of the South Adriatic Ionian Strait EBSA which is transected by much of the offshore TAP route; this site was proposed following publication of the TAP ESIAs.

Deepwater coral has been confirmed within the southern Adriatic since the publication of the ESIA (*Angeletti et al., 2014*). As detailed in Section 4.3.3, possible deepwater coral has been recorded on video images in the vicinity of the offshore pipeline route within the offshore DMU. Cold water coral communities have been identified in the deepwater habitat review as requiring further investigation (see Appendix 7). It is therefore considered that all DMUs **do qualify as critical habitat** for reefs.

- **Submarine structures made by leaking gases** are a non-priority Annex I habitat. Some seabed features were identified in TAP offshore geophysical surveys that have the potential to be, or could indicate, such complex submarine structures ('pockmarks'; 'mud volcanoes'; 'mounds'; 'fluid escape structures', the potential for carbonate chimneys was also identified in the Deepwater Habitat Review). However, these features did not appear to be systematically investigated with a camera, or have their potential significance from a habitats perspective discussed at the time. Seabed features such as pock marks and mud volcanoes are likely to indicate microbial oxidation of gases, particularly methane, a defining feature of 'submarine structures made by leaking gases' (*UK Government, 2013*). The possibility of such habitat occurring along the offshore pipeline route was not considered in the ESIAs or associated surveys. However, the potential presence of these features / habitats has been a focus of the deepwater habitat review and a summary table detailing the locations of these features and identifying a need for further investigation is presented in Appendix 7. At this time, pending further investigations, it is precautionarily considered that the offshore DMU **does qualify as potential critical habitat** for submarine structures made by leaking gases.

Based on the above, **Criterion 4 is triggered by all DMUs for further consideration as Critical Habitat.**

4.6 Criterion 5: key evolutionary processes

The coastlines of six countries border all but the southern extent of the Adriatic Sea, where the relatively narrow Strait of Otranto connects it to the Ionian and then Mediterranean Sea. The semi-enclosed Adriatic consequently contains its own distinctive characteristics. However, while the presence of some endemic species such as the Adriatic sturgeon and a number of bony fish species including the commercially important red mullet demonstrate a degree of isolation from other Mediterranean subpopulations (*Maggio et al., 2009*), the Adriatic is not understood to be of significant biological interest in terms of evolutionary processes. It could not reasonably be described as being geographically isolated, having high levels of endemicity or being highly heterogeneous spatially.

4.6.1 Evolutionarily Distinct and Globally Endangered (EDGE) species

None of the coral species assessed for EDGE occur in the Mediterranean or the Adriatic.

Of the EDGE marine mammals, three species are recorded in the project AOI:

- **Mediterranean monk seal** (EDGE mammal species #22). As noted under Criterion 1 (habitat of significant importance to CR, EN, VU species), Criterion 2 (endemic and range-restricted species) and Criterion 3 (migratory and congregatory species), the DMUs **do not qualify as Tier 1 or Tier 2 critical habitat** for this species.
- **Fin whale** (*Balaenoptera physalus*) (EDGE mammal species #74) Fin whale occurrence in the Adriatic Sea is reported to be scarce, with presence in the area probably due to sporadic movements of individuals northwards from the more important habitat in the Ionian Sea further south (*Notarbartolo-di-Sciara, et al 2003*). As noted under Criterion 3 (migratory and congregatory species), the DMUs **do not qualify as Tier 1 or Tier 2 critical habitat** for this species.
- **Sperm whale** (*Physeter macrocephalus*) (EDGE mammal species # 90) is widely distributed in deep waters of the Mediterranean but is reported as vagrant in the Adriatic (*Notarbartolo di Sciara, 2002*). As noted under Criterion 3 (migratory and congregatory species), the DMUs **do not qualify as Tier 1 or Tier 2 critical habitat** for this species.

The marine habitats and species identified are generally widespread and do not represent areas of exceptional importance to evolutionary processes, and therefore **do not qualify as critical habitat**.

4.7 Criterion 6: key scientific value

Table 4.7 lists the species qualifying as critical habitat under Criterion 6. Additional detail is provided in the following sections.

Table 4-7: Critical habitat triggers under Criterion 6

No.	Name	Scientific value	Tier of critical habitat
1	Reef	Endemic Mediterranean habitat (coralligenous assemblages) confirmed; possible presence of as yet unknown deepwater reefs.	N/A
2	Submarine structures made by leaking gases[29]	Possible presence of this rarely recorded habitat in deepwater	

As noted under Criterion 5 (Section 4.6), both 'reefs' and 'submarine structures made by leaking gases' habitats have the potential to be present along the TAP offshore route.

Results of the ROV surveys of bioconstructions at five areas in the Italian nearshore area (1-15 km from the coast) in June 2016 confirmed that bioconstructions are present in the form of both circalittoral oyster beds, and the endemic Mediterranean habitat of 'rocky outcrops with corraligenous assemblages' and may therefore be of scientific interest (particularly for coralligenous habitats). As reefs exist in nearshore areas, and based on video footage of possible corals discussed in Section 4.3.3 potentially exist in deepwater offshore (see Criterion 5), a precautionary assessment concludes that reefs **qualify as critical habitat** under this criterion.

As noted under Criterion 5 the 'submarine structures made by leaking gases[29]' habitat could potentially exist along the offshore TAP route. Interpretation of geophysical data along the TAP route and the subsequent deepwater habitat review have identified locations where this habitat may occur and locations for further investigation and consideration are presented in Appendix 7. Of the few sites designated in the EU as containing such habitats, the two in the Mediterranean are located off the coast of Spain (Espacio marino del entorno de Illes Columbretes, and Estrecho Oriental). Should submarine structures made by leaking gases be found in the southern Adriatic, they would therefore be of considerable scientific interest. As a conservative assessment in the absence of more detailed information at time of writing, it is therefore considered that submarine structures made by leaking gases **qualify as potential critical habitats under Criterion 6**.

5 CONCLUSIONS AND IMPLICATIONS FOR THE TAP PROJECT

This assessment has identified the known or likely presence of critical habitat-qualifying features relevant to the TAP project AOI. All such features and the habitats that support them will be incorporated into the project's Ecological Management Plan (EcMP).

Management implications for the project will depend on what impacts, if any, are anticipated on these features. Where significant residual impacts on critical habitat may occur, the Lenders' requirements are:

1. Demonstrate that no other viable alternatives in the region exist for development of the project on habitats of lesser biodiversity value (i.e. modified or natural habitats that are not critical)
2. Demonstrate that stakeholders have been consulted in accordance with PR10
3. Demonstrate that the project is permitted under applicable environmental laws, recognising the priority biodiversity features
4. Demonstrate that the project does not lead to significant residual impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values
5. Demonstrate that the project does not lead to a net reduction in the global and/or national/regional population of any CR, EN or VU species over a reasonable period of time
6. Demonstrate that a robust, appropriately designed and long-term biodiversity monitoring and evaluation programme aimed at assessing the status of critical habitat is integrated into the client's management programme.
7. The client's mitigation strategy will be designed to achieve Net Gains for critical habitat impacted by the project.

The project EcMP will detail how TAP intends to meet these objectives and the criteria that are being used to design a biodiversity monitoring and evaluation programme to track progress and verify that the objectives are being met. Design principles for offsets are set out in the Biodiveristy Offset Strategy and will be developed in detail in an Offset Management Plan.

Where no significant residual impacts are anticipated, the project will need to undertake appropriate monitoring for verification purposes. It may be the case that impacts can be avoided entirely, or the critical habitat-qualifying features occur in parts of the DMUs that are unlikely to be impacted by the project. An appropriate level of monitoring for these species will be included in the project EcMP.

5.1 Next steps and recommendations

The following steps are necessary to assess the options available for the TAP project regarding the critical habitat determinations made in this report. It is not an exhaustive list and it is expected that further requirements may become apparent as the process continues.

What are the likely impacts?

- update the biodiversity impact assessment initiated as part of the ESIA, to understand the potential magnitude and likelihood of impacts upon the biodiversity values identified and prioritised through the baseline reports, critical habitat assessment and other studies. This process is being documented as part of the Supplementary Ecological Assessment currently being prepared.

What mitigation measures are possible?

- investigate avoidance, minimisation and restoration options to mitigate impacts caused by the project on the biodiversity values for which critical habitat has been defined (according to this report). This process will be incorporated into the EcMP currently being prepared

What are the significant residual impacts after the mitigation hierarchy has been applied?

- calculate the total residual impact by measuring the area and the quality or condition of habitat of biodiversity value likely to be lost after the mitigation hierarchy has been applied. This process is being undertaken as part of the Biodiversity Offset Strategy currently being prepared.
- monitor actual residual impacts and amend management strategies as required. The process for doing this is being documented as part of the EcMP currently being prepared.

Which sites in the region are possible biodiversity offsets?

- screen possible offset sites for their potential by assessing their biodiversity assets (e.g. species and habitat in terms of area, abundance and quality) and the potential to conserve or improve them
- assess each offset site for social, economic and political factors such as land cost and tenure, local community requirements and the political implications of different offsets
- investigate the conservation interventions required to conserve biodiversity at the different offset sites, such as prevention of habitat loss or eradication of invasive species
- ensure additionality of conservation gains is possible
- combine these assessments into a Biodiversity Management Plan

6 REFERENCES

Aram Agasyan, Aziz Avisi, Boris Tuniyev, Jelka Crnobrnja Isailovic, Petros Lymberakis, Claes Andrén, Dan Cogalniceanu, John Wilkinson, Natalia Ananjeva, Nazan Üzüm, Nikolai Orlov, Richard Podloucky, Sako Tuniyev, Uğur Kaya. 2009. *Bombina bombina*. The IUCN Red List of Threatened Species 2009: e.T2865A9489517. dx.doi.org/10.2305/IUCN.UK.2009.RLTS.T2865A9489517.en.

Aneva Y. I., Evstatieva N.L., Zhelev, P., Papajani – Toska, V., Ibraliu A. (2014) Distribution of *Sideritis raeseri* Boiss. et Heldr. in Albania – State of its populations and recommendations for conservation. *Proceedings of the 8th CMAPSEEC*

Angeletti, L., Taviani, M., Canese, S., Foglini, F., Mastrototaro, F., Argnani, A., Trincardi, F., Bakran-Petricioli, T., Ceregato, A., Chimienti, G. (2014) New deep-water cnidarian sites in the southern Adriatic Sea. *Mediterranean Marine Science* 15(2), 1-11.

Angeletti, L., Taviani, M., Canese, S., Foglini, F., Mastrototaro, F., Argnani, A., Trincardi, F., Bakran-Petricioli, T., Ceregato, A., Chimienti, G., Mačić, V., Poliseno, A., (2014) New deep-water cnidarian sites in the southern Adriatic Sea. Medit. Mar. Sci., 15, 263-273.

Angeletti, L., Canese, S., Franchi, F., Montagna, P., Reitner, J., Walliser, E.O., Taviani, M., (2015) The "chimney forest" of the deep Montenegrin margin, south-eastern Adriatic Sea, *Marine and Petroleum Geology* doi: 10.1016/j.marpetgeo.2015.04.001.

Anonymous (2007) Monk seal pup 'Badem' returns home. *The Monachus Guardian*. monachus-guardian.org /mguard19/1916mednew.htm#Turkey.

Antolic et al., B (2013) A checklist of the benthic marine macroalgae from the eastern Adriatic coast: IV. Rhodophyta 2: Ceramiales excluded. *Acta Adriatica* 54(1): 41 - 66, 2013

Bego, F. 1997. Shoqata per Ruajtjen dhe Mbrojtjen e Mjedisit Natyror ne Shqiperi. Libri i Kuq. Pg. 1 – 312

Bego, F., Mullaj, A., Kashta, L., & Zotaj, A. (2013) The status of the habitats of European conservation interest along the Adriatic coast of Albania. *International journal of ecosystems and ecology science*. Vol.3, 203-210.

Bego, F. and Theou, P. (2014) 'Agreement on the conservation of populations of European bats. National Implementation Report: Albania', EUROBATS, June.

Beqiraj S et al (2008) Benthic macrofauna of *Posidonia oceanica* meadows in the Albanian coast. Natura *Montenegrina Podgorica* 7, 55-69

Bino, T. and Carugati, C. (2016) Wintering Waterbirds in Albania – International Waterbird Census, January 14-25, 2016

Birdlife International (2016). *Pelecanus crispus*. The IUCN Red List of Threatened Species 2016: e.T22697599A90354089. dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22697599A90354089.en .

Bland, L.M., Keith, D.A., Miller, R.M., Murray, N.J. and Rodríguez, J.P. (eds.) (2016). Guidelines for the application of IUCN Red List of Ecosystems Categories and Criteria, Version 1.0. Gland, Switzerland, IUCN.

Blondel, J., Aronson, J., Bodiou, J-Y. & Boeuf, G. (2010). *The Mediterranean Region. Biological diversity in space and time. Second Edition*. Oxford University Press, Oxford.

Bo, M., Bertolino, M., Bavestrello, G., Canese, S., Giusti, M., Angiolillo, M., Pansini, M., Taviani, M. (2012) Role of deep sponge grounds in the Mediterranean Sea: a case study in southern Italy. *Hydrobiologia*, 687, 163–177

Bronzi, P., Congiu, L., Rossi, R., Zerunian, S. & Arlati , G. (2011) *Acipenser naccarii*. The IUCN Red List of Threatened Species 2011: e.T224A13037056.

Brooks, R.R. (1987*). Serpentine and its vegetation: a multidisciplinary approach*. Dioscorides Press, Michigan, USA.

Cairns, S, Hoeksema, B. (2010) *Madrepora oculata* Linnaeus, 1758. Accessed through: World Register of Marine Species at marinespecies.org/aphia.php?p=taxdetails&id=135209 on 2016-09-02

Campagnea CS, Sallesb J-M, Boisseryc P, Detera J (2015) The seagrass *Posidonia oceanica*: Ecosystem services identification and economic evaluation of goods and benefits. *Marine Pollution Bulletin* **97**, 391-400.

Capoccioni, F., Costa, C., Aguzzi, J., Menesatti, P.,Lombarte, A. & Ciccotti, E. (2011) Ontogenetic and environmental effects on otolith shape variability in three Mediterranean European eel (Anguilla anguilla, L.) local stocks. Journal of Experimental Marine Biology and Ecology 397 (1–7)

Casado de Amezua, P., Kersting, D., Linares, C.L., Bo, M., Caroselli, E., Garrabou, J., Cerrano, C., Ozalp, B., Terrón-Sigler, A. & Betti, F. (2015) *Cladocora caespitosa*. The IUCN Red List of Threatened Species 2015: e.T133142A51214584. . Downloaded on 02 September 2016.

Castristi-Catharios J et al (2011) Revised description of a poorly known Mediterranean Dictyoceratid bath sponge, Spongia (Spongia) zimocca (Schmidt, 1862) (Porifera: Demospongiae: Dictyoceratida. Zootaxa 2812: 41–62 (2011)

Celi M, Filiciotto F, Vazzan M, Arizza V et al (2014) Shipping noise affecting immune responses of European spiny lobster (*Palinurus elephas*). *Canadian Journal of Zoology* 93, 113-121.

CEPF (2010). Ecosystem Profile: Mediterranean Basin Biodiversity Hotspot

Cerrano C et al., (2013) *Calyx nicaeensis* (Risso, 1826) (Porifera, Demospongiae). Is it a rare and threatended species? Rapp. Comm. Int. Mer Medit 40.

de Oliveira-Carvalho MF et al (2010) Taxonomy and distribution of the green algal genus Codium (Bryopsidales, Chlorophyta) in Brazil. *Nova Hedwigia* 91: 87-109.

Diez I et al., (2003) The relationship of environmental factors to the structure and distribution of subtidal seaweed vegetation of the western Basque coast (N Spain). *Estuarine, Coastal and Shelf Sciences* 56: 1041-1054

Dimopoulos, P. Raus, T., Bergmeier, E., Constanitinidis, T., Iatrou, G., Kokkini, S., Strid, A. & Tzanoudakis, D. (2013) *Vascular plants of Greece. An annotated checklist*. Botanischer Garten und Botanisches Museum Berlin-Dahlem & Hellenic Botanical Society

D'Onghia G et al. (2016) New records of cold-water coral sites and fish fauna characterization of a potential network existing in the Mediterranean Sea. *Marine Ecology* 37 (2016) 1398–1422

Edgar, P. and Bird, D. (2006) Action Plan for the Conservation of the Crested Newt Triturus cristatus Species Complex in Europe to small wetland habitats. The Herpetological Conservation Trust

European Bank for Reconstruction and Development (2014a) Performance Requirement 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

European Bank for Reconstruction and Development (2014b) Guidance Note: Performance Requirement 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

European Investment Bank (2013) Environmental and Social Handbook

FAO (2017) fao.org/fishery/species/2910/en

Fox W.T. 2005. Bioconstruction. In: *Encyclopaedia of Coastal Science*. Ed. Schwartz M.L.; Springer Netherlands. pp 186-188. DOI 10.1007/1-4020-3880. pp 1-46

Freiwald, A., Beuk, L., Rüggeberg, A., Taviani, M., Hebbeln, D. et al., (2009) The White Coral Community in the Central Mediterranean Sea Revealed by ROV Surveys. Oceanography, 22 (1), 58-74

Fromentin, J. & Lopuszanski, D. (2013) Migration, residency, and homing of bluefin tuna in the western Mediterranean Sea. *ICES J Mar Sci* 2013; 71 (3): 510-518. doi: 10.1093/icesjms/fst157

Gaethlich, M.(1988) Otters in Western Greece and Corfu. IUCN Otter Spec. Group Bull. 3: 17 – 23

Gazo M, Layna JF, Aparicio F, Cedenilla MA, Gonzalez LM, Aguilar A (1999) Pupping season, perinatal sex ratio and natality rates of the Mediterranean monk seal from the Cabo Blanco colony. *Journal of Zoology* 249: 393–401.

Gesner, J., Williot, P., Rochard, E., Freyhof, J. & Kottelat, M. (2010) *Acipenser sturio*. The IUCN Red List of Threatened Species 2010: e.T230A13040963. dx.doi.org/10.2305/IUCN.UK.2010-1.RLTS.T230A13040963.en. Downloaded on 02 September 2016.

Giangrande A et al (2003) Polychaete assemblages along a rocky shore on the South Adriatic coast (Mediterranean Sea): patterns of spatial distribution. *Marine Biology* 143: 1109–1116

Giannatos G (2004) Conservation Action Plan for the Golden Jackal (Canis Aureus L. 1758) in Greece. WWF Greece, Athens, Greece.

Giorgiev, D. (2007) Study on the home range of the resident female otter (*Lutra lutra*) (Carnivoria, Mammalia) in south-east Bulgaria. Acta Zoologica Bulgaria 59 (2), 2007: 165-172

Giovannelli D et al., (2016) Diversity and Distribution of Prokaryotes within a Shallow-Water Pockmark Field. *Frontiers in Microbiology* 2016; 7: 941

Gofas, S. (2004) *Mytilaster minimus* (Poli, 1795). In: MolluscaBase (2016). Accessed through: World Register of Marine Species at marinespecies.org/aphia.php?p=taxdetails&id=140478 on 2016-09-02

Gomerčić et al., (2011) Presence of the Mediterranean Monk Seal *Monachus monachus* in the Croatian Part of the Adriatic Sea. *Aquatic Mammals* 37, 243-247

Güçlüsoy H, Kiraç CO, Veryeri NO, Savas¸ Y (2004) Status of the Mediterranean monk seal, *Monachus monachus* (Hermann, 1779) in the coastal waters of Turkey. *E.U. Journal of Fisheries& Aquatic Sciences* 21: 201–210.

Gücü A.C, Ok M, Sakinan S (2009b) A survey of the critically endangered Mediterranean monk seal, *Monachus monachus* (Hermann, 1779) along the coast of Northern Cyprus. *Israel Journal of Ecology and Evolution* 55: 77–82.

Gücü A.C, Sakinan S, Ok M (2009a) Occurrence of the critically endangered Mediterranean monk seal, *Monachus monachus*, at Olympos-Beydaglari National Park, Turkey. *Zoology in the Middle East* 46: 3–8.

Gücü AC, Gücü G, Orek H (2004) Habitat use and preliminary demographic evaluation of the critically endangered Mediterranean monk seal (*Monachus monachus*) in the Cilician Basin (Eastern Mediterranean). *Biological Conservation* 116: 417–431.

Guidetti P et al (2003) temporal dynamics and biomass partitioning in three Adriatic seagrass species *Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina*. *Marine Ecology* 23, 57-67

Guiry, M.D. & Guiry, G.M. (2016) AlgaeBase. World-wide electronic publication, National University of Ireland, Galway. algaebase.org; searched on 31 August 2016.

Hampshire Biodiversity Partnership (2000). Biodiversity Action Plan for Hampshire: Species Action Plan for European Otter

Haxhiu, Idriz. (1998). The Reptilia of Albania: Species composition, distribution, habitats. *Bonner zoologische Beiträge*, 48, 35-57.

Hoeksema, B. (2004) *Lophelia pertusa* (Linnaeus, 1758). Accessed through: World Register of Marine Species at marinespecies.org/aphia.php?p=taxdetails&id=135161 on 2016-09-02

Holcer, C.M. Fortuna & P. C. Mackelworth.(2014). Status and Conservation of Cetaceans in the Adriatic Sea. By Draft internal report for the purposes of the Mediterranean Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas, Malaga, Spain, 7-11 April 2014. UNEP-MAP-RAC/SPA.

ICES Journal of Marine Science (2014), 71(2), 391–397. doi:10.1093/icesjms/fst132

International Finance Corporation (2012) Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources, Washington, D.C

International Finance Corporation (2012) Guidance Note 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources, Washington, D.C

IUCN (2016). An Introduction to the IUCN Red List of Ecosystems: The Categories and Criteria for Assessing Risks to Ecosystems. Gland, Switzerland: IUCN. vi + 14pp

IUCN Red List (2017) iucnredlist.org/details/60344/1

Jablonski, D. (2011). Reptiles and amphibians of Albania with new records and notes on occurrence and distribution. *Acta Societatis Zoologicae Bohemicae*, 75, 223-238.

Jalas, J. (1988) Volume 3 of Atlas Florae Europaeae: Distribution of Vascular Plants in Europe. Cambridge University Press, Cambridge.

Karamanlidis, A.A., Dendrinos, D., Fernandez de Larrinoa, P., Gücü, A.C., Johnson, W.M., Kiraç, C.O. (2016a) Status, biology, threats and conservation priorities of the Mediterranean monk seal Monachus monachus. Mammal Rev. dx.doi.org/10. 1111/mam.12053 (in press).

Karamanlidis, A.A, Gaughran, S, Aguilar, A., Dendrinos, P., Huber, D., Pires. R., Schultz, J., Skrbinšek, T., Amato, G. (2016b) Shaping species conservation strategies using mtDNA analysis: The case of the elusive Mediterranean monk seal (Monachus monachus) Biological Conservation 193 (71-79)

Karamanlidis, A. & Dendrinos, P. (2015) *Monachus monachus*. The IUCN Red List of Threatened Species 2015: e.T13653A45227543.

La Mesa, G., Annunziatellis, A., Filidei, E. and Fortuna, C. M. (2015), Modeling environmental, temporal and spatial effects on twaite shad (*Alosa fallax*) by-catches in the central Mediterranean Sea. Fish. Oceanogr., 24: 107–117. doi:10.1111/fog.12093

Lopes-Lima , M., Kebapçı, U. & Van Damme, D. 2014. *Unio crassus*. The IUCN Red List of Threatened Species 2014: e.T22736A42465628. dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T22736A42465628.en..

Lüber, S., Frey, S., Prideaux, M., and Prideaux, G. (2015) *Creating 'quiet zones': Protecting Cuvier's beaked whale and Mediterranean monk seal critical habitat from anthropogenic noise in the Mediterranean Sea*, OceanCare

MacDonald S.M., Mason C.F. (1985) Otters, their habitat and conservation in Northeast Greece Biological Conservation, Volume 31, Issue 3, 1985, Pages 191-210.

MacNamara, R. ,McCarthy, K.T,Wickstro, H., & Clevestam, P. (2016) Fecundity of silver-phase eels (Anguilla anguilla) from different habitat types and geographic locations ICES Journal of Marine Science , 73(1), 135–141.doi:10.1093/icesjms/fsv065

Maggio, T., Lo Brutto, S., Garoia, F., Tinti, F., and Arculeo, M. (2009) Microsatellite analysis of red mullet *Mullus barbatus* (Perciformes, Mullidae) reveals the isolation of the Adriatic Basin in the Mediterranean Sea. *ICES Journal of Marine Science*, 66: 000–000.

Marshall, C.E. & Wilson, E. (2008) *Pecten maximus* Great scallop. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: marlin.ac.uk/species/detail/1398

McCafferty, D (2005) Ecology and Conservation of Otters (*Lutra lutra*) in Loch Lomond and the Trossachs National Park. University of Glasgow

Mittermeier, R.A., Robles Gil, P., Hoffman, M., Pilgrim, J., Brooks, T., Mittermeier, C.G., Lamoreux, J., da Fonseca, G.A.B., 2004. Hotspots Revisited. CEMEX, Mexico City.

Natural England (2012) Marine ecosystems services. Description of the ecosystem services provided by broadscale habitats and features of conservation importance that are likely to be protected by Marine Protected Areas in the Marine Conservation Zone Project area. NE project Natural England Commissioned Report NECR088.

Nedelec SL, Radford AN, Simpson SD, Nedelec B, Lecchini D, Mills, S. (2014) Anthropogenic noise playback impairs embryonic development and increases mortality in a marine invertebrate. *Nature Scientific Reports* 4, 5891.,

Nedwell J.R., Edwards, B., Turnpenny, A.W.H. and Gordon, J. (2004). Fish and marine mammal audiograms: a summary of available information. Subacoustech Report Reference: 534R0214

Notarbartolo di Sciara G. (2002) Cetacean species occurring in the Mediterranean and Black Seas. In: G. Notarbartolo di Sciara (Ed.), Cetaceans of the Mediterranean and Black Seas: state of knowledge and conservation strategies. A report to the ACCOBAMS Secretariat, Monaco, February 2002. Section 3, 17 p.

Notarbartolo-di-Sciara, G et al (2003) The fin whale *Balaenoptera physalus* (L. 1758) in the Mediterranean Sea. *Mammal Review* 33, No. 2, 105–150.

Otero, M.M., Numa, C., Bo, M., Orejas, C., Garrabou, J., Cerrano, C., Kružic´, P., Antoniadou, C., Aguilar, R., Kipson, S., Linares, C., Terron-Sigler, A., Brossard, J., Kersting, D., Casado-Amezua, P., Garcia, S., Goffredo, S., Ocana, O., Caroselli, E., Maldonado, M., Bavestrello, G., Cattaneo-Vietti, R. and Ozalp, B. (2017). Overview of the conservation status of Mediterranean anthozoans. IUCN, Malaga, Spain. x + 73 pp

Peev, D. (ed.) (2011), Red data book of the Republic of Bulgaria digital edition. Vol. 1 plants and fungi (Sofia: Bulgarian Academy of Sciences and Ministry of Environment and Water).

Popper, A (2005) A review of hearing by sturgeon and lamprey. Report by Environmental BioAcoustics for US Army Corps of Engineers.

Pujolar, J., Roldán, M. & Pla, C. (2002) A genetic assessment of the population structure of swordfish (Xiphias gladius) in the Mediterranean Sea. Journal of Experimental Marine Biology and Ecology Volume 276, Issues 1–2, 4 September 2002, Pages 19–29

Radea, K. 2011. *Bithynia kastorias*. The IUCN Red List of Threatened Species 2011: e.T164879A5933859. dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T164879A5933859.en.

Rewilding Europe (2014) The Mediterranean monk seal makes a comeback in Croatia (rewildingeurope.com/news/the-mediterranean-monk-seal-makes-a-comeback-in-croatia/

Roberts L, Cheesman S, Elliot M, Breithaupt T (2016) Sensitivity of *Pagurus bernhardus* L to substrate-borne vibration and anthropogenic noise. *Journal of Experimental Marine Biology and Ecology* 474, 185-194.

Sanfilipino R et al. (2012) *Serpula* aggregates and their role in deep-sea coral communities in the southern Adriatic Sea. *Facies* DOI 10.1007/s10347-012-0356-7

Sanfilippo, R., Vertino, A., Rosso, A., Beuck, L., Freiwald, A. et al., (2013) Serpula aggregates and their role in deep-sea coral communities in the Adriatic Sea. Facies, 59, 663-677

Savic, I.R. (2008) Diversification of the Balkan fauna: its origin, historical development and present status. UDC 591.1(497)574/575

Smith, Kevin G. and Darwall, William R.T. (Compilers). 2006. The Status and Distribution of Freshwater Fish Endemic to the Mediterranean Basin. IUCN, Gland, Switzerland and Cambridge, UK. v + 34 pp.

Speybroeck, J., Beukema, W., Bok, B., & Van Der Voort, J. (2016). *Field Guide to the Amphibians and Reptiles of Britain and Europe*. Bloomsbury Publishing.

Stevenson, A. C. (2001), Ecology, Biogeography and Management of Pinus halepensis and P. brutia Forest Ecosystems in the Mediterranean Basin. *Journal of Ecology*, 89: 904.

Stocks, J. R., Broad, A., Radford, C., Minchinton, T. E. & Davis, A. R. (2012). Response of marine invertebrate larvae to natural and anthropogenic sound: a pilot study. *The Open Marine Biology Journal*, 6, 57-61

Strid, A. and Tan, K., eds. (1997), Flora Hellenica, 1, Koeltz Scientific Books, Koenigstein

Sturgeon Specialist Group. (1996) *Huso huso* (Adriatic Sea stock). The IUCN Red List of Threatened Species 1996: e.T10273A3188106. dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T10273A3188106.en. Downloaded on 02 September 2016.

Sustain Value (2016a) Trans Adriatic Pipeline: Albania Ecosystem Services Screening and Gap Analysis

Sustain Value (2016b) Trans Adriatic Pipeline: Italy Ecosystem Services Screening and Gap Analysis

Sustain Value (2016c) Trans Adriatic Pipeline: Greece Ecosystem Services Screening and Gap Analysis

Tucker, G. M., and Evans, M. I., (1997). Habitats for Birds in Europe: A Conservation Strategy for the Wider Environment. Birdlife International, USA

Tyler-Walters, H., 2008. *Mytilus edulis* Common mussel. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: marlin.ac.uk/species/detail/1421

UNEP (2015) Adriatic Sea: Ecology. UNEP Mediterranean Action Plan. Twelfth meeting of focal points for Specially Protected Areas. Athens, Greece 25-29 May 2015. Draft report. UNEP(DEPI)/MED WG.408/Inf.14

UK Government (2013) Conservation status assessment for Habitat H1180 - Submarine structures made by leaking gases. Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012.

van Ofwegen, L. (2004). *Isidella elongata* (Esper, 1788). Accessed through: World Register of Marine Species at marinespecies.org/aphia.php?p=taxdetails&id=125373 on 2016-09-02

van Soest, R. (2004). *Hippospongia communis* (Lamarck, 1814). In: Van Soest, R.W.M; Boury-Esnault, N.; Hooper, J.N.A.; Rützler, K.; de Voogd, N.J.; Alvarez de Glasby, B.; Hajdu, E.; Pisera, A.B.; Manconi, R.; Schoenberg, C.; Klautau, M.; Picton, B.; Kelly, M.; Vacelet, J.; Dohrmann, M.; Díaz, M.-C.; Cárdenas, P.; Carballo, J. L. (2016). World Porifera database. Accessed through: World Register of Marine Species at marinespecies.org/aphia.php?p=taxdetails&id=132377 on 2016-09-02

Wale MA, Simpson SD, Radford AN (2013) Noise negatively affects foraging and antipredator behaviour in shore crabs. *Animal behaviour* 86 (1) 111-118.

Wielstra B. & Arntzen J.W. (2012). Postglacial species displacement in Triturus newts deduced from asymmetrically introgressed mitochondrial DNA and ecological niche models. *BMC Evolutionary Biololgy,* 12, 161.

Wielstra, B., Baird, A.B., & Arntzen, J.W. (2013). A multimarker phylogeography of crested newts (Triturus cristatus superspecies) reveals cryptic species. *Molecular Phylogenetics and Evolution*, 67, 167-175

Wilson, E. 2008*. Sepia officinalis* Common cuttlefish. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: marlin.ac.uk/species/detail/1098

Würtz, M. & M. Rovere (eds) (2015). Atlas of the Mediterranean Seamounts and Seamount-like Structures. Gland, Switzerland and Málaga, Spain: IUCN. 276 pages

WWF/IUCN (2004). The Mediterranean deep-sea ecosystems: an overview of their diversity, structure, functioning and anthropogenic impacts, with a proposal for conservation. IUCN, Málaga and WWF, Rome. Part I. Cartes, J.E., F. Maynou, F. Sardà, J.B. Company, D. Lloris and S. Tudela (2004). The Mediterranean deep-sea ecosystems: an overview of their diversity, structure, functioning and anthropogenic impacts. In: The Mediterranean deep-sea ecosystems: an overview of their diversity, structure, functioning and anthropogenic impacts, with a proposal for conservation. IUCN, Málaga and WWF, Rome. pp. 9-38

Žuljevic´et al. (2016) The Mediterranean deep-water kelp *Laminaria rodriguezii* is an endangered species in the Adriatic Sea. *Marine Biology* 163:69. doi:10.1007/s00227-016-2821-2

APPENDIX 1
CANDIDATE SPECIES OF CRITICAL HABITAT TRIGGERS

Table A1: Terrestrial candidate species

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Species / Habitat	**IUCN conservation status**	**Highest national conservation status within TAP host countries**	**Endemic status within TAP host countries**	**Migratory or congregatory species?**	**Highly threatened or unique ecosystem?**	**Area supporting key evolutionary processes?**	**Key scientific value?**
Mammals							
Brown bear (*Ursus arctos*)	LC	EN (Greece), VU (Albania) CR (Italy)	Not endemic	No	N/a	N/a	No
Wolf *(Canis lupus*)	LC	VU (Greece)	Not endemic	No	N/a	N/a	No
Golden jackal (*Canis aureus*)	LC	EN (Greece), VU(Albania)	Not endemic	No	N/a	N/a	No
Eurasian otter (*Lutra lutra*)	NT	EN (Greece, Italy), VU	Not endemic	No	N/a	N/a	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
		(Albania)					
Ground squirrel (*Spermophilus citellus*)	VU	VU (Greece)	Not endemic	No	N/a	N/a	No
Wildcat (*Felis silvestris*)	LC	EN (Albania)	Not endemic	No	N/a	n/a	No
Marbled polecat (*Vormela peregusna*)	VU		Not endemic	No	N/a	n/a	No
Balkan pine vole (*Microtus feltini*)	DD	EN (Greece)	Balkan endemic	No	N/a	N/a	No
Balkan mole (*Talpa stancovici*)	LC		Balkan endemic	No	N/a	N/a	No
Mediterranean mole (*Talpa caeca*)	LC		European endemic	No	N/a	N/a	No
Mediterranean horseshoe bat (*Rhinolophus euryale*)	VU (Med.)	VU (Greece, Albania & Italy)	Not endemic	Congregatory	N/a	n/a	No
Blasius's horseshoe bat (*Rhinolophus blasii*)	VU (Europe)		Not endemic	Congregatory	N/a	n/a	No
Greater horseshoe bat (*Rhinolophus ferrumequinum*)	LC	VU (Italy)	Not endemic	Congregatory	N/a	n/a	No
Lesser horseshoe bat (*Rhinolophus hipposideros*)	LC	EN (Italy)	Not endemic	Congregatory	N/a	n/a	No
Long-fingered bat	VU	VU (Italy)	Not endemic	Congregatory	N/a	n/a	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
(*Myotis capaccinii*)							
Schreiber's bent-winged bat (*Miniopterus schreibersi*)	NT	VU (Italy)	Not endemic	Migratory, congregatory	N/a	n/a	No
Greater mouse-eared bat (*Myotis myotis*)	LC	VU (Italy)	Not endemic	Occasional migrant, congregatory	N/a	n/a	No
Lesser mouse-eared bat (*Myotis blythii*)	LC	VU (Italy)	Not endemic	Occasional migrant, congregatory	N/a	n/a	No
Serotine (*Eptesicus serotinus*)	LC		Not endemic	Congregatory	N/a	n/a	No
Free-tailed bat (*Tadarida teniotis*)	LC		Not endemic	Congregatory	N/a	n/a	No
Geoffroy's bat (*Myotis emarginatus*)	LC	VU (Greece)	Not endemic	Congregatory	N/a	n/a	No
Whiskered bat (*Myotis mystacinus*)	LC	VU (Italy)	Not endemic	Migratory, congregatory	N/a	n/a	No
Natterers bat (*Myotis nattereri*)	LC	VU (Italy)	Not endemic	Congregatory	N/a	n/a	No
Leisler's bat, lesser noctule (*Nyctalus leisleri*)	LC		Not endemic	Migratory, congregatory	N/a	n/a	No
Noctule (*Nyctalus noctula*)	LC	VU (Italy)	Not endemic	Migratory, congregatory	N/a	n/a	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Kuhl's pipistrelle (*Pipistrellus kuhlii*)	LC		Not endemic	Congregatory	N/a	n/a	No
Nathusius's pipistrelle (*Pipistrellus nathusii*)	LC		Not endemic	Migratory, congregatory	N/a	n/a	No
Common pipistrelle (*Pipistrellus pipistrellus*)	LC		Not endemic	Occasional migrant, congregatory	N/a	n/a	No
Savi's pipistrelle (*Pipistrellus savii*)	LC		Not endemic	Migration unknown, congregatory	N/a	n/a	No
Parti-coloured bat (*Vespertilio murinus*)	LC		Not endemic	Migratory, congregatory	N/a	n/a	No
Reptiles and amphibians							
Spur-thighed Tortoise (*Testudo graeca*)	VU		Not endemic	No	N/a	n/a	No
European fire-bellied toad (*Bombina bombina*)	LC	EN (Greece)	Not endemic	Possibly congregatory	N/a	N/a	No
Macedonian crested newt (*Triturus macedonicus*)	LC (as *Triturus carnifex*)	EN (Greece) (as *Triturus carnifex*)	Not endemic	No	N/a	Yes – at zone of overlap with *T. karelinii*	No
Four-lined snake (*Elaphe quatrolineata*)	NT	CR (Albania)	Not endemic	No	N/a	N/a	No
Yellow-belled toad (*Bombina variegata)*	LC		Not endemic	Congregatory	N/a	N/a	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
European green toad (*Bufo viridis*)	LC		Not endemic	Congregatory	N/a	N/a	No
Aesculapian snake (*Elaphe longissima)*	LC	EN (Albania)	Not endemic	No	N/a	N/a	No
European ratsnake (*Elaphe situla)*	LC	CR (Albania)	Not endemic	No	N/a	N/a	No
Mediterranean cat snake (*Telescopus fallax)*	LC		Not endemic	No	N/a	N/a	No
Pool frog (*Rana lessonae*)	LC	VU (Albania)	Not endemic	No	N/a	N/A	No
Albanian pool frog (*Pelophylax shqipericus*)	EN		Endemic	No	N/A	N/A	No
Invertebrates							
Rosalia Longicorn beetle (*Rosalia alpina)*	LC (European), VU (Global)	CR (Albania) NA (Greece)	Not endemic	No	N/a	N/A	No
Marbled White butterfly *(Melanargia russiae)*	LC	CR (Albania)	Not endemic	No	N/a	N/A	No
Large Blue butterfly (*Maculinea arion)*	NT	EN (Albania)	Not endemic	No	N/a	N/A	No
Noble Chafer (*Gnorimus nobilis*)	Not assessed	CR (Albania)		No	N/a	N/A	No
Mountain Apollo (*Parnassius apollo*)	VU	CR (Albania)		No	N/a	N/A	No
False Eros blue (*Polyommatus eroides*)	Not assessed	CR (Albania)		No	N/a	N/A	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Forest Caterpillar hunter (*Calosoma sycophanta*)	Not assessed	EN (Albania)		No	N/a	N/A	No
Great capricorn Beetle (*Cerambyx cerdo*)	NT (European), VU (Global)	EN (Albania)		No	N/a	N/A	No
Oberthür's grizzled skippe (*Pyrgus armoricanus*)	LC	EN (Albania)		No	N/a	N/A	No
Longhorn beetle (*Morimus funereus*)	VU			No	N/a	N/A	No
Bithynia kastorias	CR		Endemic	No	N/a	N/A	No
Heleobia tritonum	CR		Endemic	No	N/a	N/A	No
Unio crassus	EN	VU (Albania)		No	N/a	N/A	No
Freshwater fish							
Devoll riffle minnow (*Alburnoides devolli*)	Not assessed	n/a	Endemic to Albania	No	N/a	N/a	Yes, species only described in 2010
Osum riffle minnow (*Alburnoides fangfangae*)	Not assessed	n/a	Endemic to Albania	No	N/a	N/a	Yes, species only described in 2010

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Pelasgus prespensis	EN		Restricted range (Prespa Lake)	No	N/a	N/a	
Oxynoemacheilus pindus	VU		Endemic to Albania	No	N/a	N/a	No
European eel (*Anguilla anguilla*)	CR	CR (Italy)	Not endemic	Migratory, congregatory	N/a	N/a	No
Alburnus sp. Volvi	NT		Endemic to Greece	No	N/a	N/a	No
Aggitis spined loach (*Cobitis punctilineata*)	VU	EN (Greece)	Endemic to Greece	No	N/a	N/a	No
Greek brook lamprey (*Eudontomyzon hellenicus*)	CR	CR (Greece)	Endemic to Greece	No	N/a	N/a	No
Briana (*Barbus prespensis*)	LC		Endemic to Albania	No	N/a	N/a	No
Cobitis ohridana	LC		Endemic to Albania	No	N/a	N/a	No
Twaite shad (*Alosa fallax*)	LC	VU (Italy)	Not endemic	Migratory, congregatory	N/a	N/a	No
Barbus macedonicus	LC		Endemic to Greece	No	N/a	N/a	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Ukrainian stickleback (*Pungitius platygaster*)	LC	VU (Greece)	Not endemic	No	N/a	N/a	No
Salmo pelagonicus	VU	VU (Greece)	Not endemic	No	N/a	N/a	No
Alburnus vistonicus	CR	CR (Greece)	Endemic to Greece	No	N/a	N/a	No
Alosa vistonica	CR	CR (Greece), possibly extinct	Restricted to coastal Lake Vistonis in northern Greece	Migratory, congregatory	N/a	N/a	No
Adriatic sturgeon (*Acipenser naccarii*)	CR	CR (Italy), EN (Albania)	Not endemic	No	N/a	N/a	No
Italian bleak (*Alburnus albidus*)	CR	VU (Italy)	Not endemic	No	N/a	N/a	No
Botany							
6220* Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	n/a	n/a	n/a	n/a	Yes	No	No
7210* Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae	n/a	n/a	n/a	n/a	Yes	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
2270 * Wooded dunes with Pinus pinea and/or Pinus pinaster	n/a	n/a	n/a	n/a	Yes	No	No
3170* Mediterranean temporary ponds	n/a	n/a	n/a	n/a	Yes	No	No
9110 Luzulo-Fagetum beech forests	n/a	n/a	n/a	n/a	Yes	No	No
9130 Asperulo-Fagetum beech forests	n/a	n/a	n/a	n/a	Yes	No	No
91E0*Alluvial Forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion Incanae, Salicion Albae)	n/a	n/a	n/a	n/a	Yes	No	No
9530 * (Sub-)Mediterranean pine forests with endemic black pine	n/a	n/a	n/a	n/a	Yes	No	No
9540 Mediterranean pine forests with endemic Mesogean pines	n/a	n/a	n/a	n/a	Yes	No	No
Yellow monk's-hood (*Aconitum lamarkii*)	Not assessed	CR (Albania)	Not endemic	n/a	n/a	No	No
Marram grass (*Ammophila arenaria*)	Not assessed	EN (Albania)		n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Anthyllis vulneraria subsp. bulgarica	Not assessed		Balkan endemic	n/a	n/a	No	No
Astragalus thracicus	Not assessed		Balkan endemic	n/a	n/a	No	No
Deadly nightshade (*Atropa belladonna*)	Not assessed	CR (Albania)		n/a	n/a	No	No
Bromus cappadocicus	Not assessed		Balkan endemic	n/a	n/a	No	No
Centaurea affinis	Not assessed		Balkan endemic	n/a	n/a	No	No
Centaurea napulifera subsp napulifera	Not assessed		Balkan endemic	n/a	n/a	No	No
Cephalanthera epipactoides	VU (Europe)			n/a	n/a	No	No
Meadow saffron (*Colchicum autumnale*)	LC	EN (Albania)		n/a	n/a	No	No
Colchicum turcicum	Not assessed		Balkan endemic	n/a	n/a	No	No
Crocus pulchellus	Not assessed		Balkan sub-endemic	n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Dianthus cruentus	Not assessed		Balkan endemic	n/a	n/a	No	No
Dianthus formanekii	Not assessed		Range-restricted Balkan endemic	n/a	n/a	No	No
Dianthus gracilis	Not assessed		Balkan endemic	n/a	n/a	No	No
Dianthus monadelphus	Not assessed		Balkan endemic	n/a	n/a	No	No
Dianthus stenopetalus	Not assessed		Balkan endemic	n/a	n/a	No	No
Dianthus tenuiflorus	Not assessed		Range-restricted Balkan endemic	n/a	n/a	No	No
Burning dittany (*Dictamnus albus*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Joint pine (*Ephedra distachya*)	LC	EN (Albania)		n/a	n/a	No	No
Erisymum crassistylum	Not assessed		Sub-Balkan endemic	n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Serptentine brome (*Festucopsis serpentinii*)	Not assessed		Endemic (Albania) - serpentine soils	n/a	n/a	No	No
Galium oreophilum	Not assessed		Balkan endemic	n/a	n/a	No	No
Great yellow gentian (*Gentiana lutea*)	Not assessed	EN (Albania)		n/a	n/a	No	No
Geocaryum capillifolium	Not assessed		Balkan endemic Greece	n/a	n/a	No	No
Helleborus odorus subsp. cyclophyllus	Not assessed		Balkan endemic	n/a	n/a	No	No
Perforate St John's wort (*Hypericum perforatum*)	Not assessed	EN (Albania)		n/a	n/a	No	No
Hypericum rumeliacum	Not assessed		Balkan endemic	n/a	n/a	No	No
Black walnut (*Juglans regia*)	NT	EN (Albania)		n/a	n/a	No	No
Common juniper (*Juniperus communis*)	LC	VU (Albania)		n/a	n/a	No	No
Prickly juniper (*Juniperus oxycedrus*)	LC	VU (Albania)		n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Prickly juniper (*Juniperus oxycedrus ssp. Macrocarpa)*	LC	VU (Albania)		n/a	n/a	No	No
Lilium albanicum	Not assessed	EN (Albania)	Range-restricted Balkan endemic	n/a	n/a	No	No
Linaria peloponnesiaca	Not assessed		Balkan endemic	n/a	n/a	No	No
Minuartia attica	Not assessed		Balkan endemic	n/a	n/a	No	No
Wild marjoram (*Origanum vulgare*)	Not assessed	EN (Albania)		n/a	n/a	No	No
Pancratium maritimum	Not assessed	EN (Albania)		n/a	n/a	No	No
Paronychia macedonica	Not assessed		Balkan endemic	n/a	n/a	No	No
Phlomis samia	Not assessed		Balkan endemic	n/a	n/a	No	No
Hart's tongue fern (*Phyllitis scolopendrium*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Polygala supina subsp. rhodopea	Not assessed		Balkan endemic	n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Holly oak (*Quercus ilex*)	Not assessed	EN (Albania)		n/a	n/a	No	No
Crack willow (*Salix fragilis*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Common sage (*Salvia officinalis*)	Least Concern (global)	VU (Albania)		n/a	n/a	No	No
Common elder (*Sambucus nigra*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Winter savoury (*Satureja montana*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Satureja pilosa subsp. origanita	Not assessed		Balkan endemic	n/a	n/a	No	No
Scabiosa tenuis	Not assessed		Balkan endemic	n/a	n/a	No	No
Scutellaria rupestris subsp. adenotricha	Not assessed		Balkan endemic	n/a	n/a	No	No
Mountain tea (*Sideritis raeseri [also as syn.* Sideritis scardica]	NT	EN (Albania)		n/a	n/a	No	No
Verbascum dingleri	Not assessed		Endemic to Greece	n/a	n/a	No	No
Verbascum phoeniceum subsp. flavidum	Not assessed		Balkan endemic	n/a	n/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Veronica chamaedrys subsp. chamaedryoides	Not assessed		Endemic to Greece	n/a	n/a	No	No
Laurustinus (*Viburnum tinus*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Mistletoe (*Viscum album*)	Not assessed	VU (Albania)		n/a	n/a	No	No
Birds							
Pygmy cormorant (*Microcarbo pygmeus*)		CR (Albania)	Not endemic	Migratory	N/a	No	No
Little egret (*Egretta garzetta*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Night heron (*Nycticorax nycticorax*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
White stork (*Ciconia ciconia*)		CR (Albania), VU (Greece)	Not endemic	Migratory	N/a	No	No
Black stork (*Ciconia nigra*)		EN (Greece) VU (Italy)	Not endemic	Migratory	N/a	No	No
Shelduck (*Tadorna tadorna*)		VU (Greece & Italy)	Not endemic	Migratory	N/a	No	No
Griffon vulture (*Gyps fulvus*)		CR (Italy) VU (Greece)	Not endemic	Migratory	N/a	No	No
Black vulture (*Coragyps atratus*)		EN (Greece)	Not endemic	Migratory	N/a	No	No
Lesser spotted eagle (*Aquila pomarina*)		CR (Albania), EN (Greece)	Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Short-toed eagle (*Circaetus gallicus*)		VU (Albania & Italy)	Not endemic	Migratory	N/a	No	No
Booted eagle (*Hieraaetus pennatus*)		EN (Albania & Greece)	Not endemic	Migratory	N/a	No	No
Black kite (*Milvus migrans*)		CR (Greece), EN (Albania)	Not endemic	Migratory	N/a	No	No
Marsh harrier (*Circus aeruginosus*)		VU (Greece, Albania & Italy)	Not endemic	Migratory	N/a	No	No
Montagu's harrier (*Circus pygargus*)		CR (Greece) VU (Italy)	Not endemic	Migratory	N/a	No	No
Long-legged buzzard (*Buteo rufinus*)		VU (Greece)	Not endemic	Migratory	N/a	No	No
Honey buzzard (*Pernis apivorus*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Levant sparrowhawk (*Accipiter brevipes*)			Not endemic	Migratory	N/a	No	No
Lesser kestrel (*Falco naumanni*)		VU (Greece)	Not endemic	Migratory	N/a	No	No
Red-footed falcon (*Falco vespertinus*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Eleonora's falcon (*Falco eleonorae*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Grey partridge (*Perdix perdix*)		EN (Greece)	Not endemic	Migratory	N/a	No	No
Turtle dove (*Streptopelia*	VU		Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
turtur)							
Nightjar (*Caprimulgus europaeus*)			Not endemic	Migratory	N/a	No	No
Kingfisher (*Alcedo atthis*)	VU		Not endemic		N/a	No	No
Roller (*Coracius garrulus*)		CR (Albania), VU (Greece)	Not endemic	Migratory	N/a	No	No
Black woodpecker (*Dryocopus martius*)			Not endemic	Migratory	N/a	No	No
Syrian woodpecker (*Dendrocopos syriacus*)			Not endemic	Migratory	N/a	No	No
Middle spotted woodpecker (*Leiopicus medius*)			Not endemic	Migratory	N/a	No	No
Skylark (*Alauda arvensis*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Woodlark (*Lullula arborea*)			Not endemic	Migratory	N/a	No	No
Short-toed lark (*Calandrella brachydactyla*)		EN (Italy)	Not endemic	Migratory	N/a	No	No
Calandra lark (*Melanocorypha calandra*)		VU (Greece & Italy)	Not endemic	Migratory	N/a	No	No
Tawny pipit (*Anthus campestris*)			Not endemic	Migratory	N/a	No	No
Olive-tree warbler (*Hippolais olivetorum*)			Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Red-backed shrike (*Lanius collurio*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Masked shrike (*Lanius nubicus*)			Not endemic	Migratory	N/a	No	No
Lesser grey shrike (*Lanius minor*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Ortolan bunting (*Emberiza hortulana*)			Not endemic	Migratory	N/a	No	No
Golden eagle (*Aquila chrysaetos*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Spotted eagle (*Aquila clanga*)	VU	CR (Albania)	Not endemic	Migratory	N/a	No	No
Purple heron (*Ardea purpurea*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Squacco heron (*Ardeola ralloides*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Short eared owl (*Asio flammeus*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Moustached warbler (*Acrocephalus melanopogon*)		EN (Albania) VU (Italy)	Not endemic	Migratory	N/a	No	No
Rock partridge (*Alectoris graeca*)		VU (Italy)	Not endemic	Migratory	N/a	No	No
Ferrugnious duck (*Aythya nyroca*)		CR (Albania) EN (Italy)	Not endemic	Migratory	N/a	No	No
Eagle owl (*Bubo bubo*)		CR (Albania)	Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Stone curlew (*Burhinus oedicnemus*)		CR (Albania) VU (Italy)	Not endemic	Migratory	N/a	No	No
Kentish plover (*Charadrius alexandrinus*)		EN (Italy)	Not endemic	Migratory	N/a	No	No
Black tern (*Chlidonias niger*)		EN (Italy)	Not endemic	Migratory	N/a	No	No
Hen harrier (*Circus cyaneus*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Corncrake (*Crex crex*)	VU	VU (Albania & Italy)	Not endemic	Migratory	N/a	No	No
Whooper swan (*Cygnus cygnus*)			Not endemic	Migratory	N/a	No	No
White-backed woodpecker (*Dendrocopus leucotos*)			Not endemic	Migratory	N/a	No	No
Merlin (*Falco columbarius*)	VU	VU (Albania)	Not endemic	Migratory	N/a	No	No
Lesser kestrel (*Falco naumanni*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Peregrine falcon (*Falco peregrinus*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Collared pratincole (*Glareola pratincola*)		EN (Italy) VU (Albania)	Not endemic	Migratory	N/a	No	No
Bonelli's eagle (*Aquila fasciata*)		CR (Italy) EN (Albania)	Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Black-winged stilt (*Himantopus himantopus*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Red kite (*Milvus milvus*)		EN (Albania) VU (Italy)	Not endemic	Migratory	N/a	No	No
Egyptian vulture (*Neophron perconopterus*)	EN	EN (Italy), VU (Albania)	Not endemic	Migratory	N/a	No	No
Osprey (*Pandion haliaetus*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Dalmatian pelican (*Pelecanus crispus*)	VU	CR (Albania)	Not endemic	Migratory	N/a	No	No
Grey headed woodpecker (*Picus canus*)		VU (Albania)	Not endemic	Migratory	N/a	No	No
Golden plover (*Pluvialis apricaria*)			Not endemic	Migratory	N/a	No	No
Eurasian spoonbill (*Platalea leucorodia*)		EN (Albania) VU (Italy)	Not endemic	Migratory	N/a	No	No
Little crake (*Porzana parva*)			Not endemic	Migratory	N/a	No	No
Spotted crake (*Porzana porzana*)			Not endemic	Migratory	N/a	No	No
Ballions crake (*Porzana pusilla*)			Not endemic	Migratory	N/a	No	No
Chough (*Pyrrhocorax*			Not endemic	Migratory	N/a	No	No

	Criterion 1		Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
pyrrhocorax)							
Avocet (*Recurvirostra avosetta*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Little tern (*Sternula albifrons*)		EN (Italy)	Not endemic	Migratory	N/a	No	No
Common tern (*Sterna hirundo*)		EN (Albania)	Not endemic	Migratory	N/a	No	No
Little bittern (*Ixobrychus minutus)*	LC	LC (Europe)	Not endemic	Migratory	N/a	No	No

Table A2: Marine candidate critical habitat species CAL00-C5577-640-Y-TRB-0005

TAP AG Project Title / Facility Name:

Trans Adriatic Pipeline Project

Document Title:

Critical habitat assessment report - Appendix A -Table A2: Candidate critical habitat triggers - marine species

0	15/11/2016	Issued for Information	IFI	A. Moore	J.Spurgeon	N. O'Donnell
B	02/11/2016	Issued for Review	IFR	A. Moore	J.Spurgeon	N. O'Donnell
A	09/09/2016	Issued for Review	IFR	A. Moore	J.Spurgeon	N. O'Donnell
Rev.	Revision Date (dd-mm-yyyy)	Reason for issue and Abbreviation for it, e.g,	IFR	Prepared by	Checked by	Approved by

	Contractor Name:	RSK Environment Ltd.
	Contractor Project No.:	
	Contractor Doc. No.:	
	Tag No's.:	

TAP AG Contract No.: C480	*Project No.:*	
PO No.:	*RD Code:*	*Page:* **1 of 4**

TAP AG Document No.:

CAL00-C5577-640-Y-TRB-0005

Table A2: Candidate critical habitat triggers - marine species

Note: this only applies to Albania and Italy as these are the only countries crossed by the project that involve a marine component

												Criteria 1 - Threatened species	Criteria 2 - Endemic/range restricted species			Criterion 3 - Migratory/congregatory species		Criterion 4	Criterion 5	Criterion 6
Species / Habitat	**Higher taxon**	**Scientific name**	**Habs Dir Annex I**	**Habs Dir Annex II**	**Habs Dir Annex IV**	**Barcelona Convention**	**Occurrence in Italy &/or Albania**	**IUCN conservation status (global)**	**IUCN conservation status (regional)**	**Albania Red List status**	**Italy Red List Status**	**Stage 1**	**Stage 1**	**Stage 2**	**Stage 3**	**Migratory or congregatory species?**	**CMS Appendix**	**Highly threatened or unique ecosystem?**	**Area supporting key evolutionary processes?**	**Key scientific value?**
Habitats																				
Sandbanks	N/A	N/A	Yes	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A		No	No
Posidonia beds (P. oceanicae)	N/A	N/A	Yes*	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A	Habs Dir Priority Habitat	No	No
Large shallow inlets & bays	N/A	N/A	Yes	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A		No	No
Reefs	N/A	N/A	Yes	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A		No	Yes
Submarine leaking gas structures (i.e. natural underwater vents)	N/A	N/A	Yes	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A-Habitat	N/A-Habitat	N/A-Habitat	N/A	N/A		No	Yes
Species																				
Green Feather Alga	Algae	*Caulerpa ollivieri*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red algae	Algae	*Bornetia secundiflora*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Creeping chain weed	Algae	*Catenella caespitosa*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Green algae	Algae	*Codium decorticatum*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR D1	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown algae	Algae	*Cystoseira amentacea*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU B2c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown algae	Algae	*Cystoseira mediterranea*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown algae	Algae	*Cystoseira sedoides*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown algae	Algae	*Cystoseira spinosa (inc C. adriatica)*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown algae	Algae	*Cystoseira zosteroides*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Mediterranean deep-water kelp	Algae	*Laminaria rodriguezii*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	Yes	No	No	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Crustaceous Coralline Algae	Algae	*Goniolithon byssoides*	N/A	No	No	II	Yes	Not assessed	Not assessed	CR B2c	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red coralline algae	Algae	*Lithophyllum dentatum*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR B2c	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red coralline algae	Algae	*Lithophyllum trocanter*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR B2c	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red coralline algae	Algae	*Tenarea tortuosa*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR B2c	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red algae	Algae	*Digenea simplex*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Green algae	Algae	*Parvocaulis parvulus*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR D1	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Adriatic Fucus	Algae	*Fucus virsoides*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR B2c	Not assessed	**Yes (CR2)**	Yes	No	No	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Coralline algae	Algae	*Lithopyllum lichenoides*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red algae	Algae	*Ptilophora mediterranea*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red algae	Algae	*Schimmelmannia schousboei*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Neptune Grass	Flowering plant	*Posidonia oceanica*	N/A	No	No	II	Yes	Least concern	Least concern (Mediterranean)	VU A2d	LC	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Eelgrass	Flowering plant	*Zostera marina*	N/A	No	No	II	Yes	Least concern	Least concern (Mediterranean)	VU A2d	DD	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Dwarf eelgrass	Flowering plant	*Zostera noltii*	N/A	No	No	II	Yes	Least concern	Least concern (Mediterranean)	VU A2d	Not in Italy RL	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Carnivorous Sponge	Sponge	*Asbestopluma hypogea*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Aplysina sp. plur*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	LC	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Tree Sponge	Sponge	*Axinella cannabina*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Common Antlers Sponge	Sponge	*Axinella polypoides*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Calix nicaeensis*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Sponge	Sponge	*Geodia cydonium*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Ircinia foetida*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Ircinia pipetta*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Pachastrella monilifera*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Sponge	Sponge	*Petrobiona massiliana*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	NT	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Petrosia ficiformis*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Sponge	Sponge	*Poecillastra compressa*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Common Sponge	Sponge	*Tethya sp. plur.*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	LC	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Honey comb sponge	Sponge	*Hippospongia communis*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Elephant Ear Sponge	Sponge	*Spongia agaricina*	N/A	No	No	III	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Spongia lamella*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Commercial Sponge	Sponge	*Spongia officinalis*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Leather sponge	Sponge	*Spongia zimocca*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sponge	Sponge	*Suberites carnosus*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Orange Coral	Cnidaria	*Astroides calycularis*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	LC	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Mediterranean Zoanthid	Cnidaria	*Gerardia savaglia*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	NT	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Black Coral	Cnidaria	*Antipathes sp. plur.*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	LC	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red Coral	Cnidaria	*Corallium rubrum*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Mediterranean Pillow Coral	Cnidaria	*Cladocora caespitosa*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	LC	**Yes (EN1)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
White Gorgonian	Cnidaria	*Eunicella singularis*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Bamboo coral	Cnidaria	*Isidella elongata*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Smooth black coral	Cnidaria	*Leiopathes glaberrima*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	EN	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Tall Sea Pen	Cnidaria	*Funiculina quadrangularis*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Slender Sea Pen	Cnidaria	*Virgularia mirabilis*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Cockscombe Cup Coral	Cnidaria	*Desmophyllum dianthus*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Deepwater White Coral	Cnidaria	*Lophelia pertusa*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Stony Cup Coral	Cnidaria	*Dendrophyllia cornigera*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Madrepora coral	Cnidaria	*Madrepora oculata*	N/A	No	No	No	Yes	Not assessed	Not assessed	Not in Albania RL	CR	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Cushion Star	Echinodermata	*Asterina pancerii*	N/A	No	No	II	Yes	Not assessed	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Banded Urchin	Echinodermata	*Centrostephanus longispinus*	N/A	No	Yes	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	**Yes (HD)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Red Starfish	Echinodermata	*Ophidiaster ophidianus*	N/A	No	No	II	Yes	Not assessed	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Rock Sea Urchin	Echinodermata	*Paracentrotus lividus*	N/A	No	No	III	Yes	Not assessed	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Bryozoan	Bryozoa	*Hornera lichenoides*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No

Pelican's foot snail	Mollusca	*Aporrhais pespelecani*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU C2a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Bivale	Mollusca	*Astarte sulcata*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Pink Lady	Mollusca	*Charonia lampas (C. rubicunda; C. rodifera)*	N/A	No	No	II	Yes	Not assessed	Not assessed	EN A1b	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Triton's Trumpets	Mollusca	*Charonia tritonis (C. seguenziae)*	N/A	No	No	II	Yes	Not assessed	Not assessed	EN A1b	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Worm Shell	Mollusca	*Dendropoma petraeum*	N/A	No	No	II	Yes	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Limpet	Mollusca	*Diodora graeca*	N/A	No	No	No	Unknown	Not assessed	Not assessed	VU A2b	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Dirty Cowry	Mollusca	*Erosaria spurca*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Maltese Top Shell	Mollusca	*Gibbula nivosa*	N/A	Yes	Yes	II	Yes	Not assessed	Not assessed	LRnt	Not assessed	**Yes (HD)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Green ormer	Mollusca	*Haliotis lamellosa*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A2b	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Date Mussel	Mollusca	*Lithophaga lithophaga*	N/A	No	Yes	II	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Brown cowry/Lurid Cowrie	Mollusca	*Luria lurida (Cypraea lurida)*	N/A	No	No	II	Yes	Not assessed	Not assessed	EN B2a	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Topshell	Mollusca	*Monodonta turbinata*	N/A	No	No	No	Unknown	Not assessed	Not assessed	VU A2b	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Zoned mitre	Mollusca	*Mitra zonata*	N/A	No	No	II	Yes	Not assessed	Not assessed	LRnt	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Dwarf mussel	Mollusca	*Mytilaster minimus*	N/A	No	No	No	Yes	Not assessed	Not assessed	CR D1	Not assessed	**Yes (CR2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Rayed Mediterranean limpet	Mollusca	*Patella caerulea*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species		No
Ribbed Mediterranean Limpet	Mollusca	*Patella ferruginea*	N/A	No	Yes	II	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (HD, VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Pink Rayed Limpet	Mollusca	*Patella nigra*	N/A	No	No	II	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Limpet	Mollusca	*Patella rustica*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Carpet shell/clam	Mollusca	*Paphia aurea*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Rough limpet	Mollusca	*Patella ulyssiponensis*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Mediterranean scallop	Mollusca	*Pecten jacobaeus*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A2c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Common Piddock	Mollusca	*Pholas dactylus*	N/A	No	No	II	Yes	Not assessed	Not assessed	LRnt	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Noble Pen Shell	Mollusca	*Pinna nobilis*	N/A	No	Yes	II	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (HD, VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Rough Pen Shell	Mollusca	*Pinna rudis (P. pernula)*	N/A	No	Yes	II	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (HD, VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Wing oyster	Mollusca	*Pteria hirundo*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A2c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Wandering Triton/ Little Frog Triton	Mollusca	*Ranella olearia (Argobuccinum olearium; A. giganteum*	N/A	No	No	II	Yes	Near threatened	Not assessed	EN A1b	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Bobtail squid	Mollusca	*Rossia macrosoma*	N/A	No	No	No	Yes	DD	Not assessed	EN D1	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Carpet shell	Mollusca	*Tapes decussatus (Ruditapes)*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Agate cowry	Mollusca	*Schilderia achatidea*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Helmet Ton	Mollusca	*Tonna galea*	N/A	No	No	II	Yes	Not assessed	Not assessed	EN A1b	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sea snail	Mollusca	*Tricolia pullus*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sea snail	Mollusca	*Tricolia tenuis*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU D2	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Carpet shell	Mollusca	*Venerupis geographica*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Carpet shell	Mollusca	*Venerupis pullastra*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU A1a	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Pear Cowrie	Mollusca	*Zonaria pyrum*	N/A	No	No	II	Yes	Not assessed	Not assessed	EN B2a	Not assessed	**Yes (EN2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Tufted Ghost Crab	Crustacea	*Ocypode cursor*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Deep Sea Barnacle	Crustacea	*Pachylasma giganteum*	N/A	No	No	II	Unknown	Not assessed	Not assessed	Not in Albania RL	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Common spiny lobster	Crustacea	*Palinurus elephas*	N/A	No	No	III	Yes	Vulnerable	Not assessed	Not in Albania RL	Not assessed	**Yes (VU1)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Lobster	Crustacea	*Homarus gammarus*	N/A	No	No	III	Yes	Not assessed	Not assessed	VU A1c	Not assessed	**Yes (VU2)**	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Spider crab	Crustacea	*Maja squinado*	N/A	No	No	III	Yes	Not assessed	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Mediterranean Slipper Lobster	Crustacea	*Scyllarides latus*	N/A	No	No	III	Yes	Data deficient	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Pygmy Locust Lobster	Crustacea	*Scyllarus pigmaeus*	N/A	No	No	III	Yes	Least concern	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Small European Locust Lobster	Crustacea	*Scyllarus arctus*	N/A	No	No	III	Yes	Least concern	Not assessed	LRcd	Not assessed	No	No	N/A	N/A	Not migratory or congregatory	Not listed in Appendix I or II	N/A - species	No	No
Sea lamprey	Jawless fish	*Petromyzon marinus*	N/A	Yes	No	III	Yes	Least concern	Not assessed	VU	CR	**Yes (HD, VU2, CR2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
River lamprey	Jawless fish	*Lampetra fluviatilis*	N/A	Yes	No	III	Yes	Least concern	Not assessed	EN	CR	**Yes (HD, EN2, CR2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Small-tooth Sand Tiger Shark	Cartilaginous fish	*Odantaspis ferox*	N/A	No	No	No	Yes	Vulnerable	Critically endangered (Europe)	Not in Albania RL	DD	**Yes (VU1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Common thresher shark	Cartilaginous fish	*Alopias vulpinus*	N/A	No	No	No	Yes	Vulnerable	Endangered (Europe)	Not in Albania RL	CR	**Yes (VU1, EN2, CR2)**	No	N/A	N/A	Migratory	Appendix II-Migratory	N/A - species	No	No
Sand tiger shark	Cartilaginous fish	*Carcharias taurus*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Great white shark	Cartilaginous fish	*Carcharodon carcharias*	N/A	No	No	II	Yes	Vulnerable	Critically endangered (Europe)	Not in Albania RL	DD	**Yes (VU1, CR2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Basking shark	Cartilaginous fish	*Cetorhinus maximus*	N/A	No	No	II	Yes	Vulnerable	Endangered (Europe)	CR	DD	**Yes (VU1, EN2, CR2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Tope	Cartilaginous fish	*Galeorhinus galeus*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	CR	**Yes (VU1, CR2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Spiny butterfly ray	Cartilaginous fish	*Gymnura altavela*	N/A	No	No	No	Yes	Vulnerable	Critically endangered (Europe)	Not in Albania RL	DD	**Yes (VU1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Shortfin mako	Cartilaginous fish	*Isurus oxyrinchus*	N/A	No	No	III	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Migratory	Appendix II-Migratory	N/A - species	No	No
Giant devil ray	Cartilaginous fish	*Mobula mobular*	N/A	No	No	II	Yes	Endangered	Not assessed	EN A1d	EN	**Yes (EN1, EN2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Common smoothhound	Cartilaginous fish	*Mustelus mustelus*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	EN	**Yes (VU1, EN2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Angular Rough Shark	Cartilaginous fish	*Oxynotus centrina*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Smoothback Angel Shark	Cartilaginous fish	*Squatina oculata*	N/A	No	No	No	Yes	Critically endangered	Not assessed	Not in Albania RL	CR	**Yes (CR1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Angel shark	Cartilaginous fish	*Squatina squatina*	N/A	No	No	III	Yes	Critically endangered	Not assessed	Not in Albania RL	CR	**Yes (CR1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Smooth Hammerhead	Cartilaginous fish	*Sphyrna zygaena*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Spurdog	Cartilaginous fish	*Squalus acanthias*	N/A	No	No	No	Yes	Vulnerable	Endangered (Mediterranean)	Not in Albania RL	CR	**Yes (VU1, EN2, CR2)**	No	N/A	N/A	Migratory	Med population not on Appendix 1/2	N/A - species	No	No
Dusky shark	Cartilaginous fish	*Carcharhinus obscurus*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Blackchin guitarfish	Cartilaginous fish	*Glaucostegus cemiculus*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	Not in Italy RL	**Yes (EN1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Common guitarfish	Cartilaginous fish	*Rhinobatos rhinobatos*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	CR	**Yes (EN1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Undulate ray	Cartilaginous fish	*Raja undulata*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	DD	**Yes (EN1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Rough ray	Cartilaginous fish	*Raja radula*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	DD	**Yes (EN1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
White skate	Cartilaginous fish	*Rostroraja alba*	N/A	No	No	III	Yes	Endangered	Critically endangered (Europe)	Not in Albania RL	CR	**Yes (EN1, CR2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Common skate	Cartilaginous fish	*Dipturus batis*	N/A	No	No	No	Yes	Critically endangered	Not assessed	Not in Albania RL	DD	**Yes (CR1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Sandy skate	Cartilaginous fish	*Leucoraja circularis*	N/A	No	No	No	Yes	Endangered	Not assessed	Not in Albania RL	DD	**Yes (EN1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Shagreen skate	Cartilaginous fish	*Leucoraja fullonica*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	DD	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Blue shark	Cartilaginous fish	*Prionace glauca*	N/A	No	No	III	Yes	Near threatened	Not assessed	Not in Albania RL	VU	**Yes (VU2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Porbeagle	Cartilaginous fish	*Lamna nasus*	N/A	No	No	III	Yes	Vulnerable	Critically endangered (Mediterranean)	Not in Albania RL	DD	**Yes (VU1, CR2, EN2)**	No	N/A	N/A	Migratory	Appendix II-Migratory	N/A - species	No	No

Mediterranean killifish	Bony fish	*Aphanius fasciatus*	N/A	No	No	No	Yes	LC	LC	EN	Not in Italy RL	**Yes (EN2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Leerfish	Bony fish	*Lichia amia*	N/A	No	No	No	Yes	LC	DD	EN	Not in Italy RL	**Yes (EN2)**	No	N/A	N/A		Not listed in Appendix I or II	N/A - species	No	No
Meagre	Bony fish	*Algyrosomus regius*	N/A	No	No	No	Yes	Not assessed	Not assessed	EN	Not in Italy RL	**Yes (EN2)**	No	N/A	N/A		Not listed in Appendix I or II	N/A - species	No	No
Greater amberjack	Bony fish	*Seriola dumerili*	N/A	No	No	No	Yes	LC	LC	EN	Not in Italy RL	**Yes (EN2)**	No	N/A	N/A		Not listed in Appendix I or II	N/A - species	No	No
Flounder	Bony fish	*Platichthys flesus*	N/A	No	No	No	Yes	LC	NT	VU	Not in Italy RL	**Yes (VU2)**	No	N/A	N/A		Not listed in Appendix I or II	N/A - species	No	No
Turbot	Bony fish	*Psetta maxima*	N/A	No	No	No	Yes	Not assessed	Not assessed	VU	Not in Italy RL	**Yes (VU2)**	No	N/A	N/A		Not listed in Appendix I or II	N/A - species	No	No
Adriatic sturgeon	Bony fish	*Acipenser naccarii*	N/A	Yes	Yes	II	Yes	Critically endangered	Not assessed	EN	CR	**Yes (HD, CR1, CR2, EN2)**	Yes	No	No	Migratory	Appendix II- Migratory	N/A - species	No	No
Atlantic sturgeon	Bony fish	*Acipenser sturio*	N/A	Yes	Yes	II	Yes	Critically endangered	Not assessed	EN	RE	**Yes (HD, CR1, EN2)**	No	N/A	N/A	Migratory	Appendix I and II- Migratory	N/A - species	No	No
European eel	Bony fish	*Anguilla anguilla*	N/A	No	No	III	Yes	Critically endangered	Not assessed	Not in Albania RL	CR	**Yes (CR1, CR2)**	No	N/A	N/A	Migratory	Appendix II- Migratory	N/A - species	No	No
Madeiran Sardinella	Bony fish	*Sardinella maderensis*	N/A	No	No	No	Yes	Vulnerable	Least concern (Mediterranean)	Not in Albania RL	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Gray triggerfish	Bony fish	*Balistes capriscus*	N/A	No	No	No	Yes	Vulnerable	Not assessed	LRnt	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Dusky grouper	Bony fish	*Epinephelus marginatus*	N/A	No	No	III	Yes	Endangered	Not assessed	Not in Albania RL	Not in Italy RL	**Yes (EN1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Bluefish	Bony fish	*Pomatomus saltatrix*	N/A	No	No	No	Yes	Vulnerable	Least concern (Mediterranean)	Not in Albania RL	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Common Dentex	Bony fish	*Dentex dentex*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Green wrasse	Bony fish	*Labrus viridis*	N/A	No	No	No	Yes	Vulnerable	Not assessed	Not in Albania RL	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Ocean sunfish	Bony fish	*Mola mola*	N/A	No	No	No	Yes	Vulnerable	Not assessed	LRnt	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Atlantic Bluefin Tuna	Bony fish	*Thunnus thynnus*	N/A	No	No	III	Yes	Endangered	Not assessed	Not in Albania RL	Not in Italy RL	**Yes (EN1)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Atlantic Horse Mackerel	Bony fish	*Trachurus trachurus*	N/A	No	No	No	Yes	Vulnerable	Least concern (Mediterranean)	Not in Albania RL	Not in Italy RL	**Yes (VU1)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Long-snouted seahorse	Bony fish	*Hippocampus ramulosus*	N/A	No	No	II	Yes	Data deficient	Data deficient (Europe)	Not in Albania RL	Not in Italy RL	No	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Short-snouted seahorse	Bony fish	*Hippocampus hippocampus*	N/A	No	No	II	Yes	Data deficient	Data deficient (Europe)	Not in Albania RL	Not in Italy RL	No	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Beluga sturgeon	Bony fish	*Huso huso*	N/A	No	No	II	Yes	Critically endangered		Not in Albania RL	RE	**Yes (CR1)**	No	N/A	N/A	Migratory	Appendix II- Migratory	N/A - species	No	No
Canestrini's Goby	Bony fish	*Pomatoschistus canestrinii*	N/A	Yes	No	II	Yes	Least concern	Not assessed	Not in Albania RL	LC	**Yes (HD)**	Yes	No	No	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Allis shad	Bony fish	*Alosa alosa*	N/A	Yes	No	III	Yes	Least concern	Least concern	VU	Not in Italy RL	**Yes (HD, VU2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Twaite shad	Bony fish	*Alosa fallax*	N/A	Yes	No	III	Yes	Least concern	Least concern	VU	VU	**Yes (HD, VU2)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Brown meagre	Bony fish	*Sciaena umbra*	N/A	No	No	III	Yes	Near threatened	Vulnerable (Mediterranean)	Not in Albania RL	Not in Italy RL	**Yes (VU2)**	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Drum/croaker	Bony fish	*Umbrina cirrosa*	N/A	No	No	III	Yes	Not assessed	Not assessed	Not in Albania RL	Not in Italy RL	No	No	N/A	N/A	Not migratory	Not listed in Appendix I or II	N/A - species	No	No
Swordfish	Bony fish	*Xiphias gladius*	N/A	No	No	III	Yes	Least concern	Near threatened (Mediterranean)	Not in Albania RL	Not in Italy RL	No	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Green turtle	Reptile	*Chelonia mydas*	N/A	Yes	Yes	II	Yes	Endangered	Not assessed	CR	Vagrant	**Yes (HD, EN1, CR2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Loggerhead turtle	Reptile	*Caretta caretta*	N/A	Yes	Yes	II	Yes	Vulnerable	Least concern (Mediterranean)	EN	EN	**Yes (HD, VU1, EN2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Leatherback turtle	Reptile	*Dermochelys coriacea*	N/A	No	Yes	II	Yes	Vulnerable	Not assessed	CR	Vagrant	**Yes (HD, VU1, CR2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Hawksbill turtle	Reptile	*Eretmochelys imbricata*	N/A	No	Yes	II	Yes	Critically endangered	Not assessed	Not in Albania RL	Vagrant	**Yes (HD, CR1)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Kemps ridley turtle	Reptile	*Lepidochelys kempii*	N/A	No	Yes	II	Yes	Critically endangered	Not assessed	Not in Albania RL	Vagrant	**Yes (HD, CR1)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Horned grebe	Bird	*Podiceps auritus*	N/A	HOLD	HOLD	HOLD	Y	Vulnerable	Near threatened (Europe)				No	N/A	N/A	Migratory		N/A - species	No	No
Yelkoun shearwater	Bird	*Puffinus yelkouan*	N/A	HOLD	HOLD	HOLD	Y	Vulnerable	Least concern (Europe)				No	N/A	N/A	Migratory		N/A - species	No	No
Slender-billed Curlew	Bird	*Numenius tenuirostris*	N/A	HOLD	HOLD	HOLD	Y	Critically endangered	Not assessed				No	N/A	N/A	Migratory		N/A - species	No	No
Common pochard	Bird	*Aythya ferina*	N/A	HOLD	HOLD	HOLD	Y	Vulnerable	Not assessed				No	N/A	N/A	Migratory		N/A - species	No	No
Dalmatian Pelican	Bird	*Pelecanus crispus*	N/A	HOLD	HOLD	HOLD	Y	Vulnerable	Least concern (Europe)				No	N/A	N/A	Migratory		N/A - species	No	No
Mediterranean monk seal	Mammal	*Monachus monachus*	N/A	Yes	Yes	II	Yes	Endangered	Not assessed	CR	DD	**Yes (HD, EN1, CR2)**	No	N/A	N/A	Migratory	Appendix I and II-Migratory	N/A - species	No	No
Sperm Whale	Mammal	*Physeter macrocephalus*	N/A	No	Yes	II	Yes	Vulnerable	Endangered (Mediterranean)	DD	EN	**Yes (HD, EN2, VU1)**	No	N/A	N/A	Migratory	Appendix I and II-Migratory	N/A - species	No	No
Fin whale	Mammal	*Balaenoptera physalus*	N/A	No	Yes	II	Yes	Endangered	Vulnerable (Mediterranean)	Not in Albania RL	VU	**Yes (HD, EN1, VU2)**	~~No~~	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Short-beaked Common Dolphin	Mammal	*Delphinus delphis*	N/A	No	Yes	II	Yes	Least concern	Endangered (Mediterranean)	VU	EN	**Yes (HD, EN2, VU2)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Bottlenose dolphin	Mammal	*Tursiops truncatus*	N/A	Yes	Yes	II	Yes	Least concern	Vulnerable (Mediterranean)	LRcd	NT	**Yes (HD, VU2)**	No	N/A	N/A	Migratory	Appendix I and II (North Sea, Baltic Sea	N/A - species	No	No
Cuvier's beaked whale	Mammal	*Ziphius cavirostris*	N/A	No	Yes	II	Yes	Least concern	Data deficient (Mediterranean)	DD	DD	**Yes (HD)**	No	N/A	N/A	Migratory	Appendix I (only Med subpopulation)-Mi	N/A - species	No	No
Long-finned pilot whale	Mammal	*Globicephala melas*	N/A	No	Yes	II	Yes	Data deficient	Data deficient (Mediterranean)	Not in Albania RL	DD	**Yes (HD)**	No	N/A	N/A	Migratory	Med population not on Appendix 1/2	N/A - species	No	No
Risso's dolphin	Mammal	*Grampus griseus*	N/A	No	Yes	II	Yes	Least concern	Data deficient (Mediterranean)	Not in Albania RL	DD	**Yes (HD)**	No	N/A	N/A	Migratory	Appendix II (only North sea, Baltic sea a	N/A - species	No	No
Dwarf sperm whale	Mammal	*Kogia simus*	N/A	No	Yes	II	Yes	Data deficient	Not assessed	Not in Albania RL	Vagrant	**Yes (HD)**	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Humpback whale	Mammal	*Megaptera novaeangliae*	N/A	No	Yes	II	Yes	Least concern	Least concern (Europe)	Not in Albania RL	Vagrant	**Yes (HD)**	No	N/A	N/A	Migratory	Appendix I-Migratory	N/A - species	No	No
Orca	Mammal	*Orcinus orca*	N/A	No	Yes	II	Yes	Data deficient	Data deficient (Europe)	Not in Albania RL	Vagrant	**Yes (HD)**	No	N/A	N/A	Migratory	Appendix II-Migratory	N/A - species	No	No
False killer whale	Mammal	*Pseudorca crassidens*	N/A	No	Yes	II	Yes	Data deficient	Not assessed	Not in Albania RL	Vagrant	Yes (HD)	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No
Striped dolphin	Mammal	*Stenella coeruleoalba*	N/A	No	Yes	II	Yes	Least concern	Vulnerable (Mediterranean)	DD	LC	**Yes (HD, VU2)**	No	N/A	N/A	Migratory	Appendix II (eastern tropical Pacific pop	N/A - species	No	No
Rough-toothed dolphin	Mammal	*Steno bredanensis*	N/A	Yes	Yes	II	Yes	Least concern	Not assessed	Not in Albania RL	Vagrant	Yes (HD)	No	N/A	N/A	Migratory	Not listed in Appendix I or II	N/A - species	No	No

APPENDIX 2
STAKEHOLDER ENGAGEMENT ACTIVITIES

2a. Stakeholder workshops

Workshops were held in both Greece and Albania with the stakeholders identified in Table 2.4. In Italy a workshop was not possible due to current conflicts between TAP and certain local stakeholders[34]. Instead, a meeting was held with the Minister of Environment.

The aim of the workshops and meeting was to introduce the critical habitat assessment process to stakeholders, open lines of communication with them for further collaboration and receive their input on the methodology, sources of data not previously identified and the critical habitat assessment process as a whole.

Details of each workshop and meeting, including dates, venues, facilitators and participants, are presented in Table A2.1, Table A2.2 and Table A2.3 for Greece, Albania and Italy respectively.

Table A2.1: Critical habitat assessment workshop in Greece

Critical habitat assessment stakeholder workshop details: Greece	
Date: 28/06/2016 *Venue*: Athens (Rousou Athina) *Workshop facilitated by* : Mr Alexandros Panourgias: TAP Government Affairs Manager Mrs Nikki O'Donnell: Biodiversity Specialist and Critical Habitat Assessment Lead (RSK) Mr Simon Boulter: Principal Fauna Ecologist (RSK) Dr Peter Walker: Principal Aquatic Ecology Scientist (RSK) Mr Kostas Batos: Director of Environment, Exergia (local partners to RSK)	
Participants	**Organisation**
Ms Stavroula Kapsioti	Directorate of Environment and Spatial Planning – Region of East Macedonia – Thrace
Mr Themistoklis Kouimtzis	Chairman, Axios – Delta – Aliakmonas Management Authority
Mr Grigoris Kalampoukas	Region of Central Macedonia, Department of Environment
Ms Elisabet Kika	Decentralised Administration of Central Macedonia – Thrace
Ms Evdokia Karamanidis	Decentralised Administration of Central Macedonia – Thrace
Mr Stelios Tzaferos	Ministry of Environment (Department of Forestry)

[34] Several stakeholders in the TAP project area in Italy have voiced serious concerns about potential negative impacts of the project on tourism and local agriculture as well as health and safety risks related to the pipeline receiving terminal. The Puglia Region, Melendugno Municipality and individuals and entities related to the NoTAP movement (a group of people united in terms of an anti TAP campaign group) have challenged TAP's Single Authorisation permit and a court case is currently pending. Due to this high sensitivity and the fact that legal and permitting issues are still pending, it was decided not to hold a workshop in Italy at this time.

Critical habitat assessment stakeholder workshop details: Greece	
Ms Dimitra Lytsardou	General Secretariat of Spatial Planning & Urban Environment, Ministry of Environment & Energy
Mr Kostas Giavis	DIPA/YPEN (Ministry of Environment and Energy)
Ms Georgia Kotini	SEPDEM/YPEN (Ministry of Environment and Energy)
Mr Zisis Pitselis	Region of Western Macedonia
Mr Vasilios Michelakis	ADH-DM
Ms Athanasia Pardaki	Ministry of Environment & Energy – Special Secretariat for Water
Ms Vicky Tzatzaki	Ministry of Environment & Energy – Special Secretariat for Water
Ms Katerina Stylogianni	Department of Biodiversity and Protected Areas - Ministry of Environment and Energy
Mr Anestis Gourgiotis	Department of Spatial Planning
Ms Foteini Stefani	Department of Spatial Planning
Ms Christina Kourenti	Sygapez/YPEN (Ministry of Environment and Energy)

Table A2.2: Critical habitat assessment workshop in Albania

Critical habitat assessment stakeholder workshop details: Albania	
Date: 30/06/2016 *Venue*: Tirana: Rogner Hotel Athens *Workshop facilitated by* : Ms Enida Bezhani: TAP Public Relations Albania Mrs Nikki O'Donnell: Biodiversity Specialist and Critical Habitat Assessment Lead (RSK) Dr Peter Walker: Principal Aquatic Ecology Scientist (RSK)	
Participants	**Organisation**
Ms Lira Hakani	EDEN Center
Mr Hugo Diaz	Institute for Environmental Policy (IEP)
Ms Alba Espasadin	Institute for Environmental Policy (IEP)
Mr Elsou Salikaj	National Agency of Protected Areas
Ms Jonida Ceta	National Environmental Agency – EIA
Mr Mehmet Metaj	Albaforest
Mr Philippe Théou	Bat researcher
Prof. Arsen Proko	Faculty of Forestry Services
Mr Aleksander	Protection and Preservation of Natural Environment in Albania

Critical habitat assessment stakeholder workshop details: Albania	
Trajçe	
Mr Bledi Hoxha	Protection and Preservation of Natural Environment in Albania

Table A2.3 Critical habitat assessment meeting in Italy

Critical habitat assessment stakeholder meeting details: Italy	
Date: 07/07/2016 *Venue:* Rome, Ministry of Environment *Meeting facilitated by* : Anton Mifsud-Bonnici: TAP representative Ms Risso: TAP representative Mr Claudio Scura: ESMS Manager, TAP Mr Bocchetto: TAP Dr Dave Watson: Director, Marine Scientist (RSK)	
Participants	**Organisation**
Dr Graziano Falappa (MoE)	Ministry of Environment
Ms Carmela Bilanzone	
Mr Antonio Venditti	

The stakeholder meetings were organised as follows:

- ***Welcome and introduction***

  In each country, the TAP representative provided a welcome and introduction to the project, and the facilitation team and stakeholder participants introduced themselves.

- ***Aims of the workshop and presentation of the critical habitat assessment***

  A PowerPoint presentation was given, covering the following topics:

  - aim and programme of the workshop
  - introduction to the TAP project
  - presentation of critical habitat assessment definition, aim, methodology and scoping results

  The presentation for the Albania workshop is provided in Appendix 2. The presentation for Greece was similar but tailored to suit the country conditions.

All meetings were conducted in the English language. Where required (Greece and Italy), translations into national languages were provided by the participants or RSK / TAP supporting staff.

Minutes of all meetings were compiled using a dedicated template. Data from the meetings were entered in a database. The minutes were also submitted to TAP for inclusion in the stakeholder database. Minutes of the meetings are presented in Appendix 2d to Appendix 2.

2b. Post-workshop follow-up

Several follow-up actions were undertaken with stakeholders, including those who were unable to attend the workshop. These included:

- correspondence with stakeholders in Greece and Albania including the workshop presentation and a questionnaire. The questionnaire gave the workshop participants an additional opportunity to provide input into the critical habitat assessment process, after conferring with colleagues and other potential stakeholders. The questionnaire had the following main questions:
    - Do you have any more up-to-date information (revised boundaries, site description sheets, qualifying species, etc.) on the protected areas network in Albania (which is currently undergoing review)?
    - Do you have any additional information on potential wildlife dispersal corridors (other than those already identified and presented at the workshop)?
    - Do you have any data on recent national or regional population data for key fauna groups, such as large carnivores, bats, etc.?
    - Do you have any information of key ecosystem services within the project area of influence?
    - Are there other stakeholders with whom we should be liaising?
    - Follow-up calls with stakeholders in Greece and Albania to encourage feedback from stakeholders and provide further clarifications where necessary.

No workshops were conducted in Italy. Instead, a discussion was held with the TAP Italy stakeholder engagement staff to access (second-hand) information on stakeholder concerns in terms of biodiversity. Minutes of this meeting are presented in Appendix 2.

The feedback from stakeholders received during the workshops, meeting and subsequent questionnaires is presented in Appendix 2. Stakeholders expressed gratitude for holding the workshop and found it interesting. However, the notion of a critical habitat assessment was not entirely familiar to them and some time was required to explain the process. Subsequently, stakeholders in general agreed with the critical habitat assessment methodology used. Ecological experts provided additional technical information which contributed to the assessment, particularly in terms of home range sizes and population data.

2c. Powerpoint presentation – Albania

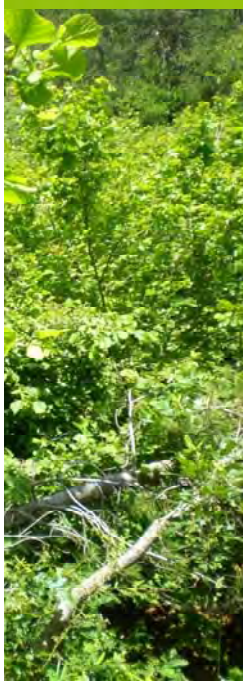
TAP - CRITICAL HABITAT ASSESSMENT

Nikki O'Donnell – June 2016

Copyright of RSK

Agenda

1. Introduction
   a. Project background and definition
   b. Applicable standards
2. Critical Habitats Assessment
   a. Methodology
   b. Approach
3. Preliminary list of critical habitat triggers identified to date
4. Stakeholder inputs to the identification of critical habitat triggers
5. Q/A



Copyright of RSK

Introduction – Project Background and Definition

TAP Project:

- Designed to meet the combined performance standards and requirements of the Equator Principles, the IFC, the EBRD and the EIB for all biodiversity work on the Project.
- This includes Biodiversity Action Plans, cumulative impact assessment and critical habitat assessments

Definition of Critical Habitat

- Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a species or habitat of conservation concern and that may require special management and protection.
- Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

Copyright of RSK

Introduction – Applicable standards

International Finance Corporation (IFC), 2012

Performance Standard 6 (PS6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Critical habitats are areas with high biodiversity value, including:

- Habitat of significant importance to critically endangered or endangered species;
- Habitat of significant importance to endemic and/or range-restricted species;
- Habitat supporting globally significant concentrations of migratory and/or congregatory species;
- Highly threatened and/or unique ecosystems;
- Areas associated with key evolutionary processes.

European Bank for Reconstruction and Development (EBRD), 2014

Performance Requirement 6 (PR6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources

The most sensitive biodiversity features are defined as critical habitat, which comprise one of the following:

- Highly threatened or unique ecosystems;
- Habitats of significant importance to endangered or critically endangered species;
- Habitats of significant importance to endemic or geographically restricted species;
- Habitats supporting globally significant migratory or congregatory species;
- Areas associated with key evolutionary processes;
- Ecological functions that are vital to maintaining the viability of biodiversity features described above.

Copyright of RSK

Introduction – Applicable standards

European Investment Bank (EIB)

Environmental and Social Handbook, 2013; Standard 3 – Biodiversity and Ecosystems

Critical habitat is defined according to the following attributes:

- Presence of critically endangered, endangered or vulnerable species, as defined by the IUCN Red List of threatened species and in relevant legislation;
- Importance to the survival of endemic or range-restricted species, or unique assemblages of species;
- Required for the survival of migratory species or congregatory species;
- Required for the maintenance of biological diversity with significant social, economic or cultural importance to local communities
- Required for the maintenance of ecosystem functioning and the provision of key ecosystem goods and services; and
- Key scientific value.

The fulfilment of one of these criteria is enough to qualify habitat as critical. There is a presumption of criticality, and the burden of proof is on the proponent to characterize the absence of critical habitat.

Copyright of RSK

Critical Habitats Assessment - Methodology

Identification of potential Critical Habitats (CH) triggers

1. Identification of all of the potential critical habitat triggers in all three host countries and the offshore section.
2. Each species to be screened against the selection criteria, which are a combination of each Lender's criteria (as outlined before).

CH determination for each potential trigger

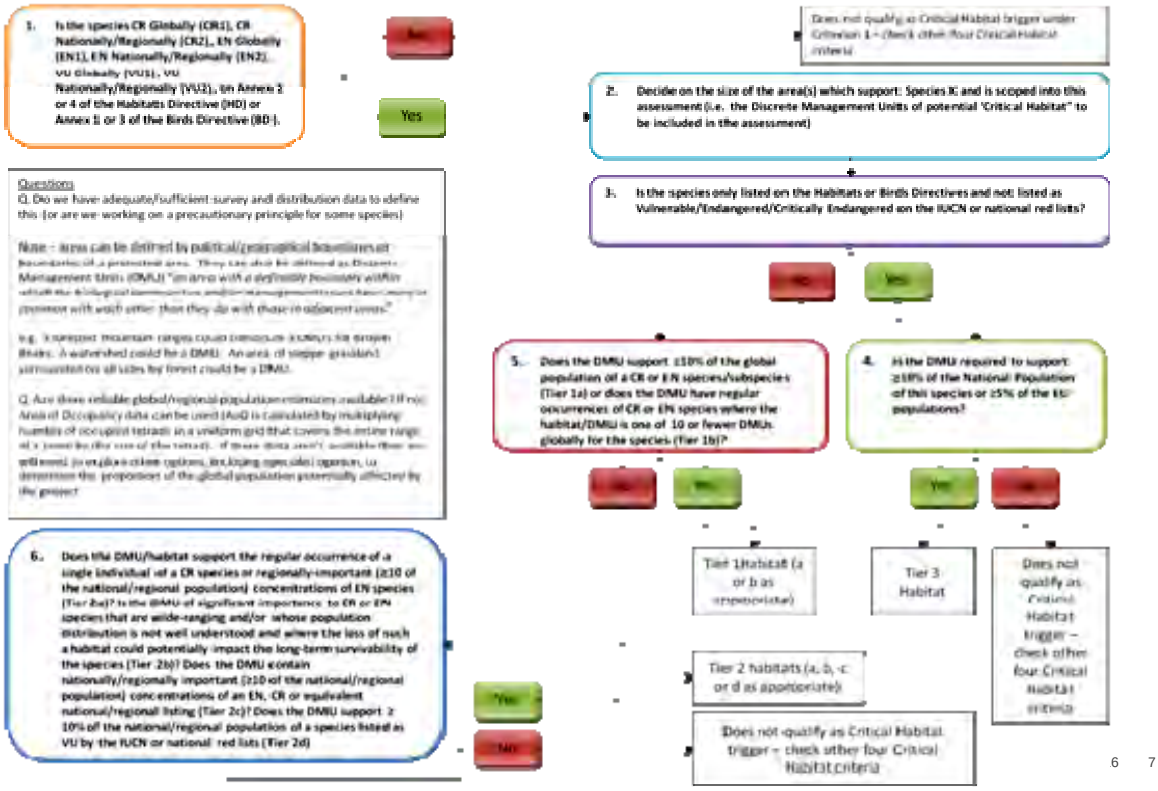
1. For each of the species identified in the first step as being a potential critical habitat trigger, a more detailed determination will be undertaken against EIB Standard 3 / EBRD PR6 / IFC PS6.
2. Determination will be undertaken on the basis of Discrete Management Units - areas of continuous habitat that bears might use (where the habitat used is obviously different, or subject to different management regimes, than surrounding habitat types). DMUs are not limited to the pipeline RoW.
3. This step will include support from in-country experts that have been assisting RSK with the 2015 ecology surveys in Greece and Albania and/or environmental monitoring work in Italy.
4. Workshops will be held with these experts and other key biodiversity stakeholders in each of the three host countries;.

Detailed assessment of project impacts on CH

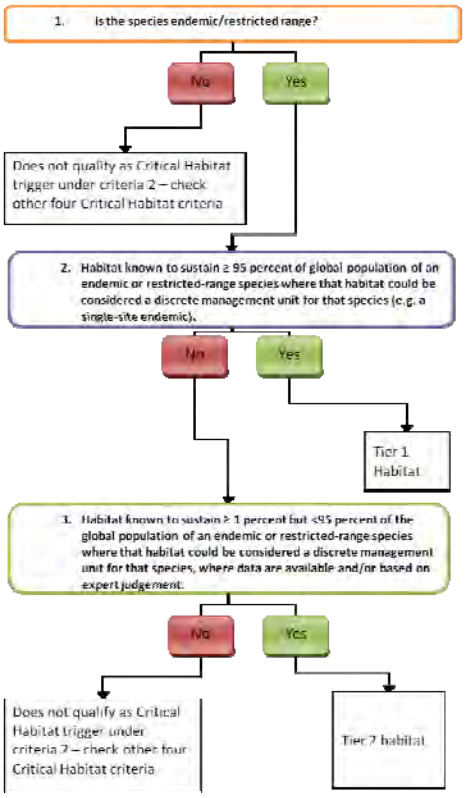
1. For those species that are considered to have critical habitat within the project area, a detailed assessment of potential project impacts will be undertaken.
2. This step will also involve input from the relevant in-country experts.

Copyright of RSK

Critical Habitats Assessment – Approach for Criteria 1

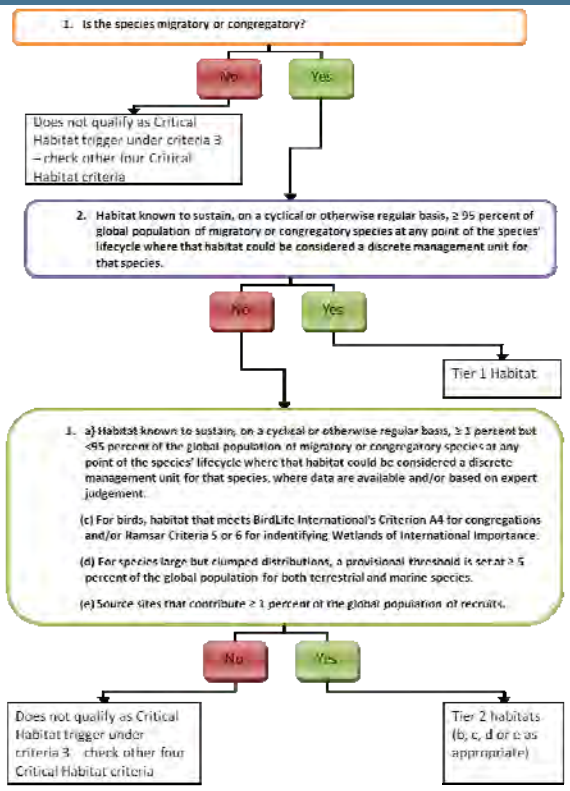


Critical Habitats Assessment – Approach for Criteria 2



Copyright of RSK

Critical Habitats Assessment – Approach for Criteria 3



Preliminary list of critical habitat triggers identified to date – Mammal Examples

Species / Habitat	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Social, economic or cultural heritage significance to local communities?
Mammals						
Ursus arctos (Brown bear)	Least concern	Endangered (Greece), Vulnerable (Albania)	Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	Culturally iconic species
Canis lupus (Wolf)	Least concern	Vulnerable (Greece), Near Threatened (Albania)	Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	Culturally iconic species
Canis aureus (Golden Jackal)	Least concern	Endangered (Greece)		Not endemic	Not migratory Not congregatory	Culturally iconic species
Lutra lutra (Otter)	Near Threatened	Endangered (Greece), Vulnerable (Albania)	Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Spermophilus citellus (Ground squirrel)	Vulnerable	Vulnerable (Greece), not present (Albania)	Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Bats (all species)	Various (Least concern to near threatened)	Vulnerable (Albania)	Annex 4 (and some Annex 2)	Not endemic	Migratory and congregatory	None
Rhinolopus euryale	near threatened	Vulnerable (Albania)	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Rhinolopus blasii	lower risk – near threatened	least concern	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Rhinolopus ferrumequinum	lower risk - least concern	least concern	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Rhinolopus hipposideros	lower risk – near threatened	least concern	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Myotis capaccinii	lower risk - least concern	Vulnerable	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Miniopterus schreibersi	lower risk – near threatened	near threatened	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Myotis myotis	none	least concern	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Myotis Blythii	none	least concern	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	None
Felis silvestris (Wildcat)	Least Concern	Endangered (Albania)	Annex 4	Not endemic	Not migratory Not congregatory	None
Vormela peregusna (Marbled Polecat)	Vulnerable			Not endemic	Not migratory Not congregatory	None
Muscardinus avellanarius (Hazel Dormouse)	Least Concern	LR/nt (Greece), DD (Albania)	Annex 4	Not endemic	Not migratory Not congregatory	None
Dryomys nitedula (Forest Dormouse)	Least Concern	LR/nt (Greece), DD (Albania)	Annex 4	Not endemic	Not migratory Not congregatory	None
Talpa stancovici (Balkan Mole)	Least Concern		-	Balkan endemic (Albania not a stronghold)	Not migratory Not congregatory	None
Talpa caeca (Mediterranean Mole)	Least Concern		-	European enedmic (Alps, Apennines and Balkans)	Not migratory Not congregatory	None
Microtus feltini (Balkan Pine Vole)	Data deficient	LR/nt (Albania)	-	Balkan endemic	Not migratory Not congregatory	None

Preliminary list of critical habitat triggers identified to date – Reptile Examples

Species / Habitat	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Social, economic or cultural heritage significance to local communities?
Reptiles						
Testudo graeca (Spur-thighed Tortoise)	Vulnerable		Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Testudo hermanni (Hermann's Tortoise)	Near Threatened	LR/nt (Albania)	Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Bombina bombina	Least concern	Endangered (Greece)	Annex 2 and Annex 4	Not endemic	Not migratory Possibly congregatory	None
Triturus carnifex	Least concern	Endangered (Greece)	Annex 4	Not endemic	Not migratory Not congregatory	None
Triturus ivanbureschi	Least Concern	near threatened (Greece)	Annex 4	Not endemic	Not migratory Not congregatory	None
Emys orbicularis	lower risk – near threatened		Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Elaphe quatrolineata	Near Threatened		Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Bombina variegata	Least concern		Annex 2 and Annex 4	Not endemic	congregatory	None
Bufo viridis	Least concern	protected (Greece)	Annex 4	Not endemic	congregatory	None
Algyroides nigropunctatus (Dalmatian algyroides)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Coluber caspius (large whip snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Coluber jugularis (Caspian whip snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Coluber najadum (Dahl's whip snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Cyrtopodion kotschyi (European bent-toed gecko)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Elaphe longissima (Aesculapian snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Elaphe situla (European ratsnake)	Least concern		Annex 2 and Annex 4	Not endemic	Not migratory Not congregatory	None
Natrix tessellata (dice snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Telescopus fallax (Mediterranean cat snake)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Vipera ammodytes (European nose-horn viper)	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None
Rana graeca	Least concern		Annex 4	Not endemic	Not migratory Not congregatory	None

Preliminary list of critical habitat triggers identified to date – Fish / Aquatics Examples

Species / Habitat	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Social, economic or cultural heritage significance to local communities?
Fish/Aquatics						
Alburnoides devolli	Not evaluated			Endemic to Albania	Not migratory Not congregatory	None
Pelasgus prespensis	Endangered	Listed as 'Protected' under Albanian Law		Not endemic	Not migratory Not congregatory	None
Barbus prespensis	Least concern	Albanian Red list - LRed		Not endemic	Not migratory Not congregatory	None
Gobio gobio	Least concern	Albanian Red list - LRnt		Not endemic	Not migratory Not congregatory	None
Chondrostoma nasus	Least concern	Albanian Red list - LRed	Bern Convention Annex 3	Not endemic	Not migratory Not congregatory	None
Cobitis ohridana	Least concern	Albanian Red list - LRed		Not endemic	Not migratory Not congregatory	None
Oxynoemacheilus pindus	Vulnerable	Listed as 'Protected' under Albanian Law		Regionally endemic (Albania)	Not migratory Not congregatory	None
Anguilla anguilla	Critically endangered	Least Concern (Albania) Near Threatened (Greece)		Not endemic	Migratory Congregatory	None
Alburnoides bipunctatus		Least Concern (Albania)	Bern Convention Annex 3	Not endemic	Not migratory Not congregatory	None
Alburnoides strymonicus	???	???	???	???	???	???
Alburnus sp. Volvi	Near Threatened	Least Concern (Greece)		Endemic to Greece	Not migratory Not congregatory	None
Cobitis punctilineata	Vulnerable	Vulnerable	Listed	Endemic to Greece	Not migratory Not congregatory	None
Eudontomyzon hellenicus	Critically Endangered		Annex 2 and Annex 3 of Bern Convention	Endemic to Greece	Not migratory Not congregatory	None
Squalius cephalus	Least concern	Vulnerable		Not endemic	Not migratory Not congregatory	None
Salmo faroides (trutta)	Least concern	Near threatened and listed as 'Protected' under Albanian Law		Not endemic	Not migratory Not congregatory	None
Pachychilon pictum	Least concern	Least concern	Annex 3 of Bern Convention	Not endemic	Not migratory Not congregatory	None
Barbus prespensis	Least concern	Least concern (Albania) but listed as 'protected' under Albanian law	Annex 5	Regionally endemic (Albania)	Not migratory Not congregatory	None
Cobitis ohridana	Least concern	Least concern (Albania) but listed as 'protected' under Albanian law		Regionally endemic (Albania)	Not migratory Not congregatory	None
Vimba melanops	Data deficient	Vulnerable (Greece)		Not endemic but Taxonomy remains uncertain	Not migratory Not congregatory	None
Alburnus vistonicus	Critically endangered	Critically endangered		Endemic to Greece	Not migratory Not congregatory	None
Alosa vistonica	Critically endangered	Critically endangered (possibly extinct)	Listed	Restricted to coastal Lake Vistonis in northern Greece	Migratory Congregatory	None

Preliminary list of critical habitat triggers identified to date – Botany Examples

Species / Habitat	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Social, economic or cultural heritage significance to local communities?
Botany						
2110 Embryonic shifting dunes (Cakiletea maritimae & Ammophiletea)	n/a		Annex I natural habitat (non-priority)			Yes- beaches - high recreational value
2270 * Wooded dunes with Pinus pinea and/or Pinus pinaster	n/a		Annex I priority habitat			
3170* Mediterranean temporary ponds	n/a		Annex I priority habitat			
6420 Mediterranean tall humid herb grasslands of the Molinio-Holoschoenion	n/a		Annex I natural habitat (non-priority)			
6450 Greek hyper-Mediterranean humid grasslands	n/a	Greek habitat				
6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	n/a		Annex I natural habitat (non-priority)			
6520 Mountain hay meadows	n/a		Annex I natural habitat (non-priority)			
72A0 Reed beds (Phragmito-Magnocaricetea)	n/a	Greek habitat	Annex I natural habitat (non-priority)			
8210 Calcareous rocky slopes with chasmophytic vegetation	n/a		Annex I natural habitat (non-priority)			
92B0 Riparian formations on intermittent Mediterranean watercourses with Salix and others	n/a		Annex I natural habitat (non-priority)			
92C0 Platanus orientalis and Liquidambar orientalis woods (Plantanion orientalis)	n/a		Annex I natural habitat (non-priority)			
9340 Quercus ilex forests	n/a		Annex I natural habitat (non-priority)			
9350 Quercus macrolepis forests	n/a		Annex I natural habitat (non-priority)			
9530 * (Sub-)Mediterranean pine forests with endemic black pine	n/a		Annex I priority habitat			
Deciduous chestnut (Castanea sativa) forests	n/a					Yes - cultural habitat
Olive groves	n/a					Yes - cultural habitat
Minuartia attica	not listed			Balkan endemic	n/a	
Neotinea lactea	Least Concern (EU)	Protected Albania			n/a	Medicianal/Cultural use
Neottia nidus-avis	Least Concern (global)	Protected (PD 67/81); Other important plant species list Greece			n/a	
Onosma halacsyi	not listed	Greek endemic Greece			n/a	
Ophrys apifera	Least Concern (EU)	Protected (PD 67/81) Greece			n/a	
Verbascum dingleri	not listed			Range-restricted Balkan/Greek endemic	n/a	

Preliminary list of critical habitat triggers identified to date – Birds Examples

Species / Habitat	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Social, economic or cultural heritage significance to local communities?
Birds - Greece						
Loutros forest (GR1110009)			SPA			
Wildlife Refuge "Kirki"			Wildlife reserve			
Filiouris river and tributary (GR1130006)			SPA			
Wildlife Refuge "Chatisio"			Wildlife refuge			
National Park of East Macedonia-Thrace – Kompsatos Wildlife Refuge			Wildlife refuge / NP			
Wildlife Refuge "Ag.Timotheos - Koupia"			Wildlife refuge			
Wildlife Refuge "Petroto-Faraggi-Almyra"			Wildlife refuge			
Axios river crossing point (GR1220002)			SPA			
Mount Vermio - Wildlife Refuge "Leivaditsi-Tovaritsi"			Wildlife refuge			
Wildlife refuge "Kouri Ptolemaidas"			Wildlife refuge			
Pygmy cormorant			Annex I		Yes	
Little egret			Annex I		Yes	
Night heron		NT (Greece)	Annex I		Yes	
White stork		VU (Greece)	Annex I		Yes	
Black stork		EN (Greece)	Annex I		Yes	
Shelduck		VU (Greece)			Yes	
Griffon vulture		VU (Greece)	Annex I		Yes	
Black vulture	NT	EN (Greece)	Annex I		Yes	
Lesser spotted eagle		EN (Greece)	Annex I		Yes	
Short-toed eagle		NT (Greece)	Annex I		Yes	
Booted eagle		EN (Greece)	Annex I		Yes	
Black kite		CR (Greece)	Annex I		Yes	
Marsh harrier		VU (Greece)	Annex I		Yes	
Montagu's harrier		CR (Greece)	Annex I		Yes	
Long-legged buzzard		VU (Greece)	Annex I		Yes	
Lesser kestrel		VU (Greece)	Annex I		Yes	
Birds - Albania						
Golden Eagle		EN (Albania)	Annex I		Yes	
Spotted Eagle	VU	CR (Albania)	Annex I		Yes	
Lesser Spotted Eagle		CR (Albania)	Annex I		Yes	
Osprey		VU (Albania)	Annex I		Yes	
Dalmatian Pelican	VU	CR (Albania)	Annex I		Yes	
Honey Buzzard		EN (Albania)	Annex I		Yes	
Pygmy cormorant		CR (Albania)	Annex I		Yes	
Grey Headed Woodpecker		VU (Albania)	Annex I		Yes	
Golden Plover			Annex I		Yes	
Eurasian Spoonbill		EN (Albania)	Annex I		Yes	
Avocet		EN (Albania)	Annex I		Yes	
Little Tern			Annex I		Yes	
Common Tern		EN (Albania)	Annex I		Yes	

Worked example – brown bear

Surveys identified 5 Discrete Management Units which form likely parts of permanent brown bear home ranges (some important all year round and some seasonally important)

Critical Habitat Determination using IFC PS6

- Criterion 1 – Conservation Status - Triggered – the 5 DMUs support Bears which have Endangered status in Greece, triggering 'project-wide' CHA
- Criterion 2 – Endemic/range-restricted - Not triggered
- Criterion 3 – Migratory/Congregatory - Not triggered
- Criterion 4 – Highly threatened or unique ecosystems – Not triggered
- Criterion 5 – Key evolutionary processes – Not triggered – Bears not listed on EDGE database and no reason to believe species is evolutionarily distinct or that DMUs support any other evolutionarily-significant species

Further investigation regarding Criterion 1

- Numbers taken from: Action Plan for the conservation of the Brown Bear in Europe (2000), Brown Bear Action Plan – Albania (2007) and Status, Management and Distribution of Large Carnivores in Europe (2012)
- Global estimates of European Brown Bear - c. 50,000 (c. 14,000 outside Russia) within an area of more than 2.5 million km² (800,000 km² outside of Russia)
- Balkan region estimates – 2,800 Bears in the Alps-Dinaric-Pindos complex (distributed over approximately 44,820 km²
- National Estimates – Albania – 180 – 200 Bears distributed over approximately 5,000 km²

Copyright of RSK

Worked example – brown bear

KP0-2 near the Greek border, c. 2.73 km^2

Seasonally important feeding area, suspect bears actually denning in Greece

Copyright of RSK

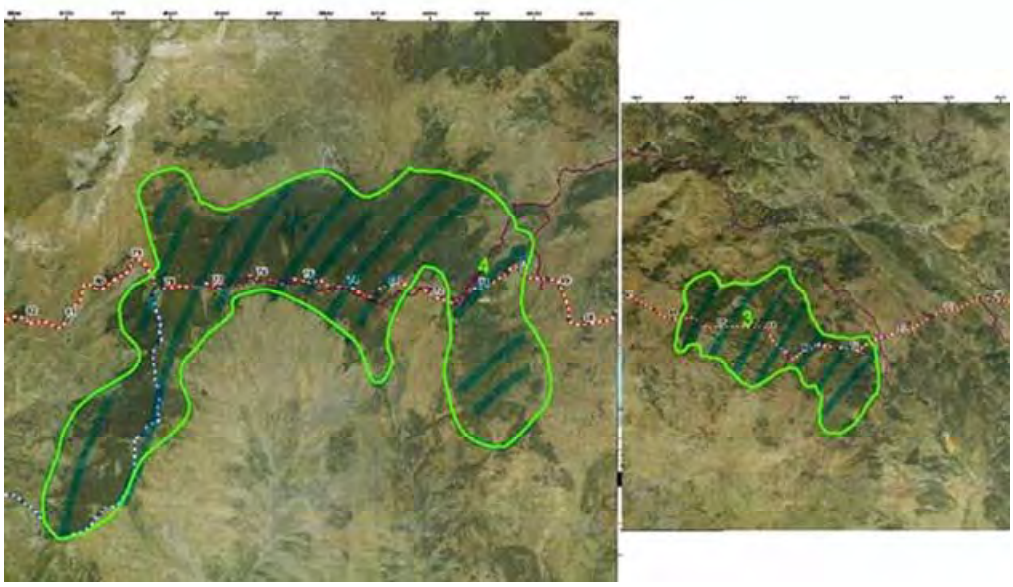
Worked example – brown bear

KP21-23 between Prespa National Park and Morava Mountains, c. 1.24 km^2

Potential wildlife movement corridor

Copyright of RSK

Worked example – brown bear



KP62-66, c. 6.29 km^2 potential denning area

KP70-79, c. 28.69 km^2 potential denning area

Copyright of RSK

Worked example – brown bear

KP119-129, c. 20.89 km^2 seasonally important feeding area

In total 59.78 km^2 potentially 1% of the habitat supporting bears in Albania

Copyright of RSK

Worked example – brown bear

Number of bears potentially affected

- Bear distribution data from Action Plan = 0.05 bears per km^2 in Albania
- So could be 3 bear home ranges potentially occupying the five DMUs
- Likely to be other animals using the DMUs for movement so could conservatively double this number and assume 6 bears could be affected by the project
- 0.012% of global population
- 0.2% of Balkan population
- 3.33% of Albanian population
- As < 10% of the national population, likely to be considered **Tier 2 critical habitat:** '*habitat of significant importance to CR or EN* species that are wide-ranging and where the loss of such a habitat could potentially impact the long-term survival of the species'*
- However assessment will need to be repeated in Greece and overall evaluation be considered at a project-wide level (rather than country-by-country)
- Brown bear also considered a keystone species
- Further assessment of value of habitats and potential impacts relating to the TAP will be required, and biodiversity offsets may be necessary to compensate for any residual impacts

Copyright of RSK

Stakeholder inputs to the identification of critical habitat triggers

Trans Adriatic Pipeline

RSK

Questionnaire

Please send to:

nodonnell@rsk.co.uk

Or:

RSK
Spring Lodge,
172 Chester Road,
Helsby, Cheshire,
WA6 0AR,
United Kingdom

Copyright of RSK

Discussion

Trans Adriatic Pipeline

RSK

Questions / Comments?

Copyright of RSK

Faleminderit!

Trans Adriatic Pipeline

RSK

tapshqiperi@tap-ag.com
nodonnell@rsk.co.uk

2d. Minutes of stakeholder engagement workshop – Greece

Minutes of Meeting

Subject of meeting	Critical Habitat Assessment (CHA) – Stakeholder Engagement Greece
Purpose of meeting	To inform the relevant stakeholders about the TAP Critical Habitat Assessment - background, scope of work and progress to date and inquire stakeholder Input.
Date of MoM	30.06.2016
Author of MoM	Sebastian Ulrichs – sulrichs@rsk.co.uk

Counterparty	Alexandros Panourgias - Alexandros.Panourgias@tap-ag.com
Location	Athens – Rousou Athina 115 26, Greece
Date of meeting	28.06.2016

Participants	TBC
Distribution (by email)	Participants+ TBC

Item	Subject	Action date	Actioned by	Status
00	Introductory words by Alexandros Panourgias Introduction by Nikki O'Donnell Introductory round along the table of attendees (list above) Presentation given by Nikki O'Donnell, interpretation by Kostas Batos	N/A	N/A	N/A
01	Q/A: In case we identify species or habitat that is critical – as the development process is now outside of the ESIA phase - Will there be cases of offset? *Process most likely as follows: If CHA identifies critical habitat, it will be managed, including mitigation and offsets, through a Biodiversity Action Plan (BAP). Management is thought to be undertaken in combination with local partners and support by TAP.*	N/A	N/A	N/A
02	Q/A:	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
	BAP responsibility of TAP? *Yes – BAPs run multiple years (e.g. 10). TAP AG is the responsible party and owner of the BAP implementation.* *The construction Contractor has construction responsibilities, including mitigation measures that need to be implemented, but only on a short term basis.* *BAPs function as longer term management plans.*			
03	Q/A: Will BAPs require approval by authorities? *To our understanding BAPs are not a part of the permitting process and therefore, no regulatory approval is required.* *However lender confirmation and agreement on the BAPs is required to gain funding.* *Additionally all relevant authorities and other stakeholders will be included in development process of the BAPs to ensure agreement on content and actions.*	N/A	N/A	N/A
04	Q/A: What are the criteria for critical habitats based on? *Clarification that criteria are based on official existing lender guidance, available scientific literature and environmental regulation.*	N/A	N/A	N/A
05	Q/A: Critical Habitat example Golden Jackal: Are the areas examined that were classified as critical habitat selected based on presence of species or other criteria? *These areas were flagged up through the presence of the species. Then the habitat that they were found in was evaluated. DMUs were then established based on potential habitat that is within this area similar to the one that species was encountered, or that would be suitable for the species.*	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
	Not only presence data but also field survey based species numbers and foraging areas were used to identify these DMUs			
06	Q/A: Have pipeline changes occurred since the ESIA stage? *Yes multiple realignments have occurred, based on Stakeholder feedback, feeding in several amendments of the ESIAs. The latest reroutes are included in the CIA via an overarching project description*	N/A	N/A	N/A
07	Q/A: Is the data that has been collected throughout the post Ecological management, Cumulative Impact Assessment (CIA) and CHA, going to be made available to local Authorities in order to help them with local stakeholders? *All data of the CIA and CHA work is by lender standards required to be published for review and to be publicly available.* *For Albania it was considered to potentially share all the Ecological Management data with authorities.* • TAP to make a decision as to whether or not make data available.	05.07.2016	TAP Greece	Incomplete
08	Q/A: Are the preconstruction survey reports available publicly? *RSK is unsure of the answer as they are property of TAP* • TAP to make a decision as to whether or not make reports available.	05.07.2016	TAP Greece	Incomplete
09	Q/A: Is there information for endangered species in the west of Greece that was collected by RSK and NGOs that is available? *Collected through RSK as part of preconstruction surveys, possibly*	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
10	**Note by Katarina Stylogianni:** A national level species monitoring program has now completed, which was monitoring species throughout the entire Greek country. Results should be available through ministries, however are excluding classified species, e.g. birds. • TAP RSK to enquire species data, including classified species (e.g. birds) from ministry biodiversity specialist	05.07.2016	TAP Greece	Incomplete
11	Q/A: What about financial security arrangements and social standards? *RSK is only engaged to advise on environmental and social management aspects of the TAP project and the question is outside RSKs current scope of work*	N/A	N/A	N/A
12	Q/A: Can the critical habitat assessment trigger route realignment? ***Note Alexandros:*** *The route is now fixed. No route changes are envisaged. The aim is to have the BAPs in place to manage encountered critical habitats.*	N/A	N/A	N/A
13	Q/A: Fauna has been mentioned in respect to critical habitats, what about flora? *NOD goes back in the presentation to show respective slide that displays the flora triggers that have been considered.*	N/A	N/A	N/A
14	Q/A What are mitigation measure for river crossings? ***Note Kelly****: Particular mitigation measures in respect to river crossings include HDD for crossings e.g. Freshwater fish, and micro sitting in certain forest areas* *Impacts on rivers are only very minor as*	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
	crossings are mostly HDD and only few are open cut crossings.			
15	Q/A: Fungus transmission via construction seems to occur – requires to be considered to minimise distribution and widespread infection. *West Macedonia area affected*	N/A	N/A	N/A
16	Questionnaires: Handed out to all attendees – for data gap identification and completion. Purpose of questionnaires has been communicated to attendees • To be returned to TAP • Translation of the questionnaires enquired • Sending of questionnaires to attendees enquired	05.07.2016	TAP Greece	Incomplete
17	Critical Habitat Trigger Flow Charts: • Translation of flow charts enquire • Sending of questionnaires to attendees enquired	05.07.2016	TAP Greece	Incomplete

2e. Minutes of stakeholder engagement workshop – Albania

Minutes of Meeting

Subject of meeting	Critical Habitat Assessment (CHA) – Stakeholder Engagement Albania
Purpose of meeting	To inform the relevant Stakeholders about the TAP Critical Habitat Assessment - background, scope of work and progress to date and inquire Stakeholder Input.
Date of MoM	04.07.2016
Author of MoM	Sebastian Ulrichs – sulrichs@rsk.co.uk

Counterparty	Enida Bezhani – TAP Public Relations Albania. Enida.Bezhani@tap-ag.com
Location	Tirana - Rogner Hotel Tirana - Bulevardi Dëshmorët e Kombit - Postal Code 1001 - Albania
Date of meeting	30.06.2016

Participants	Bledi Hoxha PPNEA (Protection & Preservation of Natural Environment in Albania) Aleksander Tracje PPNEA Alba Perereira Espasandiu IEP (Institute for Environmental Planning) Hugo Costas Diaz IEP Philippe theou Environmental Expert Arsen Proko Faculty of Forestry Services Mehmet Metaj AlbaForest (National Level Forest NGO) Elsou Salikaj NAPA (National Agency of Protected Areas) Jonida Ceta NEA (National Environmental Agency) –EIA sector Peter Walker Aquatic Ecology Expert RSK Nikki O'Donnell Biodiversity Expert RSK Katrina Cooper Technical Director RSK Sebastian Ulrichs Environmental and Social Consultant RSK Enida Bezhani TAP Public Relations Albania
Distribution (by email)	Aleksander Tracje a.tracje@ppnea.org Bledi Hoxha b.hoxha@ppnea.org Alba Perereira Espasandiu l a.p.espasandiu@gmail.com Hugo Costas Diaz Hugo.costas.diaz@gmail.com Philippe theou p.theou@gmail.com Arsen Proko a-proko@hotmail.com Mehmet Metaj Mehmet.metaj@yahoo.com Elsou Salikaj Elsousalikaj@yahoo.com Jonida Ceta Jonida_ceta@yahoo.com

Item	Subject	Action date	Actioned by	Status
01	Introductory words by Nikki O'Donnell / Enida Bezhani Introduction round along the table.	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
02	Presentation by NOD	N/A	N/A	N/A
03	Q/A Could Questionnaire and presentation be sent to attendees via email / translated: *Presentation: Possibly to be translated and handed out – pending TAP approval* *Questionnaire: Possibly translated and handed out – pending TAP approval*	10/07/2016	TAP / RSK	Incomplete
04	Q/A: How has bear density been calculated - Per suitable habitat not per entire country? *Density has been calculated based on DMUs.*	N/A	N/A	N/A
05	Q/A: **Note from audience:** National inventories of fauna should be available per administrations – such as wildlife departments. TAP to follow up	10/07/2016	TAP	Incomplete
06	Q/A: **Note Nikki O' Donnell** – *Is there any other data that is missing (based on the presentation) that could possibly be provided to RSK?* No response from audience	N/A	N/A	N/A

2f. Minutes of stakeholder meeting – Italy

Minutes of Meeting

Subject of meeting	Critical Habitat Assessment (CHA) and Cumulative Impact Assessment (CIA)– Stakeholder Engagement Italy
Purpose of meeting	To inform Ministry of Environment (MoE) about the TAP Critical Habitat Assessment and TAP Cumulative Impact Assessment - background, scope of work and progress to date and inquire Stakeholder Input.
Date of MoM	07.07.2016
Author of MoM	Claudio Scura: cscura@rsk.co.uk

Counterparty	Anton Mifsud-Bonnici (Anton.Mifsud-Bonnici@tap-ag.com)
Location	Rome, Ministry of Environment
Date of meeting	07.07.2016

Participants	Watson (RSK), Bonnici (TAP) Risso (TAP), Bocchetto (IPMT), Scura (IPMT), Falappa (MoE) (ctva@minambiente.it), Bilanzone (MoE), Fornari (MoE), Venditti (MoE) (DVA-UDG@minambiente.it)
Distribution (by email)	Participants

Item	Subject	Action date	Actioned by	Status
00	Notes about CIA and CHA distributed together with the relevant questionnaires round along the table of attendees (list above) Presentation given by C. Scura, about the status of the process (New methodologies requested by the Lenders) and future steps	N/A	N/A	N/A
01	Falappa immediately after the presentation highlighted the history of the CIA proposed during the ESIA phase and the legal challenge received on this subject; he asked if TAP was sure about the presentation of a new study in this phase. TAP answered that is a request of the lenders and that could not be ignored. Special attention should be given in the submission of the document in order to be sure that no one can state that the previous work	N/A	N/A	N/A

Item	Subject	Action date	Actioned by	Status
	came to different conclusions. An informal communication on this subject was recommended by MoE			
02	Collaboration with MoE/questionnaires. Questionnaires should be submitted formally, but collaboration is recommended in order to avoid misalignments	14.07.16	RSK/TAP	Incomplete
03	Collaboration with MoE/final sharing of the documents MoE is aware about this kind of procedures and it granted its availability at the end of the process (provided that the contents are reliable)	TBD	TAP	Incomplete

2g. Feedback from critical habitat assessment questionnaires

Table A2.4: Questionnaire Question1 and responses

Organisation	Question	Sub-question	Comment
Alba Forest (Albania)	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	Regarding current status of Albanian Emerald (carried out in 2002) and proposed Natura 2000 sites in study site maps and/or lists of protected areas that show different numbers and boundaries of sites have to be verified comparing the existing MPs and maps with the field TAP-line impact and VECs. The Emerald network sites are: 1. National park "Prespa" 2. "Divjaka Pine forest - Karavasta lagoon" 3. "Llogara-Karaburun" area 4. National Park "Mali i Tomorrit" 5. National Park "Lura" and "Allamani's forest" 6. National Park "Butrinti"
		Are there any citation sheets (site description sheets) available for any of these sites?	We have been engaged in Emerald Network Study in 2002(the mapping was developed latter on) and Natura 2000 you can find it studies with respective mapping in the MoE.
	ALBANIA – GREECE: **Wildlife corridors in the study area**	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	You have to verify it through existing protected areas network and nature reserves established during the territory affected.
		If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	To be verified .?
	ALBANIA – GREECE: **Population,**	Are there any recent national or regional population data available for wolves, golden jackal, otter, wildcat, bats?	The specialist in-charge for national and regional inventory for population data for wildlife (wolves, golden jackal, etc) who used to work for the MoE until last year is working nowon with our organization and who has data available of most of them.
		Is there any information available on population / range	?

	habitat data	/ habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	
Arsen PROKO Faculty of Forestry Sciences (Agricultural University of Tirana)	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	Recently creation of the National Agency of Protected area is working on the digitalisation of the data base of protected areas. Can be investigated
		Are there any citation sheets (site description sheets) available for any of these sites?	Yes, on the Web page of NAPA, but not only
	ALBANIA – GREECE: **Wildlife corridors in the study area**	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	Another narrow area between Morava and Vithkuq-Ostrovica Zone (Voskopoja as well), Qafa e Qarrit (the area between Korca and Kolonja Municipalities could be a potential wildlife corridor within the study area
		If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	Here are studies in vegetation sciences and brown bear in this area, not enough information
	ALBANIA – GREECE: **Population, habitat data**	Are there any recent national or regional population data available for wolves, golden jackal, otter, wildcat, bats?	As i know not
		Is there any information available on population / range / habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	I don't know
EDEN	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	Regarding N2000 sites, Albania has not yet adopted that system. Regarding the EMERALD, actually the actual protected areas represent usually these sites and there is a map of these all.
		Are there any citation sheets (site description sheets) available for any of these sites?	Not as far as I know…Ministry of Environment though might have reports regarding to them.

	ALBANIA – GREECE:	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	I have no info on that topic (NI)
	Wildlife corridors in the study area	If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	
	ALBANIA – GREECE:	Are there any recent national or regional population data available for wolves, golden jackal, otter, wildcat, bats?	NI
	Population, habitat data	Is there any information available on population / range / habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	NI
Phillipe Theou	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	mjedisi.gov.al/al/programi/biodiversiteti-dhe-zonat-e-mbrojtura/rrjeti-i-zonave-tembrojtura
		Are there any citation sheets (site description sheets) available for any of these sites?	The Bern Convention Secretariat should have the site proposed by Albania to be incorporated in the Emerald Network
	ALBANIA – GREECE:	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	Bats might use important corridor in all the south Albania with important colonies in the Prespa, Permet, Berat and Tepelene area.
	Wildlife corridors in the study area	If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	However, no data available as ringing of bats never happened in Albania.
	ALBANIA –	Are there any recent national or regional	chiropteralb.files.wordpress.com/2014/06/natslo_17_1_3.pdf

	GREECE: **Population, habitat data**	population data available for wolves, golden jackal, otter, wildcat, bats?	chiropteralb.files.wordpress.com/2014/06/bats-prespa_theou-loce-bego.pdf
		Is there any information available on population / range / habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	
Axios Delta Management Authority, Greece	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	
		Are there any citation sheets (site description sheets) available for any of these sites?	
	ALBANIA – GREECE: **Wildlife corridors in the study area**	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	
		If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	
	ALBANIA – GREECE: **Population, habitat data**	Are there any recent national or regional population data available for wolves, golden jackal, otter, wildcat, bats?	**(Data acquired by the National Monitoring Programme applied in the Axios Delta Management Authority's responsibility area)** **Wolf**: There is an overall presence of the species across the protected area. Individual sightings were recorded in deltas area close to livestock farming infrastructures (feeding on carcasses) and further to the north, using the riverine vegetation habitats close to Eleousa dam. The presence of a reproductive pack has been recorded some years ago between the Axios & Aliakmon delta **Otter:** In the Aliakmon and Axios catchment area, along with Loudias and Gallikos rivers, 16 (84%) out of 19 sampling stations produced signs of otters (positive stations with spraints and tracks close to the river bank and under bridges) and revealed a healthy population feeding on fish, crabs etc**.** **Wild cat:** Individual sightings have been recorded on the western Aliakmon

			embankment (delta area) and in many areas along the Axios river, usually close to densely vegetated parts of the river bank - both eastern and western bank, all the way to the north. Many recordings were the result of photo-trapping as well. Intense presence was revealed around the Eleousa dam. **Bats:** 14 species were recorded, most of them along the Axios river and close to the deltas under bridges and in old, abandoned buildings (train stations, military infrastructure etc).
		Is there any information available on population / range / habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	So far the amphibian *Triturus carnifex macedonicus* was detected close to the Axios Delta Management Authority's responsibility area (in SPA Anthofytou GR1230006) – but not within it. Nevertheless, there is great possibility of finding it in the future within the Axios Delta protected area because of the presence of appropriate habitats.
Directorate of Environment & Spatial Planning of the Region of East Macedonia – Thrace / Department of Environment and Hydroeconomy of the Regional Entity of Evros	**Current status of Albanian Emerald / proposed Natura 2000 sites in study site**	Maps and/or lists of protected areas that show different numbers and boundaries of sites have been found. Is there an official definitive list of sites with their boundaries and status available?	GREEK BIOTOPE/WETLAND CENTRE ¨Capacity Building on Conservation of Albanian Wetland Ecosystems¨
		Are there any citation sheets (site description sheets) available for any of these sites?	
	ALBANIA – GREECE: **Wildlife corridors in the study area**	Other than river corridors and the narrow area between Prespa National Park and the Morava Mountains, are there any known or potential wildlife corridors within the study area?	Management Bodies of: N. Pindos Pamvotida Kalamas Prespes
		If there are is there any available data on these corridors, such as which species use them, what times of year, etc.?	
	ALBANIA – GREECE: **Population, habitat data**	Are there any recent national or regional population data available for wolves, golden jackal, otter, wildcat, bats?	Arcturos – Programme for the wolf WWF – Programme for the jackal
		Is there any information available on population / range / habitat associations of *Bombina bombina* and *Triturus carnifex* in Greece?	

Table A2.5: Questionnaire Question 2 and responses

Organisation	Question	Sub-question	Comment
Alba Forest (Albania)	ALBANIA – GREECE: Aside from the national level stakeholders present, do you feel that the auditorium is incomplete? If incomplete, who should be included and how can they contribute to the process?	National level Governmental Body - reason: To be represented from a broader stakeholders, from national institutions (MoE, MoAFRDWA) and local structures and local NGOs.	To collaborate with local LGUs, from national institutions (MoE, MoAFRDWA) and local structures and local NGOs.
		National Level NGO - reason: to use their own expertise	to use their own expertise
		Other – Reason:	Other – Reason: to involve multidisciplinary team of experts to develop 0nsite verifications on VECs and other issues.
Arsen PROKO Faculty of Forestry Sciences (Agricultural University of Tirana)	ALBANIA – GREECE: Aside from the national level stakeholders present, do you feel that the auditorium is incomplete? If incomplete, who should be included and how can they contribute to the process?	National level Governmental Body - reason:	
		National Level NGO - reason:	
		Other – Reason:	National Agency of Protected Areas, Faculty of Natural Sciences, Faculty of Forestry Sciences
EDEN	ALBANIA – GREECE: Aside from the national level stakeholders present, do you feel that the auditorium is incomplete? If incomplete, who should be included and how can they contribute to the process?	National level Governmental Body - reason:	I was not present by myself at the meeting and EDEN has suggested a list of participants.
		National Level NGO - reason:	
		Other – Reason:	
Phillipe Theou	ALBANIA – GREECE: Aside from the national level stakeholders present, do you	National level Governmental Body - reason:	The national Environmental Agency is legally responsible for Biodiversity Monitoring, and wasnot represented during the workshop that I attended.
		National Level NGO - reason:	

	feel that the auditorium is incomplete? If incomplete, who should be included and how can they contribute to the process?	Other – Reason:	
Directorate of Environment & Spatial Planning of the Region of East Macedonia – Thrace / Department of Environment and Hydroeconomy of the Regional Entity of Evros	ALBANIA – GREECE: Aside from the national level stakeholders present, do you feel that the auditorium is incomplete? If incomplete, who should be included and how can they contribute to the process?	National level Governmental Body - reason:	Ministry of Environment and Energy – Department of Biodiversity
		National Level NGO - reason:	WWF Greece Hellenic Ornithological Society Arcturos Greek Biotope / Wetland Centre
		Other – Reason:	Management Bodies

Table A2.6: Questionnaire Question 3 and responses

Organisation	Question	Sub-question	Comment
Alba Forest (Albania)	ALBANIA – GREECE: Aside from the presented suggested triggers, do you feel that the list is incomplete? If so please insert in the applicable rows:	Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)	To be identified sites of Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)
		Endemic or range-restricted species	To be verified endemic or range-restricted species
		Migratory or congregatory species	To be verified migratory or congregatory species
		Triggers of key ecosystem services	There is an ongoing WB Project on forest ecosystem services including and TAP pipeline areas.
		Triggers of key evolutionary processes or key scientific value	To be identified triggers of key evolutionary processes or key scientific value
		Triggers of highly threatened or unique ecosystems	To be identified triggers of highly threatened or unique ecosystems
Arsen PROKO Faculty of Forestry Sciences (Agricultural University of Tirana)	ALBANIA – GREECE: Aside from the presented suggested triggers, do you feel that the list is incomplete? If so please insert in the applicable rows:	Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)	On the red list, referring TAP area are insert Ulmus glabra, Tulipa sylvestris, Gladiolus palustris, Genista hasertiana, Arenaria serprntini, Festucopsis serpentine, Trollius europaeus, Sedum serpentine, Ptilotrichum cyclocarpum, Styrax officinalis, Cardus micropterus, Alyssum bertolonii, achilea grandifolia, Sambucus racemosa, Prunus webii, Digitalis lanata, Dictamus albus, Campanula tymphaea, Atropa bella-donna
		Endemic or range-restricted species	Morina persica can be taken into consideration as a range-restricted specie to TAP zone (Korca region)
		Migratory or congregatory species	
		Triggers of key ecosystem services	No
		Triggers of key evolutionary processes or key scientific value	No
		Triggers of highly threatened or unique ecosystems	No
EDEN	ALBANIA – GREECE: Aside from the presented suggested triggers, do you feel that the list is incomplete?	Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)	
		Endemic or range-restricted species	For plants, *Festucopsis serpentini* in Vithkuq

	If so please insert in the applicable rows:	Migratory or congregatory species	
		Triggers of key ecosystem services	
		Triggers of key evolutionary processes or key scientific value	
		Triggers of highly threatened or unique ecosystems	
Phillipe Theou	ALBANIA – GREECE: Aside from the presented suggested triggers, do you feel that the list is incomplete? If so please insert in the applicable rows:	Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)	In the list available on the .ppt presentation, the Big Myotis species should be with the following IUCN global trend : Myotis myotis : Lc Myotis blythii : Lc Also, the IUCN Red List consider must be underlined. The Global, Europe and Mediterranean IUCN Red List exist, and the classification might be different depending of the scale selected.
		Endemic or range-restricted species	
		Migratory or congregatory species	
		Triggers of key ecosystem services	
		Triggers of key evolutionary processes or key scientific value	
		Triggers of highly threatened or unique ecosystems	
Axios Delta Management Authority, Greece	ALBANIA – GREECE: Aside from the presented suggested triggers, do you feel that the list is incomplete? If so please insert in the applicable rows:	Critically Endangered, Endangered and Vulnerable Species (IUCN Red List and/or National Lists)	
		Endemic or range-restricted species	
		Migratory or congregatory species	
		Triggers of key ecosystem services	

		Triggers of key evolutionary processes or key scientific value	The National Park of the Axios-Loudias-Aliakmon delta is included in the IUCN's network of 167 validated **freshwater KBAs (Key Biodiversity Areas)** in the Mediterranean Basin Hotspot. It also qualifies as an **AZE (Alliance for Zero Extinction) site** across the Mediterranean Hotspot region**. (**Trigger species need to be reviewed in the light of new data recorded during the National Monitoring Programme)
		Triggers of highly threatened or unique ecosystems	

Table A2.7: Questionnaire Question 4 and responses

Organisation	Question	Sub-question	Comment
Alba Forest (Albania)	**Other comments**	**N/A**	In order to having developed a integrated and comprehensive CIA and CHA it is necessary a close collaboration with our NGOs who have experts available to establish a multidisciplinary team or working group for and according to the respective topics and themes of CIA and CHA in Albania.
EDEN	**Other comments**	**N/A**	NA

APPENDIX 3
TERRESTRIAL BIODIVERSITY FEATURES NOT TRIGGERING CRITICAL HABITAT

The following table assesses taxa other than terrestrial invertebrates in Greece, which are assessed in a separate table below.

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
	IUCN conservation status	Highest national conservation status within TAP host countries	Status under Habitats Directive / Birds Directive	Endemic status within TAP host countries	Migratory or congregatory species?	Highly threatened or unique ecosystem?	Area supporting key evolutionary processes?	Key scientific value?		
Mammals										
Wolf (*Canis lupus*)	LC	VU (Greece & Italy)	Annex 2 and Annex 4	Not endemic	No	N/a	N/a	No	Global EOO: 798300km^2, Approximate DMU: 1900km^2	DMUs do not support > 10% of the national population of this VU (Greece) species, see detailed assessment below.
Ground squirrel (*Spermophilus citellus*)	VU	VU (Greece)	Annex 2 and Annex 4	Not endemic	No	N/a	N/a	No	Global EOO: 47000km^2, Approximate DMU: 0	No evidence of European ground squirrel colonies was found along the route during the 2016 survey. No actual or potential European ground squirrel colonies recorded in previous TAP reports were found to be present during the surveys undertaken in May 2016 and no new colonies were found along the route
Marbled polecat (*Vormela peregusna*)	VU		Annex 2 and Annex 4	Not endemic	No	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: 0	Inhabits desert, semi-desert and steppe habitats, none of which are widespread within the project AOI. Key prey species is ground squirrel, for which 2016 surveys failed to identify any colonies along the pipeline RoW. Any DMUs are unlikely to support 10% of the national population of this VU species
Balkan pine vole (*Microtus feltini*)	DD	EN (Greece)		Balkan endemic	No	N/a	N/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No population data available. Species prefers montane forests, which are avoided by project. DMUs unlikely to support > 1% of the global population of this EN (Greece) and Balkan endemic species
Balkan mole (*Talpa stancovici*)	LC			Balkan endemic	No	N/a	N/a	No	Global EOO: Unknown Approximate DMU: Unknown	No population data available. Due to extensive endemic range any suitable habitat within the AOI considered unlikely to support ≥ 1% of the global population.
Mediterranean mole (*Talpa caeca*)	LC			European endemic	No	N/a	N/a	No		No population data available. Due to extensive endemic range any suitable habitat within the AOI considered unlikely to support ≥ 1% of the global population.
Serotine (*Eptesicus serotinus*)	LC	DD (Albania)	Annex 2 and Annex 4	Not endemic	Congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
										population of this congregatory species, based on in-country expert judgement
Free-tailed bat (*Tadarida teniotis*)	LC	DD (Albania)	Annex 2 and Annex 4	Not endemic	Congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Whiskered bat (*Myotis mystacinus*)	LC	DD (Albania) VU (Italy)	Annex 2 and Annex 4	Not endemic	Migratory, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, nor > 10% of the national population in Italy, based on in-country expert judgement
Natterers bat (*Myotis nattereri*)	LC	DD (Albania) VU (Italy)	Annex 2 and Annex 4	Not endemic	Congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, nor > 10% of the national population in Italy, based on in-country expert judgement
Leisler's bat, lesser noctule (*Nyctalus leisleri*)	LC	DD (Albania)	Annex 2 and Annex 4	Not endemic	Migratory, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Noctule (*Nyctalus noctula*)	LC	DD (Albania) VU (Italy)	Annex 2 and Annex 4	Not endemic	Migratory, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, nor > 10% of the national population in Italy, based on in-country expert judgement
Kuhl's pipistrelle (*Pipistrellus kuhlii*)	LC	NE (Albania)	Annex 2 and Annex 4	Not endemic	Congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Nathusius's pipistrelle (*Pipistrellus nathusii*)	LC	NE (Albania)	Annex 2 and Annex 4	Not endemic	Migratory, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Although listed as a qualifying feature for a number of protected/designated areas within 5km of the project, any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Common pipistrelle (*Pipistrellus pipistrellus*)	LC	NE (Albania)	Annex 2 and Annex 4	Not endemic	Occasional migrant, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Although listed as a qualifying feature for a number of protected/designated areas within 5km of the project, any DMUs are considered unlikely to support > 1% of

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
										the global population of this congregatory species, based on in-country expert judgement
Savi's pipistrelle (*Pipistrellus savii*)	LC	NE (Albania)	Annex 2 and Annex 4	Not endemic	Migration unknown, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Parti-coloured bat (*Vespertilio murinus*)	LC	DD (Albania)	Annex 2 and Annex 4	Not endemic	Migratory, congregatory	N/a	n/a	No	Global EOO: Unknown, Approximate DMU: Unknown	No known roosts within the project AOI although targeted surveys not undertaken in Greece. Any DMUs are considered unlikely to support > 1% of the global population of this congregatory species, based on in-country expert judgement
Reptiles										
Spur-thighed Tortoise (*Testudo graeca*)	VU		Annex 2 and Annex 4	Not endemic	No	N/a	n/a	No	Global EOO: Widespread, Approximate DMU: 300km^2	No detailed information available for global or national distributions. Species prefers semi-arid scrub and forested habitats, which are not common across the AOI. DMUs not likely to support > 10% of the national population of this VU species
Yellow-bellied toad (*Bombina variegata)*	LC		Annex 2 and Annex 4	Not endemic	Congregatory	N/a	N/a	No	Global EOO: 1.1 million km^2, Approximate DMU: 3000km^2	Species distributed throughout forests, forest steppe, scrubland, grassland and alpine habitats in Greece and Albania. DMUs unlikely to support > 1% of the global population of this congregatory species
European green toad (*Bufotes viridis*)	LC	protected (Greece)	Annex 4	Not endemic	Congregatory	N/a	N/a	No	Global EOO: 3.75 million km^2, Approximate DMU: 1200km^2	Species distributed throughout coniferous, deciduous and mixed forests, bushlands and meadows, floodplains and grasslands and wetlands in Greece. DMUs unlikely to support > 1% of the global population of this congregatory species
Aesculapian snake (*Elaphe longissima)*	LC	EN (Albania)	Annex 4	Not endemic	No	N/a	N/a	No	Global EOO: 1.65 million km^2, Approximate DMU: 800km^2	Species distributed throughout dry, open woodlands (deciduous, mixed and coniferous), woodland edges, forested ravines, scrubland and thickets, rocky outcrops, road embankments, moist meadows, field edges, traditionally cultivated land, tea plantations, stone walls and old buildings, parks and gardens in Albania. DMUs unlikely to support > 10% of the national population of this species
European ratsnake (*Elaphe situla)*	LC	CR (Albania)	Annex 2 and Annex 4	Not endemic	No	N/a	N/a	No	Global EOO: 350000km^2, Approximate DMU: Unknown	No DMUs identified within the project AOI

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Pool frog (*Rana lessonae*)	LC	VU (Albania)	Annex 4	Not endemic	No	N/a	N/A	No	Global EOO: 3.3 million km^2 (synonomous species - *Pelophylax lessonae*), Approximate DMU: 800km^2	May occur within deciduous and mixed forests, forest steppe, steppe, bush lands (e.g. riparian alder groves), meadows, fields and fens. It may often be found in shallow stagnant waterbodies (usually without fish) such as lakes, ponds, swamps, large puddles, clay and gravel pits, and ditches, often covered with dense herbaceous vegetation in Albania. DMUs unlikely to support > 10% of the national population of this VU (Albania) species
Terrestrial invertebrates										
Rosalia longicorn beetle (*Rosalia alpina)*	VU (Global) LC (European)	CR (Albania)	Annex 4	Not endemic	No	N/a	N/A	No	Not available	In Albania: Known from Mali i Tomorrot National Park (noted in the Management Plan). Requires Beech trees and this habitat within the NP has been mapped as the DMU. The DMU is > 10 km from the route and is elevated (the route at this location passes through a ravine). DMU not affected and CHA not triggered. In Greece: Known to occur in Oros Vermio SCI which is c. 2 km from the TAP route. Species has a wide distribution according to Fauna Europaea (not mapped by the IUCN or European Environment Agency) and not restricted to Greece. No information regarding population numbers in Greece available. It appears that there are suitable beechwoods along the TAP route in the vicinity of the SCI and potentially woodland connectivity between the SCI and TAP, so this LC (IUCN European Red List)/VU (Global IUCN – and not assessed in the Greek Red Data Book) species is likely present along the TAP route here. However, it is unlikely that any DMU around the TAP route at this location would support >10% of the national population of a LC/VU species (especially given the size of the SCI in comparison and the potential available habitat just in this region alone). However, detailed population information is not available and further survey/expert advice would be required to provide certainty
Marbled white butterfly *(Melanargia russiae)*	LC	CR (Albania)		Not endemic	No	N/a	N/A	No	Not available	Known from Mali i Tomorrot National Park (noted in the Management Plan). The species likes rocky places and the larvae feed on *Brachypodium, Poa, Stipa pennata* and *Aegilops geniculata.* Associated with higher elevations. DMU for this species within the NP is > 10 km from the TAP route. In addition, the DMU is at a much higher aaltitude than the TAP route, which passes along the bottom of a ravine, at this location. DMU not affected and CHA not triggered
Large blue butterfly (*Maculinea arion)*	NT	EN (Albania)		Not endemic	No	N/a	N/A	No	Not available	Known from Prespa National Park. Very specific habitat requirements. The species requires a combination of abundant amounts of its larval food plant, *Thymus*

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
										drucei, and the presence of *Myrmica sabuleti* ants in order to survive. DMU within the NP was mapped based on suitable habitats. The DMU is >10 km from the route and adults generally do not disperse more than 5 km (and often don't even travel this far). The DMU within Prespa NP will not be affected and CHA not triggered. There are some small areas of grassland along the TAP route within the region of Prespa NP. However, these are over 10 km from the nearest known population. It is considered unlikely that the species is present.
Morimus funereus (a longhorn beetle)	VU	NA		Not endemic	No	N/a	N/A	No	Not available	Known from Oros Vermio SCI and Lake Mikri Prespa and Lake Megali Prespa, neither of which is directly crossed by the route. No population data available for the species. Distribution is not mapped on IUCN or European Environment Agency, but Fauna Europaea shows it to be widely distributed. It is unlikely that any DMU around the TAP route at this location would support >10% of the national population of a VU (IUCN Global, not assessed in the Greek Red Data Book) species (and habitats at Prespa Lakes are very different to those crossed by the TAP route). However, detailed population information is not available and further survey/expert advice would be required to provide certainty
Great Capricorn Beetle (*Cerambyx cerdo*)	NT (European) VU (Global)	EN (Albania)	Annex 4	Not endemic	No	N/a	N/A	No	Not available	Known from Mali i Tomorrot National Park. Similar habitat preferences as Rosalia alpine (and similar habitat enhancement measures benefit both species) and this habitat within the NP has been mapped as the DMU. The DMU is > 10 km from the route and is elevated (the route at this location passes through a ravine). DMU not affected and CHA not triggered
Freshwater fish										
Oxynoemacheilus pindus	VU			Not Endemic	No	N/a	N/a	No	Global EOO: Estimated to be < 5,000 km^2. DMU: Aoos River Basin (unknown area within)	DMU unlikely to support > 1% of the global population
Alburnus sp. Volvi	NT			Endemic to Greece	No	N/a	N/a	No	Global EOO: 10,000 km². DMU: Lower Struma Drainage and lake Volvi (unknown area)	DMU unlikely to support > 1% of the global population
Briana (*Barbus prespensis*)	LC			Endemic to Albania	No	N/a	N/a	No	Global EOO: Estimated to be over 20,000 km^2. DMU: Unknown but likely to be present in the majority of rivers crossed in Alabania and Greece	DMU unlikely to support > 1% of the global population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Cobitis ohridana	LC	LC (Albania) but listed as 'protected' under Albanian law		Not endemic	No	N/a	N/a	No	Global EOO: Unknown. DMU: Restricted to the Lake Ohrid and Drim river system in Albania and the former Yugoslav republic of Macedonia (FYROM) (Unknown area)	DMU unlikely to support > 1% of the global population
Twaite shad (*Alosa fallax*)	LC	VU (Italy) DD (Greece)	Annex 2	Not endemic	Migratory, congregatory	N/a	N/a	No	Global EOO: Unknown. DMU: Evros in Greece, Filiouris, Nestos, Strymon. Likely to be present in a number of other rivers (such as Loudias, Aliakmon and Axios) however the species is under recorded	DMUs not likely to support > 1% of the global population of this migratory species, based on in-country expert judgement, nor > 10% of the national population in Italy
Barbus macedonicus	LC	LC (Greece)		Endemic to Greece	No	N/a	N/a	No	Global EOO: Estimated to be over 20,000 km^2 (areas of Greece and the Former Yugoslav Republic of Macedonia. DMU: Axios, Pinios, Loudias and Aliakmon river basins in Greece (Unknown area)	DMU unlikely to support > 1% of the global population
Ukrainian stickleback (*Pungitius platygaster*)	LC	VU (Greece)		Not endemic	No	N/a	N/a	No	Global EOO: Estimated to be over 20,000 km^2. DMU: Isolated populations in Axios and Aliakmon drainages (Greece)	DMU unlikely to support > 10% of the national population
Salmo pelagonicus	VU	VU (Greece)	Annex 2 (Taxonomic uncertainty)	Not endemic	No	N/a	N/a	No	Global EOO: Estimated to be over 10,000 km^2. DMU: The species is found in the upper tributaries of the Aliakmon (Greece)	DMU unlikely to support > 10% of the national population
Vimba melanops	DD	VU (Greece)		Not endemic but Taxonomy remains uncertain	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO: Unknown - taxonomy of the species remains uncertain. Still a debate as to whether this species is the same as Vimba vimba. DMU: Evros River Basin in Greece (Unknown area)	DMU unlikely to support > 10% of the national population
Zingel balcanicus	DD	DD		Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO: Unknown. DMU: Unknown	Restricted to the Vardar (Axios) River in the former Yugoslav republic of Macedonia (FYROM). Potentially it may also be present in the lower reaches of the river in Greece. DMU unlikely to support > 10% of the national population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Knipowitschia caucasica	LC	DD		Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO: Unknown. DMU: Aliakmon Drainage	Taxonomy of the species reamins uncertain. Saline, Fresh and Estuarine waters. lowland rivers up to 100km from the coast DMU unlikely to support > 10% of the national population
Pachychilon macedonicum	DD	DD		Endemic to Southern Balkans	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO: Estimated to be over 20,000 km^2. DMU: Nestos and Strymon River basin.	Nestos and Strymon River. Present in the Evros but not in Greek territory. DMU unlikely to support > 10% of the national population
Salmo macedonicus	DD	DD		Not endemic	Migratory Congregatory	N/a	N/a	N/A	Global EOO Unknown - taxonomy of the species reamins uncertain.	DMU unlikely to support > 10% of the national population
Barbus cyclolepis				Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Estimated Global EOO: >20,000 km^2	DMU unlikely to support > 10% of the national population
Cobitis puncticulata	EN	DD		Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO: Unknown. Area of occupancy is less than 500 km and only known from three sites	Present in canals/wetlands near the villages of Lyra and Tychero (the Evros Population) and these types of waterbodies are not crossed by the route in this area DMU unlikely to support > 10% of the national population
Cobitis strumicae	LC	LC (Greece)		Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Global EOO includes Greece, Bulgaria and Turkey but area unknown. DMU: Unknown	Widespread species, known from the Strymon to Evros river basins DMU unlikely to support > 10% of the national population
Cyprinus carpio	VU	LC (Greece)		Not endemic	Not migratory Not congregatory	N/a	N/a	N/A	Widespread Eurasian Species, Hybridisation with domesticaed strains and therefore calculation of true EOO is not possible	Native populations most likely to be in North Eastern Greece (Thraki and Makedonia-Thessaly Ecoregions. DMU unlikely to support > 10% of the global population
Acipenser sturio	CR	DD (Greece)		Not endemic	Migratory Congregatory	N/a	N/a	N/A	Global EOO: Unknown. DMU: Unknown	This species is restricted only to the Garonne River (France). Not known within the project AOI
Alosa vistonica	CR	CR (Greece), possibly extinct	Annex 2	Restricted to coastal Lake Vistonis in northern Greece	Migratory, congregatory	N/a	N/a	No	Global EOO: Unknown. DMU: Unknown	Not known within the project AOI
Italian bleak (*Alburnus albidus*)	CR	VU (Italy)	Annex 2	Not endemic	No	N/a	N/a	No	Global AOO: < 2,000km^2 This freshwater species is endemic to southern Italy it's natural range on the Adriatic side of the country is from the Trigno to Basento rivers. DMU: none as no freshwater habitats within Italian AOI	Not known within the project AOI
Freshwater invertebrates										

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Heleobia tritonum	CR			Endemic to Greece and range restricted	No	N/a	N/a	No	Population unknown Range restricted to 100 km^2	Despite the species' range apparently including the project AOI based on it's IUCN listing, in-country experts have confirmed that *Heleobia tritonum* is only known from two sites in the Peloponnese, hundreds of kilometres away from the project. The species purportedly present in the Aliakmon catchment is likely to be a different species under the *Heleobia* genus.
Bithynia kastorias	CR			Endemic to Greece and range restricted	No	N/a	N/a	No	Population unknown Range restricted to 28 km^2	*Bithynia kastorias* is a qualifying feature of the Kastoria Catchment Freshwater KBA and is only known from Kastoria Lake (Radea, 2011).It's apparent habitat preference is rocks on the littoral zone of this eutrophic lake. Lake Kastoria is hydrologically more than 2 km from the project. Although the pipeline crosses three watercourses within this catchment, none of them provide the preferred habitat and therefore the species is screened out.
Botany										
Adiantum capillus-veneris	LC	VU(A1b) Albania			n/a	n/a			Global EOO: Unknown, Approximate DMU: Unknown	Throughout the most of its range, this species is abundant and there is no evidence of a decline. DMU unlikely to support > 1% of the global population
Alnus glutinosa	LC	Other important plant species list Greece			n/a	n/a			Global EOO: Unknown, Approximate DMU: Unknown	This species has a wide distribution across Europe and into North Africa. Although population size has not been quantified, it is not believed to approach threshold values for a threatened category. DMU unlikely to support > 1% of the global population
Marram grass (*Ammophila arenaria*)	Not assessed	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: 110km^2	Invasive species, that occurs in dune systems along the Albanian coastal zone. DMU unlikely to support > 10% of the national population
Anthyllis vulneraria subsp. bulgarica	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Astragalus thracicus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Bromus cappadocicus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Centaurea affinis	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Centaurea napulifera subsp napulifera	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Cephalanthera epipactoides	VU				n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this species, but the DMU unlikely to support > 10% of the global population
Meadow saffron (*Colchicum autumnale*)	LC	EN (Albania)			n/a	n/a	No	No	Albanian EOO: 4,200 km^2, Approximate DMU: 300 km^2	Species occurs in central Albania, in damp meadows, open woods and river banks. DMU unlikely to support > 10% of the national population
Colchicum turcicum	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Crocus pulchellus	Not assessed			Balkan sub-endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Dianthus cruentus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Dianthus gracilis	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Dianthus monadelphus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Dianthus stenopetalus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Burning dittany (*Dictamnus albus*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Joint pine (*Ephedra distachya*)	LC	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: 110km^2	DMU of coastal dunes unlikely to support > 10% of the national population
Erisymum crassistylum	Not assessed			Sub-Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Galium oreophilum	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Great yellow gentian (*Gentiana lutea*)	Not assessed	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Geocaryum capillifolium	Not assessed			Balkan endemic Greece	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Helleborus odorus subsp. cyclophyllus	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Perforate St John's wort (*Hypericum perforatum*)	GISD	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Hypericum rumeliacum	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Black walnut (*Juglans regia*)	NT	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Common juniper (*Juniperus communis*)	LC	VU (Albania)			n/a	n/a	No	No	Global EOO: Widespread, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Prickly juniper (*Juniperus oxycedrus*)	LC	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Prickly juniper (*Juniperus oxycedrus ssp. Macrocarpa)*	LC	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: 110km^2	Species occurs in dune systems along the Albanian coastal zone. DMU unlikely to support > 10% of the national population
Linaria peloponnesiaca	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Minuartia attica	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Wild marjoram (*Origanum vulgare*)	Not assessed	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Pancratium maritimum	Not assessed	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: 110km^2	Species occurs in dune systems along the Albanian coastal zone. DMU unlikely to support > 10% of the national population
Paronychia macedonica	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Phlomis samia	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Hart's tongue fern (*Phyllitis scolopendrium*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Polygala supina subsp. rhodopea	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Holly oak (*Quercus ilex*)	Not assessed	EN (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: 100km^2	Species component of EU Habitat 9340, which occurs throughout Albania. DMU unlikely to support > 10% of the national population
Crack willow (*Salix fragilis*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Common sage (*Salvia officinalis*)	LC	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Common elder (*Sambucus nigra*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Winter savoury (*Satureja montana*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Satureja pilosa subsp. origanita	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Scabiosa tenuis	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Scutellaria rupestris subsp. adenotricha	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Verbascum phoeniceum subsp. flavidum	Not assessed			Balkan endemic	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this Balkan endemic species, but due to the wide geographic extent of the Balkans area, the DMU unlikely to support > 1% of the global population
Veronica chamaedrys subsp. chamaedryoides	Not assessed			Endemic to Greece	n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	No information is available on this endemic species, but due to the wide geographic extent of Greece, the DMU unlikely to support > 1% of the global population
Laurustinus (*Viburnum tinus*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Mistletoe (*Viscum album*)	Not assessed	VU (Albania)			n/a	n/a	No	No	Global EOO: Unknown, Approximate DMU: Unknown	DMU unlikely to support > 10% of the national population
Birds										
Little egret (*Egretta garzetta*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 34,100,000 km^2, Approximate DMU: 4,150 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Night heron (*Nycticorax nycticorax*)	LC	VU (Italy) NT (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 41,200,000 km^2, Approximate DMU: 4,150 km^2	In Greece: DMU supports < 0.1% of the global AOO of this migratory species In Italy: no DMUs identified for this species
White stork (*Ciconia ciconia*)	LC	CR (Albania), VU (Greece)	Annex I	Migratory	Migratory	No	No	No	Global EOO: 6,320,000 km^2, Approximate DMU: 4,150 km^2	DMU does not support > 10% of either the global or national population of this species, nor is it one of ten or fewer DMUs globally for the species. DMU is not of significant importance to this species which is wide-ranging whereby the loss of the habitat could potentially affect the long-term survivability of the population. DMU does not appear to support the regular occurrence of this species.
Black stork (*Ciconia nigra*)	LC	EN (Greece) VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 13,100,000 km^2, Approximate DMU: 4,150 km^2	In Greece: DMU supports < 0.1% of the global AOO of this migratory and nationally-EN species In Italy: no DMUs identified for this species
Shelduck (*Tadorna tadorna*)	LC	VU (Greece)		Not endemic	Migratory	N/a	No	No	Global EOO: 2,200,000 km^2, Approximate DMU: 4,150 km^2	DMU supports < 0.2% of the global AOO of this migratory and VU (Greece) species
Griffon vulture (*Gyps fulvus*)	LC	CR (Italy) VU (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 10,200,000 km^2, Approximate DMU: 2,800 km^2	In Greece: DMU supports < 0.1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Black vulture (*Coragyps atratus*)	NT	EN (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 338,000 km^2, Approximate DMU: 2,800	DMU supports < 1% of the global AOO of this migratory and EN (Greece) species

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
									km^2	
Short-toed eagle (*Circaetus gallicus*)	LC	VU (Albania & Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 6,880,000 km^2, Approximate DMU: 2,800 km^2	In Albania: DMU supports < 0.1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Pygmy cormorant (*Microcarbo pygmeus*)	LC	CR (Albania)							Global EOO 461,000 km^2 The global population is estimated to be 85,000-80,000 mature individuals and the European population is estimated to be 56,000-78,000 mature individuals (IUCN 2016).	In Albania the species' range extends across the western coastal areas and the south east of the country where it is considered resident. DMUs have been identified within the project AOI, associated with the Prespa Lakes and Karavasta Lagoon. Both sites are National Parks, designated Ramsar sites and proposed Emerald sites. Given the broad range of the species these DMUs do not qualify as Tier 1 habitat as the area in question is well under 1% of the EOO. Similarly, the supported population is likely to be < 10% of the regional population, with surveys conducted by Wetlands International in 2016 recording 1,019 individuals at Karavasta and < 200 at Prepspa Lakes (Bino and Carugati, 2016).
Marsh harrier (*Circus aeruginosus*)	LC	VU (Albania, Greece & Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 13,500,000 km^2, Approximate DMU: 6,950 km^2	In Greece and Albania: DMU supports < 0.1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Long-legged buzzard (*Buteo rufinus*)	LC	VU (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 8,890,000 km^2, Approximate DMU: 6,950 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Greece) species
European honey buzzard (*Pernis apivorus*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 8,990,000 km^2, Approximate DMU: 6,950 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Levant sparrowhawk (*Accipiter brevipes*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 660,000 km^2, Approximate DMU: 6,950 km^2	DMU supports 1% of the global AOO of this migratory species
Lesser kestrel (*Falco naumanni*)	LC	VU (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 10,100,000 km^2, Approximate DMU: 6,950 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Greece) species
Red-footed falcon (*Falco vespertinus*)	NT	VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 4,380,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Eleonora's falcon (*Falco eleonorae*)	LC	VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 140,000 km^2, Approximate DMU: Sea cliffskm2	DMU supports <1% of the global AOO of this migratory species
Grey partridge (*Perdix perdix*)	LC	EN (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 7,230,000 km^2, Approximate DMU: 6,950 km^2	DMU unlikely to support > 1% of the national population of this migratory and EN (Greece) species
Turtle dove (*Streptopelia turtur*)	VU			Not endemic	Migratory	N/a	No	No	Global EOO: 4,510,000 km^2, Approximate DMU: 4,150 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU species

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Nightjar (*Caprimulgus europaeus*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 6,550,000 km^2, Approximate DMU: 6,950km^2	DMU supports <1% of the global AOO of this migratory species
Kingfisher (*Alcedo atthis*)	VU		Annex I	Not endemic		N/a	No	No	Global EOO: 17,900,000 km^2, Approximate DMU: 4,150 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU species
European roller (*Coracius garrulus*)	LC	CR (Albania), VU (Greece)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 11,400,000 km^2, Approximate DMU: 6,950 km^2	DMUs support < 10% of this nationally-CR species
Black woodpecker (*Dryocopus martius*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 19,600,000 km^2, Approximate DMU: 2,800 km^2	DMU supports <1% of the global AOO of this migratory species
Syrian woodpecker (*Dendrocopos syriacus*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 2,630,000 km^2, Approximate DMU: 2,800 km^2	DMU supports <1% of the global AOO of this migratory species
Middle spotted woodpecker (*Leiopicus medius*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 3,910,000 km^2, Approximate DMU: 2,800 km^2	DMU supports <1% of the global AOO of this migratory species
Skylark (*Alauda arvensis*)	LC	VU (Italy)		Not endemic	Migratory	N/a	No	No	Global EOO: 33,000,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Woodlark (*Lullula arborea*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 2,890,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Short-toed lark (*Calandrella brachydactyla*)	LC	EN (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 8,080,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Calandra lark (*Melanocorypha calandra*)	LC	VU (Greece & Italy))	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 5,630,000 km^2, Approximate DMU: 6,950 km^2	In Greece: DMU supports <1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Tawny pipit (*Anthus campestris*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 4,500,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Olive-tree warbler (*Hippolais olivetorum*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 286,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Red-backed shrike (*Lanius collurio*)	LC	VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 5,360,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Masked shrike (*Lanius nubicus*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 353,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Lesser grey shrike (*Lanius minor*)	LC	VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 2,090,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Ortolan bunting (*Emberiza hortulana*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 627,000 km^2, Approximate DMU: 6,950 km^2	DMU supports <1% of the global AOO of this migratory species
Golden eagle (*Aquila chrysaetos*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 41,500,000 km^2, Approximate DMU: 2,600 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Purple heron (*Ardea purpurea*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 28,700,000 km^2, Approximate DMU: 1,700 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Squacco heron (*Ardeola ralloides*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 18,600,000 km^2, Approximate DMU: 1,700 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Short eared owl (*Asio flammeus*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 29,300,000 km^2, Approximate DMU: 1,700 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Moustached warbler (*Acrocephalus melanopogon*)	LC	EN (Albania) VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,550,000 km^2, Approximate DMU: 1,700 km^2	In Albania: DMU supports < 0.2% of the global AOO of this migratory and nationally-EN species In Italy: no DMUs identified for this species
Rock partridge (*Alectoris graeca*)	NT		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 538,000 km^2, Approximate DMU: 2,600 km^2	DMU supports <1% of the global AOO of this migratory species
Ferruginous duck (*Aythya nyroca*)	NT	CR (Albania) EN (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,200,000 km^2, Approximate DMU: 1,700 km^2	In Albania: DMU supports < 1% of the global AOO of this nationally-EN species In Italy: no DMUs identified for this species
Stone curlew (*Burhinus oedicnemus*)	LC	CR (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 9,150,000 km^2	No DMUs identified within the project AOI
Kentish plover (*Charadrius alexandrinus*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 12,900,000 km^2, Approximate DMU: 1,700 km^2	DMU supports <1% of the global AOO of this migratory species
Black tern (*Chlidonias niger*)	LC	EN (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,430,000 km^2, Approximate DMU: 865 km^2	DMU supports <1% of the global AOO of this migratory species
Hen harrier (*Circus cyaneus*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 12,300,000 km^2, Approximate DMU: 1,700 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Corncrake (*Crex crex*)	VU	VU (Albania & Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 12,300,000 km^2, Approximate DMU: 1,700 km^2	In Albania: DMU supports < 1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Whooper swan (*Cygnus cygnus*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 2,220,000 km^2, Approximate DMU:	DMU supports <1% of the global AOO of this migratory species

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
									1,700 km^2	
White-backed woodpecker (*Dendrocopus leucotos*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 11,200,000 km^2, Approximate DMU: 2,600 km^2	DMU supports <1% of the global AOO of this migratory species
Merlin (*Falco columbarius*)	VU	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 23,100,000 km^2, Approximate DMU: 4,300 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU species
Lesser kestrel (*Falco naumanni*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 10,100,000 km^2, Approximate DMU: 4,300 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Peregrine falcon (*Falco peregrinus*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 38,100,000 km^2, Approximate DMU: 4,300 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Collared pratincole (*Glareola pratincola*)	LC	EN (Italy) VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 5,350,000 km^2, Approximate DMU: 4,300 km^2	In Albania: DMU unlikely to support >1% of the global AOO of this migratory and nationally-VU species In Italy: no DMUs identified for this species
Bonelli's eagle (*Aquila fasciata*)	LC	CR (Italy) EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 5,440,000 km^2, Approximate DMU: 4,300 km^2	DMU unlikely to support >1% of the global AOO of this migratory species
Black-winged stilt (*Himantopus himantopus*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 39,700,000 km^2, Approximate DMU: 1,700 km^2	DMU unlikely to support >1% of the global AOO of this migratory species
Red kite (*Milvus milvus*)	NT	EN (Albania) VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,970,000 km^2, Approximate DMU: 4,300 km^2	In Albania: DMU supports < 0.3% of the global AOO of this migratory and nationally-EN species In Italy: no DMUs identified for this species
Egyptian vulture (*Neophron perconopterus*)	EN	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 14,800,000 km^2, Approximate DMU: 4,300 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN species
Osprey (*Pandion haliaetus*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 31,500,000 km^2, Approximate DMU: 4,300 km^2	DMU supports < 0.1% of the global AOO of this migratory and VU (Albania) species
Grey headed woodpecker (*Picus canus*)	LC	VU (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 595,000 km^2, Approximate DMU: 2,600 km^2	DMU unlikely to support >1% of the global AOO of this migratory and VU (Albania) species
Golden plover (*Pluvialis apricaria*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,170,000 km^2, Approximate DMU: 1,700 km^2	DMU unlikely to support >1% of the global AOO of this migratory species
Eurasian spoonbill (*Platalea leucorodia*)	LC	EN (Albania) VU (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 4,420,000 km^2, Approximate DMU: 1,700 km^2	In Albania: DMU supports < 0.1% of the global AOO of this migratory and nationally-EN species In Italy: no DMUs identified for this species

Species / Habitat	Criterion 1			Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Population Data (Where available)	Rationale
Little crake (*Porzana parva*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 1,450,000 km^2, Approximate DMU: 1,700 km^2	DMU unlikely to support >1% of the global AOO of this migratory species
Spotted crake (*Porzana porzana*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 7,390,000 km^2, Approximate DMU: 1,700 km^2	DMU unlikely to support >1% of the global AOO of this migratory species
Ballions crake (*Porzana pusilla*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 13,900,000 km^2, Approximate DMU: 1,700 km^2	DMU supports <1% of the global AOO of this migratory species
Chough (*Pyrrhocorax pyrrhocorax*)	LC		Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 13,300,000 km^2, Approximate DMU: 2,600 km^2	DMU supports <1% of the global AOO of this migratory species
Avocet (*Recurvirostra avosetta*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 12,800,000 km^2, Approximate DMU: 1,700 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Little tern (*Sternula albifrons*)	LC	EN (Italy)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 11,800,000 km^2, Approximate DMU: 865 km^2	In Albania: DMU supports <1% of the global AOO of this migratory species In Italy: no DMUs identified for this species
Common tern (*Sterna hirundo*)	LC	EN (Albania)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 16,000,000 km^2, Approximate DMU: 865 km^2	DMU supports < 0.1% of the global AOO of this migratory and EN (Albania) species
Little Bittern (*Ixobrychus minutus*)	LC	LC (Europe)	Annex I	Not endemic	Migratory	N/a	No	No	Global EOO: 32,800,000 km^2 Approximate DMU: unknown	Suitable habitat (e.g. freshwater marshes, riparian vegetation) within project AOI unlikely to support >1% of the global AOO of this wide ranging, migratory species

Screening of Terrestrial Invertebrates in Greece

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Acicula multilineata	EN	VU	Snail	Endemic to Greece: Peloponisos, Achaia, Only known from 3 localities, potentially threatened by habitat destruction. Rocky habitats, found in 550 m altitude.	No as well outside the known range
Deroceras gorgonium	EN		Slug	N central Crete near Síses, Found in Mediterranean shrubland and by roadside	No as well outside the known range
Deroceras kythirensis	EN		Slug	Greece: Kíthira, between Potamos and Agia Pelagia, Apparently an endemic species of Kithira island. Shrubland and old cultivated land	No as well outside the known range
Deroceras minoicum	EN		Slug	Greece: central Crete, Idi mountains (Lives near mountain springs on a plateau of 1500 m altitude in the Idi mountains, but possibly also some lowland slugs belong to this species), Nida plateau	No as well outside the known range
Deroceras nyphoni	EN		Slug	Endemic to Skiathos Island, found under stones, open habitats and in olive-yards.	No as well outside the known range
Speleodentorcula beroni	CR	VU	Snail	Found in a single cave on the Island of Evvoia	No as well outside the known range
Albinaria adrianae	EN		Snail	Greece: Kefaloniá, 21 km E Argostoli. Open rocky habitats, on the rock faces	No as well outside the known range
Albinaria broemmei	CR		Snail	Greece: N Pelopónisos, Achaia, Chelmos.	No as well outside the known range
Albinaria campylauchen	CR		Snail	Greece: S Pelopónisos, Lakonia, Trinisa Stefanias	No as well outside the known range
Albinaria evelynae	CR		Snail	Greece: S Pelopónisos, Lakonia	No as well outside the known range
Albinaria haessleini	CR		Snail	Greece: SE Pelopónisos near Githio and Monemvasia	No as well outside the known range
Albinaria hohorsti	CR		Snail	Greece: E Pelopónisos, Kandia SE of Nafplion. Under limestone rocks	No as well outside the known range
Albinaria ithomensis	CR		Snail	Greece: Messenia, Mavrommáti, 800 m	No as well outside the known range
Albinaria jaeckeli	EN		Snail	Greece: island of Dia N of Crete. Lives very cryptically in rock crevices of steep limestones, at N and E exposed slopes, not found at S exposed slopes, scattered distribution, not continuously distributed over area	No as well outside the known range
Albinaria jonica	EN		Snail	Greece: Kefaloniá, 20 km NNE Argostoli. Prefers low rocks and ascends sometimes also shrubs.	No as well outside the known range
Albinaria li	EN		Snail	Greece: Very narrow restricted range near Kalí Liménes, S central Crete. Limestone rock faces	No as well outside the known range
Albinaria litoraria	CR		Snail	Greece: Arkadia, Paralia Astros,	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Albinaria mixta	EN		Snail	Greece: E Pelopónisos, near Mili S of Argos. Low limestone rocks and boulders.	No as well outside the known range
Albinaria pelocarinata	CR		Snail	Greece: S Pelopónisos: Lakonia near Demonia	No as well outside the known range
Albinaria rebeli	EN		Snail	Greece: E Crete, 3 km NW Kavoúsi. Limestone rock faces, prefers steep rocky slopes.	No as well outside the known range
Albinaria rechingeri	EN		Snail	Greece: Ródos (restricted range near Lindos). Lives exclusively at limestone rocks, syntopically with A. brevicollis	No as well outside the known range
Albinaria retusa	CR		Snail	Greece: Island of Día: restricted range near Lindos only at the northeastern slopes. Steep limestone rocks and their upper margins, hides in rock crevices.	No as well outside the known range
Albinaria solicola	EN		Snail	Greece: E Pelopónisos: Arkadia near Leonidi at the coast	No as well outside the known range
Albinaria subaii	CR		Snail	Greece: Pelopónisos, Lakonía, Dirón. Limestone rocks	No as well outside the known range
Albinaria zilchi	CR		Snail	Greece: E Pelopónisos. At limestone rocks in karstic habitats with poor vegetation, less frequent than sympatrically occuring Albinaria grisea.	No as well outside the known range
Graecophaedusa sperrlei	CR		Snail	N Greece: Makedonia (Pangeon mountains). Probably subterranean, found in deep rock crevices.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Isabellaria idyllica	CR		Snail	Greece: Peloponisos, Lakonia, 7 km SSE Agios Petros at the road to Sparti	No as well outside the known range
Montenegrina zilchi	EN		Snail	Greece: Thessalia, 18 km from Trikkala to Pili	No as well outside the known range
Sciocochlea collasi	CR		Snail	NW Greece: Kérkira - Restricted to caves, associated with root or root fragment of trees, obviously feeding on symbiotic fungi.	No as well outside the known range
Sciocochlea cryptica	CR		Slug	Greece: Ipiros - Lives inside caves, probably associated with deep-reaching tree root systems	No as well outside the known range
Sciocochlea nordsiecki	CR		Slug	NW Greece: Ipiros, S Albania. Subterranean, lives in caves, only rarely found at the surface.	No as well outside the known range
Sericata lutracana	CR		Snail	Greece: Loutráki	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Tsoukatosia liae	CR		Snail	Greece: Peloponisos, Arkadia,3.95 km along bypass road from Leonidion-Plaka to Tsitalia. Mesozoic limestone rock crevices with reddish soil, very difficult to find.	No as well outside the known range
Chondrula pindica	CR	LC	Snail	NW Greece. Rocky mountain slopes, between 600 and 2100 m.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Mastus athensis	EN	LC	Snail	N Greece (reported from Mt. Athos)	No as well outside the known range
Zebrina mirifica	CR		Snail	Greece: Thásos, Ipsarion mountains above Theologos	No as well outside the known range
Zebrina stokesi	CR	NT	Snail	Greece: island of Amorgós, Rocky habitats, hides in crevices.	No as well outside the known range
Zebrina zasiensis	CR	NT	Snail	Greece: Naxos.Range restricted to a small area at Zas mountain, the species is rare and consists of only few mature individuals (but its life cycle is unknown). Rocky habitats, hides in crevices.	No as well outside the known range
Assyriella rechingeri	CR	CR	Snail	known only from subfossilised shells from mountain Kali Limni in Karpathos Island	No as well outside the known range, which is limited to a number of islands
Helix godetiana	CR	EN	Snail	Greece (recent in Astipálea, Ródos, Kásos, Amorgós, Náxos, Anáfi, extinct (subfossil) in Síros, Sífnos, Kéros, Iraklia, Thíra, Síkinos, Folégandros, Páno Koufonísi, Anáfi, Náxos). Protected since 1979 on Kikládes, threatened by habitat destruction, overgrazing and introduced species Helix aspersa and Helix aperta, probably also Eobania. Critically endangered. Mediterranean shrublands (Pistacia lentiscus and Juniperus phoenicea) on limestone	No as well outside the known range, which is limited to a number of islands
Helix valentini	CR	EN	Snail	Greece: The species has only survived on 5 small islands (Telendos, Plati, Nera, Ag. Kiriaki, Safonidi).	No as well outside the known range, which is limited to a number of islands
Helicodonta gyria	CR		Snail	Greece: central Crete, 1 km W Káto Karouzianá near Kastéli.	No as well outside the known range
Sphincterochila insularis	CR		Snail	Greece: Endemic species on the island of Andikíthira, frequent only at one site. Extremely thermophilous, snails estivate on very hot and sun-exposed limestone slabs.	No as well outside the known range
Vitrina cephalonica	CR		Snail	Greece: Kefaloniá, Aenos mountain, coniferous forest in the peak region, 1570 m	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Allaegopis jonicus	EN		Snail	NW Greece: Lefkáda, possibly Ipiros. In highland habitats at 600-1000 m altitude.	No as well outside the known range
Allaegopis kerketianus	EN		Snail	N Greece: Pindos mountains. Limestone rocks in coniferous mountain forests, 1200-1900 m.	No as well outside the known range
Allaegopis meridionalis	EN		Snail	Greece: N Peloponisos, Stereá Elláda.Was found in a humid limestone rock rubble habitat at N and W exposed slopes in a gorge under shrubs and spiny herbs. Threatened:	No as well outside the known range
Allaegopis subariedeli	CR		Snail	Greece: Ipiros (Thesprotia).	No as well outside the known range
Balcanodiscus beroni	CR		Snail	N Greece: E Makedonia near Drama. Known from caves, probably a subterranean species.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Balcanodiscus carinatus	EN		Snail	Greece: Thásos, S Thráki. In rock crevices and under boulders.	No as well outside the known range
Balcanodiscus cerberus	CR		Snail	Greece: Rodopi, Maronia cave near Maronia. Restricted to a small range. Most probably subterranean, was found in a cave, more rarely outside the cave under stones and in rock crevices.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Balcanodiscus difficilis	EN		Snail	Greece: Thásos. Restricted to the E and central parts of Thásos. Occurs together with B. carinatus, but more restricted to caves where B. carinatus is not found.	No as well outside the known range
Balcanodiscus magnus	CR		Snail	Greece: Endemic of Samothraki, Paleopolis. Confined to calcareous substrate, lives on the surface in marble habitats, under stones and in leaf litter, locally frequent.	No as well outside the known range
Doraegopis boeoticus	CR		Snail	Greece: Viotia. Species was found at mountain slopes covered with herbs and shrubs, rarely near Pinus and Quercus ilex, also in rock crevices deeply inside humid soil with fine calcareous rocky substrate. Empty shells were also found at rocks and under stones.	No as well outside the known range
Doraegopis carinatus	CR		Snail	Greece: Viotia (near Skoponeri and Ritsona). Restricted to very few localities, but the animals may be locally abundant.	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Doraegopis euboeicus	CR		Snail	Greece: N Evia. Shells were found in a quarry. Sexually mature animals were found at the end of May. In April the genitalia of fully grown individuals were not well developed. Only found in one locality.	No as well outside the known range
Doraegopis parnonicus	CR		Snail	Greece: Pelopónisos - Párnonas mountains	No as well outside the known range
Doraegopis subaii	CR		Snail	Greece: Fthiotis. Was found in a moist cave at a steep limestone rocky slope of a gorge, but the species is probably not a cave snail.	No as well outside the known range
Gyralina epeirotica	CR		Snail	NW Greece: Ipiros (Pindos mountains). Presumably subterranean, but shells were found mainly at the soil surface under stones, not in caves and rock crevices.	No as well outside the known range
Gyralina ermonae	CR		Snail	Greece: Endemic species of Kérkira Island. Presumably subterranean, shells were found in a 15 cm small hole at a rock face.	No as well outside the known range
Gyralina hausdorfi	CR		Snail	Greece, SW Thessalia: Morfovoúni 25 km W of Karditsa. Was found deep inside ground litter below limestone rocks in a poorly vegetated area with few shrubs.	No as well outside the known range
Gyralina pageti	CR		Snail	Greece: Kérkira. Subterranean.	No as well outside the known range
Gyralina sattmanni	CR		Snail	Greece: N Ipiros. Subterranean, was found in moist soil samples with fine limestone substrate and plant roots under a meadow at the foot of steep limestones, in mountains at 1200-1400 m.	No as well outside the known range
Gyralina tsatsae	CR		Snail	Greece: Kérkira. Subterranean, known from caves.	No as well outside the known range
Gyralina velasensis	CR		Snail	NW Greece: Ipiros. Subterranean, found in rock crevices.	No as well outside the known range
Lindbergia beroni	CR		Snail	Greece: Endemic to the island of Thira/Santorini. Subterranean, was found in a cave.	No as well outside the known range
Lindbergia gittenbergeri	CR		Snail	Greece: Kérkira. Subterranean, only found in two caves.	No as well outside the known range
Lindbergia pageti	CR		Snail	Greece: Crete: reliably only known from near Kolimbári in NW Crete. Subterranean, often found in caves, occasionally in rock crevices.	No as well outside the known range
Lindbergia pinteri	CR		Snail	Greece: Island of Ikaria. Subterranean, found in a cave.	No as well outside the known range
Lindbergia spiliaenymphis	CR		Snail	Greece: Attiki. Most probably a strictly endemic subterranean species, limited to Mt. Panion in Attikí. Only 3 specimens have been found, and only at the type locality	No as well outside the known range
Lindbergia stylokamarae	CR		Snail	Greece: Island of Kásos. Endemic species of the island of Kasos. Abundant in the Stilokamara cave, but has not been found at another place	No as well outside the known range
Oxychilus aegopinoides	CR		Snail	Endemic species in E Crete. Akra Síderos to Zákros, and Dionisádes islands	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Oxychilus amaltheae	CR	VU	Snail	Greece: Dikteon Antron cave in the Díkti mountains, central eastern Crete, 1700 m.Probably strictly endemic, very rare, population small and should be protected (Riedel 1992: 91), no other population besides Dikteon Antron known	No as well outside the known range
Oxychilus pieperi	EN		Snail	Greece: island of Gávdos S of Crete.Lives in all parts of the island, confined to limestone basements, frequent under Pinus brutia in needle layers in open forests, under higher trees also under rotting tree trunks. Rarely in rock crevices and in the rocky habitats in the south of the island, not very frequent on sandy substrate, absent in non-calcareous units.	No as well outside the known range
Oxychilus pygmaeus	EN		Snail	Greece: Sámos.Probably subterranean, found at a S exposed hill slope providing open oak forest habitats, snails were found in rock rubble and 20-50 cm deep inside soils with limestones, associated with Cecilioides and Vitrea contracta.	No as well outside the known range
Vitrea keaana	EN		Snail	Greece (Kikládes: island of Kea)	No as well outside the known range
Vitrea olympica	CR		Snail	Greece: Mt. Olimbos. Alpine zones of Mount Olimbos, 2700 m.	No as well outside the known range
Vitrea ossaea	CR		Snail	Greece: Ossa mountains in Thessalia	No as well outside the known range
Vitrea pageti	CR		Snail	Greece: Endemic to Rodos. In organic soil litter at limestone rocks.	No as well outside the known range
Vitrea pieperiana	CR		Snail	Greece: Island of Kárpathos. known only from Volada on Kárpathos	No as well outside the known range
Vitrea pinteri	CR		Snail	Attikí: Mt. Imittos. One known locality. Was found at N exposed mountain slopes, in 800 m altitude and rocky habitats.	No as well outside the known range
Vitrea schneideri	CR		Snail	Island of Samothráki, only a few specimens found.	No as well outside the known range
Vitrea sporadica	CR		Snail	Endemic species from the island group of Skíros	No as well outside the known range
Vitrea storchi	CR		Snail	Chios, only been found at this locality. Was found in an ancient quarry among rocks.	No as well outside the known range
Zonites anaphiensis	CR	NT	Snail	Endemic species of the island of Anáfi. Limestone habitats covered with Mediterranean shrubland vegetation, particularly under Genista shrubs at N exposed slopes, probably not in the S parts of the island.	No as well outside the known range
Zonites astakidae	CR		Snail	Dodekánisa: islet of Astakida 35 km NW of Kárpathos	No as well outside the known range
Zonites embolium	CR		Snail	Dodekanisa: some islets between Astipálea and Kárpathos: Dio Adelfi (east), Megali Zafrano, Karavonisi (Karávi Nisiá), Divounia (= W Unia)	No as well outside the known range
Zonites euboeicus	EN		Snail	Greece: Evia, Niki and Agalis gorge	No as well outside the known range
Zonites invitus	CR		Snail	Endemic to the islet of Kendriko Sofrano	No as well outside

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
					the known range
Zonites kobelti	EN		Snail	Greece: Peloponisos, Taigetos or Messinia. Mountain habitats, upto 2400m.	No as well outside the known range
Zonites labiosus	EN		Snail	Mountains of N and NW Pelopónisos, Erimanthos and Mainalon	No as well outside the known range
Zonites messenicus	EN		Snail	Greece: Pelopónisos: W part of Messinia (W of river Pamisos)	No as well outside the known range
Zonites nautarum	CR		Snail	Endemic to the islet of Megalo Sofrano	No as well outside the known range
Zonites nisyrius	CR		Snail	Almost certainly an endemic species of the island of Nísiros, is expected to occur in low numbers.	No as well outside the known range
Zonites oertzeni	EN		Snail	Greece: S Evia and adjacent coast of Attikí	No as well outside the known range
Zonites sariae	CR		Snail	Greece: Dodekanisa, island of Saria	No as well outside the known range
Tegenaria schmalfussi	CR		Spider	Crete	No as well outside the known range
Histopona isolata	CR		Spider	Crete	No as well outside the known range
Tegenaria ariadnae	CR		Spider	Crete	No as well outside the known range
Tegenaria labyrinthi	CR		Spider	Crete	No as well outside the known range
Tegenaria pieperi	EN		Spider	Crete	No as well outside the known range
Dysdera laterispina	CR		Spider	Central Greece	No as well outside the known range
Dysderocrates gasparoi	CR		Spider	Corfu. Only one male specimen known. In caves.	No as well outside the known range
Harpactea corinthia	CR		Spider	Peloponnese. Only one male specimen known. In cave.	No as well outside the known range
Harpactea strinatii	CR		Spider	Peloponnese	No as well outside the known range
Harpactea vallei	EN		Spider	Crete	No as well outside the known range
Rhodera hypogea	CR		Spider	Crete	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Cryptodrassus creticus	EN		Spider	Crete	No as well outside the known range
Leptodrassus manolisi	EN		Spider	Crete	No as well outside the known range
Zelotes aerosus	CR		Spider	Crete	No as well outside the known range
Cataleptoneta sengleti	CR		Spider	Crete, caves	No as well outside the known range
Leptonetela kanellisi	CR		Spider	Central Greece	No as well outside the known range
Icariella hauseri	CR		Spider	Icaria Island	No as well outside the known range
Lepthyphantes beshkovi	EN		Spider	Crete	No as well outside the known range
Lepthyphantes kratochvili	CR		Spider	Crete	No as well outside the known range
Savignia naniplopi	CR		Spider	Crete	No as well outside the known range
Walckenaeria christae	EN		Spider	Attika, Central Greece	No as well outside the known range
Nemesia caranhaci	CR		Spider	Crete	No as well outside the known range
Nemesia daedali	EN		Spider	Crete	No as well outside the known range
Nesticus beshkovi	CR		Spider	Crete	No as well outside the known range
Nesticus henderickxi	CR		Spider	Crete	No as well outside the known range
Hoplopholcus minotaurinus	EN		Spider	Crete, caves	No as well outside the known range
Pholcus creticus	EN		Spider	Crete, caves and under stones.	No as well outside the known range
Segestria sbordonii	CR		Spider	Crete	No as well outside the known range
Zodarion musarum	CR		Spider	Central Greece	No as well outside the known range
Platanosphaera ariadnae	CR		Woodlouse	Crete	No as well outside

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
					the known range
Platanosphaera cavernarum	CR		Woodlouse	Crete	No as well outside the known range
Platanosphaera kournasensis	CR		Woodlouse	Crete	No as well outside the known range
Schizidium atticum	CR		Woodlouse	Greek mainland	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Schizidium beroni	CR		Woodlouse	Greek mainland, possibly Santorini	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Schizidium delmastroi	CR		Woodlouse	Crete	No as well outside the known range
Schizidium graecum	CR		Woodlouse	Sporades Islands	No as well outside the known range
Schizidium levithae	CR		Woodlouse	Dodecanese Islands	No as well outside the known range
Schizidium paragamiani	CR		Woodlouse	Aegan Islands	No as well outside the known range
Schizidium polyvotisi	CR		Woodlouse	Dodecanese Islands	No as well outside the known range
Schizidium tinum	CR		Woodlouse	Cyclades Islands	No as well outside the known range
Trichodillidium mylonasi	CR		Woodlouse	Crete	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Arnadillidium bensei	EN		Woodlouse	Peloponnese Peninsula, mainland Greece	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Trichodillidium malickyi	EN		Woodlouse	Cyclades Islands	No as well outside the known range
Porcellionides cavernarum	CR		Woodlouse	Crete	No as well outside the known range
Kithironiscus paragamiani	CR		Woodlouse	Kythira Island	No as well outside the known range
Cordioniscus andreevi	CR		Woodlouse	Peloponnese Peninsula, mainland Greece	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Cordioniscus antiparosi	CR		Woodlouse	Cyclades Islands	No as well outside the known range
Cordioniscus graecus	CR		Woodlouse	Central Greece	No as well outside the known range
Cordioniscus graevei	CR		Woodlouse	Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Cordioniscus kalimnosi	CR		Woodlouse	Dodecanese Islands	No as well outside the known range
Cordioniscus kithnosi	CR		Woodlouse	Cyclades Islands	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Cordioniscus paragamiani	CR		Woodlouse	Peloponnese Peninsula, mainland Greece	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Cordioniscus vandeli	CR		Woodlouse	Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Acteoniscus petrochilosi	CR		Woodlouse	Central Greece	No as well outside the known range
Alistratia beroni	CR		Woodlouse	Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Alpioniscus epigani	CR		Woodlouse	Central Greece	No as well outside the known range
Alpioniscus giurensis	CR		Woodlouse	Sporades Islands	No as well outside the known range
Alpioniscus henroti	CR		Woodlouse	Peloponnese Peninsula, mainland Greece	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Alpioniscus matsakisi	CR		Woodlouse	Euboea Island	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Alpioniscus thracicus	CR		Woodlouse	Thrace - Geographical region spanning Greece, Bulgaria and Turkey	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Buddelundiella sporadica	CR		Woodlouse	Sporades Islands	No as well outside the known range
Graeconiscus caecus	CR		Woodlouse	Crete	No as well outside the known range
Graeconiscus dryopeorum	CR		Woodlouse	Euboea Island	No as well outside the known range
Graeconiscus guanophilus	CR		Woodlouse	Crete	No as well outside the known range
Graeconiscus kournasensis	CR		Woodlouse	Crete	No as well outside the known range
Graeconiscus liebegotti	CR		Woodlouse	Sporades Islands	No as well outside the known range
Graeconiscus paxi	CR		Woodlouse	Ionian Islands	No as well outside the known range
Graeconiscus strouhali	CR		Woodlouse	Crete	No as well outside the known range
Graeconiscus tricornis	CR		Woodlouse	Ionian Islands	No as well outside the known range
Graeconiscus xerovunensis	CR		Woodlouse	Epirus, NW Greece	No as well outside the known range
Hyloniscus marani	CR		Woodlouse	Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Trichoniscus beschkovi	CR		Woodlouse	Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Potamon rhodium	EN	NT	Crab	Found in the Greek islands of Ikaria,Tilos, Kos, Samos, and Rhodes in the southern Aegean Sea. It is also found in a number of localities in western Anatolia in Turkey adjacent to these Greek islands along the coastal plain west of the Taurus Mountains in Mugla, Aydin, Izmir, and Manisa Provinces.	No as well outside the known range
Dignathodon pachypus	CR		Centipede	Island of Leros	No as well outside the known range
Lithobius cretaicus	CR		Centipede	Endemic to Crete, lives in caves	No as well outside the known range
Lithobius nudus	CR		Centipede	Endemic to Greece, mainland and one island of the Cyclades archipelago. Phyrganic habitats.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Lithobius catascaphius	EN		Centipede	3 Islands in theCyclades archipelago, 1 in the Dodecanese	No as well outside the known range
Cordulegaster helladica	CR	EN	Dragonfly	Greek Goldenwing. Endemic to southern Greece and some islands.	No as well outside the known range
Chorthippus lacustris	CR	CR	Grasshopper	Endemic NW Greece, wetlands	No as well outside the known range
Erebia cassioides	EN	LC	Butterfly	Common Grassy Ringlet. One Location in far north Greece near the border with FYRM, found at altitudes between 1,600-2,600 m.	No as well outside the known range
Glaucopsyche (Turanana) endymion	CR		Butterfly	Odd-spot blue. Mountains in Peloponnese	No as well outside the known range
Polyommatus orphicus	CR	VU	Butterfly	One locality, Northern Greece on the border with Bulgaria	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Plebeius (Agriades) pyrenaica	EN		Butterfly	Gavarnie Blue. Two localities on Mt. Orvilos, in the north	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Polyommatus andronicus	EN		Butterfly	Phalakron Blue. NW Rhodopi Moutnains	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Polyommatus eleniae	EN		Butterfly	Mt. Falakro and surrounding areas.	Given the species distribution/habitat preferences, it is considered highly unlikely that the project area would support ≥ 10% of the national population of this species
Polyommatus (Agrodiaetus) iphigenia	EN		Butterfly	Chelmos Blue. Three localities on Mt. Chelmos, in the Peloponnese	No as well outside the known range
Polyommatus menelaos	EN		Butterfly	Taygetos Blue. Three localities on Mt. Taygetos, in the Peloponnese	No as well outside the known range
Saturnia spini	CR		Butterfly	Sloe Emporer Moth. One Location in the north	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Erebia epiphron	EN	LC	Butterfly	Moutain Ringlet. Two mountain areas in far northern Greece, area covering Lake Ohrid and the northern half of the Large Prespa Lake (Albania and FYRM)	No as well outside the known range

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Erebia rhodopensis	EN	LC	Butterfly	Nicholl's Ringlet. Occurs very locally in the mountains of southeast Europe: Serbia, western FYRM, southeast and central Bulgaria, north of Greece. Range includes the mountainous transboundary region between Albania and Greece, found at altitudes 1800-2600 m on alpine and sub-alpine grasslands (40%), coniferous woodland (40%) and mesophile grasslands (40%). Population assessed by IUCN as stable, not severely fragmented and not facing major threats at a European level	Insufficient data available but highly unlikely that any DMUs in the project area (corresponding to the known range within the transboundary region) would support ≥ 10% of the national or regional population of this species given its documented occurrence in multiple areas.
Hemaris tityus	EN		Butterfly	Narrow-bordered Bee Hawk-moth. 3 Localities in Greece	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Maniola megala	EN	LC	Butterfly	Large Meadow Brown. Found in the coastal provinces of southern Turkey; in Greece the distribution is limited to the island of Lesbos	No as well outside the known range
Proserpinus proserpina	EN	DD	Butterfly	Willowherb Hawkmoth. Two populations in Greece - one on Mt. Taygetos and the island of Samos.	No as well outside the known range
Pseudochazara amymone	EN		Butterfly	Brown's Graling. Found in 4 localities, in Epirus and Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species

Latin	Greek RDB cat.	IUCN cat.	Description	Habitat/Distribution	Screened in to CHA?
Pseudochazara geyeri	EN		Butterfly	Grey Asian Grayling. Two Mountainous areas in the north	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Pseudochazara orestes	EN		Butterfly	Dil's Grayling. Drama prefecture, in the north	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species
Sphinx ligustri	EN		Moth	Privet Hawk. 5 localities in Chalkidiki, in the north.	No as well outside the known range
Rhysodes sulcatus	EN		Beetle	3 mountainous areas, in Thessaly and Macedonia	Insufficient data available but highly unlikely that the project area would support ≥ 10% of the national population of this species

Worked example - Grey wolf

Four DMUs for grey wolf, *Canis lupis*, have been identified in Albania, with a further seven in Greece which form likely parts of wolf pack territories. These are listed in the table below and mapped in Figure 31 and Figure 32 for Albania and Greece respectively.

Wolf DMUs in Albania and Greece

RSK ID	Approximate area in km^2	Corresponding KPs*
Albania = 57.02 km^2		
2	1.242	21 - 23
3	6.291	62 - 66
4	28.690	70 - 79
5	20.829	119 - 129
Greece = 855 km^2		
A	44	28 – 32
B	151	47 - 62
C	147	187 - 194
D	99	299 - 314
E	267	430 - 453
F	91 (160/7*4)	498 - 502
H	56 (180/16*5)	544 - 549
Total: approximately **912 km²**		

Population data is available from the *Action Plan for the conservation of the Wolf in Europe* (2000), *Large Carnivores in Albania* (2004), *Status, Management and Distribution of Large Carnivores in Europe* (2012) and *Recovery of large carnivores in Europe's modern human-dominated landscapes* (2014):

- global estimates of European wolves - c. **12,000** within an area of more than 798,300 km²
- Balkan region estimates – **3,900** wolves in the Dinaric-Pindos complex (distributed over approximately 331,400 km²)
- national estimates – Albania – **200 – 250** wolves distributed over approximately 7,000 km²
- national estimates – Greece - **795** (95%CI 717-875) wolves distributed over approximately 61,000 km² (data provided by TAP's in-country expert).

Number of wolves potentially supported in the DMUs in Albania

No official density data could be found at this stage of the review. However, using the population data and the predicted amount of suitable habitat from the 2014 study gives

a density of 0.03 wolves per km². This density figure would give a (crudely) predicted wolf population of 1.7 wolves in the DMUs, which is not considered appropriate.

Territory size is dependent on several variables, but the 2000 Action Plan gives average territory sizes of 100 to 500 km² in Europe (compared to 80 – 2,500 km² in North America). Given the size of the DMUs, even in combination this would not seem to constitute a whole territory for a wolf pack. Therefore, this is also not an appropriate method to use when calculating the potential number of wolves supported by the DMUs.

The data collected for the 2014 study relating to wolf pack sizes varies from three to eight, depending on which country is reviewed. However, the 2000 Action Plan gives an average pack size of seven animals in Europe. Expert opinion was sought regarding pack sizes in Albania to determine an appropriate figure. It was noted that, while an average pack size of seven animals might hold true on a continental scale, the situation in Albania (and wider in the Balkans) is considerably different. Prey abundance/food availability is considered to be a main factor affecting pack sizes among wolves, and it is generally assumed that prey species are dwindling in Albania due to heavy poaching in the past. In addition, livestock cannot be considered a steady food source due to the constant protection measures employed by Albanian shepherds. Given these considerations, the average pack size is assumed to be below the continental average in this region. This assumption is supported by field observations and wolf sightings reported by local people, both of which revolve around two to four animals per pack. Photos/videos from PPNEA's camera-trapping monitoring has never managed to prove a pack bigger than two individuals in the period 2009-2016 in Albania.

Although no solid data exist for pack sizes in Albania, somewhat more reliable estimates come from Croatia. For 2013, an average of 177 wolves distributed among 49 packs was recorded. This gives a figure of 3.62 wolves/pack. Given the geographical proximity, and similarities in habitat and prey species, it was considered appropriate to use this figure for the pack sizes of wolves in Albania as well.

Given the fact that there are four discrete DMUs, one must consider that field signs indicated at least four different social groups (agreed in consultation with the local expert). Therefore, using the pack-size figure above, it would be more appropriate to consider the DMUs supporting 15 wolves.

Fifteen wolves equal:

- 0.1% of the European population
- 0.4% of the Dinaric-Pindos complex population
- 6 - 8% of the Albanian population

Number of wolves potentially supported b ythe DMUs in Greece

The 2014 study referenced above states '*Wolf territories estimated with satellite telemetry are large (400-600 km^2) conforming well to estimates undertaken with simulated howling surveys. Average wolf densities were estimated to be about two individuals per 100 km^2 (Iliopoulos et al, 2005, 2008, 2008b, 2009b).*

- using the density figures above, this would relate to 17 wolves in the DMUs

- using the home-range size stated above (500 km^2 average), this would equate to 1.7 territories. If average pack size is taken as seven animals, this would result in 12 wolves in the DMUs.

As there are seven discrete DMUs within Greece, it is not unreasonable to assume that the route crosses seven separate pack territories. If the average pack size is seven animals, this would equate to 49 wolves. In reality, the minimum number of wolves physically recorded during the TAP camera-trapping studies was 34 wolves (although it must be noted that this is a minimum and it should be assumed that not all pack animals were recorded during the survey).

Using the figures above, between 12 (**1.5%** of the national population) and 49 (**6%** of the national population) would be supported by the DMUs in Greece.

Tier of critical habitat for grey wolf

The figures above indicate that grey wolf does not trigger critical habitat.

APPENDIX 4
MARINE BIODIVERSITY FEATURES SCREENED OUT OF THE CRITICAL HABITAT ASSESSMENT

Marine features screened out of the critical habitat analysis on the basis of no reasonable pathway for impacts are listed in the table below.

Species / Habitat (and information relevant to CHA)	Rationale for screening out
Molluscs & crustaceans	
Only a single mollusc species, the dwarf mussel (*Mytilaster minimus*), is assessed as CR on the Red List of Albania. This hard-substrate species has a wide distributional range across the Mediterranean and eastern Atlantic, it is small (20mm) and difficult to record (*Gofas, 2004*). The presence of a single individual cannot be ruled out, particularly at the Italian coast where hard substrate is more prevalent in the coast and nearshore DMUs. As a precautionary estimate this does qualify as Tier 2 critical habitat, as a minimum under (a) '*Habitat that supports the regular occurrence of a single individual of a CR species'.* A large number of other mollusc species are assessed as EN or VU under the Red List of Albania. In addition to two species of crustacean, the European lobster (*Homarus gammarus*, VU on the Red List of Albania) and the spiny lobster (*Palinurus elephas*, VU on the global Red List), these may also qualify as Tier 2 habitat under a) '*habitat supporting…regionally important concentrations of a CR, EN or VU species* and/or (b) *'Habitat of significant importance to CR or EN species that are wide-ranging and/or whose population distribution is not well understood'*	As noted in the CHA, there is no reasonable pathway for impacts from either temporary suspended sediment or underwater noise to occur to either molluscs or crustaceans. As such, these taxa were not considered further in the CHA process. Independent assessment by the Marine Life Information Network (MarLIN) to increases in suspended sediment for several species of commercially important crustaceans A number of shellfish species (including brown crab, brown shrimp, a swimming crab) are reported as ranging from 'not sensitive' to 'low' sensitivity (*MarLIN, 2012, various*). Independent assessment by the Marine Life Information Network (MarLIN) to increases in suspended sediment for three species of commercially important molluscs report mussels and cuttlefish as being 'not sensitive' (*Wilson, 2008*; *Tyler-Walters 2008*) and king scallops of 'low' sensitivity (*Marshall & Wilson 2008*). Anthropogenic noise has been shown to negatively impact development and survival of larvae of a mollusc species (*Nedelec et al, 2014*); however, there is no evidence that significant, population-level impacts could feasibly occur from temporary sources of noise/vibration, as is planned for construction of the cofferdam.

	While recent laboratory experiments have demonstrated that some types of anthropogenic noise and vibration has the potential to affect the behaviour of crustaceans, such as shore crabs (*Wale et al., 2013*), and hermit crabs (*Roberts et al., 2016*); and the immune responses of spiny lobster (*Celi et al.,2015*), there is no evidence that significant, population-level impacts could feasibly occur from temporary sources of noise/vibration as is planned for construction of the cofferdam.
Jawless fish (lampreys)	
Two species of lamprey may occur in the project AOI, sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*). Both species are classed as CR on the Red List of Italy, and Least Concern in the global Red List. The Albania Red List assesses river lamprey as EN, and sea lamprey as VU. In the absence of any detailed information on the importance of the southern Adriatic to these two species, it is likely that a single individual of one or more of either species could occur in the three DMUs. As a precautionary estimate, each DMU does qualify as Tier 2 critical habitat under (d) *'Habitat of significant importance to CR, EN or VU species that are wide-ranging and/or whose population distribution is not well understood'.*	As noted in the CHA, there is no reasonable pathway for impacts from either temporary suspended sediment or underwater noise to occur to lampreys. As such, these taxa were not considered further in the CHA process. Most species will be tolerant of naturally high background levels, and/or mobile enough to leave an affected area. The few available MarLIN assessments of fish sensitivity (i.e. a skate species, two goby species and seahorses) to suspended sediment report either a 'very low' sensitivity, or that this impact is 'not relevant' to the species in question (*MarLIN, 2012, various*). Little data is available on lamprey sensitivity, but given their auditory biology and very limited behavioural repertoire it is possible that sound is not relevant to them (*Popper, 2005*).
Cartilaginous fishes (sharks & rays)	
A number of Mediterranean species known to, or likely to occur in the Adriatic are currently classified as CR at either national (Italy, Albania), regional (Mediterranean) or global IUCN Red List assessment level. These include: • global: smoothback angel shark (*Squatina oculata*), angel shark (*Squatina squatina*), common skate (*Dipturus batis*) • regional: small-tooth sand tiger shark (*Odontaspis ferox*), great white shark (*Carcharodon carcharias*), spiny butterfly ray (*Gymnura altavela*), white skate (*Rostroraja alba*), porbeagle (*Lamna nasus*), shortfin mako (*Isurus oxyrinchus*) bullray (*Pteromylaeus bovinus*), blue shark (*Prionace glauca*), smooth hammerhead	As noted in the CHA, there is no reasonable pathway for impacts from either temporary suspended sediment or underwater noise to occur to sharks and rays. As such, these taxa were not considered further in the CHA process Most species will be tolerant of naturally high background levels, and/or mobile enough to leave an affected area. The few available MarLIN assessments of fish sensitivity (i.e. a skate species, two goby species and seahorses) to suspended sediment report either a 'very low' sensitivity, or that this impact is 'not relevant' to the species in question

(*Sphyrna zygaena*), sand tiger shark (*Carcharias taurus*), gulper shark (*Centrophorus granulosus*), angular rough shark (*Oxynotus centrina*) • national Italy: common thresher shark (*Alopias vulpinus*), tope (*Galeorhinus galeus*), smoothback angel shark, angel shark, spurdog (*Squalus acanthias*), common guitarfish (*Rhinobatos rhinobatos*), white skate • national Albania: basking shark (*Cetorhinus maximus*) Due to their relatively large size and mobile nature it is highly likely that at least one individual of one or more of these species could occur in one or more of the DMUs. This therefore does qualify as Tier 2 critical habitat, as a minimum under (a) '*Habitat that supports the regular occurrence of a single individual of a CR species'.* A large number of other shark and ray species are variously assessed as EN and/or VU and may also qualify under (b) *'Habitat of significant importance to CR, EN or VU species that are wide-ranging and/or whose population distribution is not well understood'.*	(*MarLIN, 2012, various*). As hearing non-specialists with no swim bladder, elasmobranchs such as skate species have been considered to be of 'low' sensitivity to underwater noise (*Nedwell et al., 2004*). Shark and ray species are large and usually highly mobile, capable of swimming away from temporary sources of disturbance.

Presence of sperm whales and causes of strandings in the Adriatic Sea

In the Mediterranean Sea, the sperm whale *Physeter macrocephalus* is one of eight regular cetacean species (*Notarbartolo di Sciara, 2002*). Preferred sperm whale habitat in the Mediterranean Sea consists mostly of deep continental slope waters (*Azzellino et al. 2008*, *Praca & Gannier 2008*).

The shallow waters of the northern and central Adriatic Sea do not represent a suitable habitat for this deep-diving species (*Bearzi et al. 2004*): sightings are absent/rare (*Bearzi et al. 2009*; *Bearzi et al. 2004*, *Fortuna 2006, Genov et al. 2008*) and the area is mostly characterized by death and stranding episodes. Between 1555 and 2011, in fact, a total of 36 validated mortality events have been listed in the Adriatic Sea, involving 68 animals (*Bearzi et al. 2011*).

Spiridion Brusina in particular, professor of zoology and director of the Zoological Museum in Zagreb, noted at the end of the 19th century, that some parts of the upper Adriatic Sea act as 'sperm whale traps', suggesting that sperm whales entering the Adriatic Sea move north along the eastern coast, where waters are deeper, following the main northbound circulation. Then, trying to exit the cul-de-sac following the southbound stream along the Italian coast, they often strand in shallow waters (*Brusina, 1889; Bearzi et al., 2011*).

The following table provides an analysis of the data on sperm whales stranding recorded along the Adriatic coast of Apulia and Abruzzo Regions in the last 50 years, drawn from the Stranding Database of the Coordinating Centre for collection of Marine Mammals Stranding Data (*CIBRA - Centro Interdisciplinare di Bioacustica e Ricerche Ambientali, Università degli Studi di Pavia, 2017*).

Date	N. Animals	Body	Location	Region	Species
12/09/2014	7	CERT - CETACEANS STRANDINGS EMERGENCY RESPONSE TEAM	VASTO, CHIETI	ABRUZZO	*Physeter macrocephalus*
10/12/2009	7	VARI ENTI	ISOLA VARANO, FOGGIA	PUGLIA	*Physeter macrocephalus*
29/09/2014	1	CAPITANERIA DI PORTO	PORTO CAVALLO, POLIGNANO A MARE, BARI	PUGLIA	*Physeter macrocephalus*

Despite stranding of cetaceans (single or mass) are not new (multiple live strandings of sperm whales in the Adriatic Sea have been documented since 1584, *Bearzi et al. 2011, Pierce et al. 2007*), the causes remain largely unknown. Scientists have identified a number of contributing factors, including illness and injuries, storms, predator attacks and even toxins from algae, just to name a few. Dramatic increases in the number of strandings in an area are typically connected to an outbreak of infection, such as red-tide or moribillivirus (*IAGC, 2014*). Moreover *Whitehead (2003)* noted that whales stranding *en masse* are not brought to the beach independently because of some common external factor: strandings clearly have a strong social component, which may prompt healthy animals to follow sick or confused ones onto a beach ('doing as the group does'; *Whitehead 2003*).

Referring to the main multiple stranding (see previous Table) occurred recently (2009 and 2014), involving in both case 7 sperm whales, here below are presented the main conclusions that scientific studies have carried out.

Postmortem investigation of the sperm whales stranded along the Gargano coast (Apulia Region) in December 2009, carried out by the "Dipartimento di Sanità Pubblica, Patologia Comparata e Igiene Veterinaria" of the University of Padova, the results of which have been published on the website of the Italian Ministry of the Environment and Protection of Land and Sea (MATTM, Website), conclude that the stranding can be attributed to a multifactorial condition: "*The subjects were probably in the Ionian Sea, presumably at low latitudes. The animals entered the Adriatic Sea and here the complicity of ecological factors (depth), biological (group inexperience), social (aggregation), together with pathological and toxicological findings (alteration of the sensory and immunocompromised of chemical origin), impossible to orientate and find a way out of this blind alley. In this context, the role of weather-climatic conditions remains to be considered. During the journey, lasting at least a week, the animals did not feed, with a potential movement of the lipid reserves and, potentially, any lipophilic pollutants present in adipose tissues; this situation has obviously exacerbated the general health conditions of individuals; it is still not clear why these specimens entered (or have fled) in the Adriatic Sea. Excluding any correlations with solar cycles, alterations in the geomagnetic field and lunar phases (as reported in the literature), some natural and man-made factors remain to be investigated, at least 7 to 20 days before the event in the Ionian Sea. In particular, any water temperature alterations should be considered, with a shift of the prey to the water column. Other natural factors to consider are earthquakes, as a causal event of an escape and not as triggering an embolic condition. The only one that appears compatible with the previously listed factors seems to be that on November 26, 2009 (magnitude 5.1 in the Richter scale) in the Hellenic Trench, where sperm whales live and are usually sighted, including 2 of those stranded.*"

Moreover, the absence of embolic conditions allows to exclude as a causal agent of the stranding for their direct impact, sonar or prospecting activities in the Adriatic. These may possibly be considered as a potential disturbance factor and / or alteration of sperm whales behavior.

Postmortem investigation of the sperm whales stranded (3 adult females and 1 male fetus carried by the largest female, 4 other animals were refloated) along the coast of Vasto (Abruzzo Region) in September 2014, (*Mazzariol et al. 2017*), strongly suggest a viremic condition in all 4 whales, in an early development stage, that can reasonably cause a general discomfort condition. DMV infection (Dolphin MorbilliVirus) in this event seems to be one of the factors that could explain the whales' northward trajectory into the Adriatic Sea, which is known to be a cul-de-sac for this species, representing, therefore, a possible additional factor, with the presence of chemical pollutants (methylmercury), to the stranding and subsequent death of the examined animals.

Based on the historical data on the presence and stranding of sperm whales in the Adriatic Sea and on the specific investigations carried out for the last two mass stranding events in middle and southern Adriatic, it is possible to conclude that the occurrence of such stranding may results from the combination of a number of factors for example pollution, infections, meteorological and oceanographic events, possible seismic events, noise pollution etc.

APPENDIX 5
SCREENING OF PROTECTED SITES AND DESIGNATED AREAS

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Greece						
Dasos Dadias - Soufli	KP6.1 690576 , 4537384 3.4km from pipeline	Prostatevomeni periochi Dasous Dadias-Leukimis-Soufliou (GR004)	Important Bird and Biodiversity Area	42,370 ha This is a very important site for breeding and wintering raptors with 36 species recorded. Breeding birds include eight of the 21 species that are restricted in Europe to the Mediterranean biome.	Geoffroy's bat (*Myotis emarginatus*), Mediterranean horseshoe bat (*Rhinolophus euryale*), Greater horseshoe bat (*Rhinolophus ferrumequinum*), Lesser horseshoe bat (*Rhinolophus hipposideros*) Golden jackal (*Canis aureus*) Four lined snake (*Elaphe quatuorlineata*), Mediterranean spur-thighed tortoise (*Testudo graeca*), yellow bellied toad (*Bombina variegata*), *Triturus karelinii* 135 bird species including Lesser spotted eagle (*Clanga pomarina*), Eagle owl (*Bubo bubo*), Montagu's harrier (*Circus pygargus*), Long legged buzzard (*Buteo rufinus*), Black stork (*Ciconia nigra*), Syrian woodpecker (*Dendrocopos syriacus*), Booted eagle (*Hieraaetus pennatus*) Marsh Fritillary (*Euphydryas aurinia*)	Critical Habitat triggered by golden jackal DMU which overlaps the protected area As per the flowchart in Section 2.1.4, the project is too far away from this protected area (> 2 km) for it to be screened in to the assessment for amphibians and reptiles. The portion of the protected area within 5 km of the project is predominately cultivated alluvial plains and unlikely to contain caves suitable for congregatory bats.
	KP5.8 690854 , 4537464 3.4km from pipeline	DASOS DADIAS - SOUFLI (GR1110002)	Special Protection Area (Birds Directive)	411km^2. The area is an important biotope for many reptiles and birds as a result of site location, it is a cross road for migrating birds as well as an ideal nesting point. This is a very important site for breeding and wintering raptors with many species recorded.		
	KP5.8 690854 , 4537464 3.4km from pipeline	Vouna Evrou (GR1110005)	Site of Community Importance (Habitats Directive)	424km^2 site containing 10 protected habitats and 77 protected species. The site is a submountainous hilly area with intense and diverse landscapes, part of River Evros watershed crosses the area.		
	KP8.3 688506 , 4536894 3km from pipeline	Ethniko parko dasous Dadias - Lefkimmis - Soufliou	National Park	432km^2 designation to protect fauna, flora, habitats and landscapes		
	KP8.3 688506 , 4536894 8.1km from pipeline	Dadia-Lykofos-Lefkimmi	Wildlife Refuge	73km^2 part of 432km^2 designation to protect flora, fauna, habitats and landscape		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
South forest complex of Evros prefecture	KP13.6 684368 , 4534226 0km from pipeline	Notio Dasiko Symplegma Nomou Evrou (GR005)	Important Bird and Biodiversity Area	71800 ha site containing forest complex at the south-eastern end of the Rodopi mountain. It is characterized by low hills covered with Quercus, Caprinus, Fraxinus and Acer woodland and scrub. Small wetlands are also present.	Golden jackal White-tailed eagle (*Haliaeetus albicilla*), Egyptian vulture (*Neophron percnopterus*), Cinerous vulture (*Aegypius monachus*), Short-toed eagle (*Circaetus gallicus*), Long-legged buzzard, Lesser spotted eagle, Greater spotted eagle (*Aquila clanga*), eastern imperial eagle (*Aquila heliaca*), Golden eagle (*Aquila chrysaetos*), Booted eagle, Lesser kestrel (*Falco naumanni*), Eagle owl and masked shrike (*Lanius nubicus*).	Critical Habitat triggered by DMUs for greater spotted eagle, lesser spotted eagle, booted eagle and black kite which overlap the protected area
	KP21.7 677916 , 4530640 0km from pipeline	NOTIO DASIKO SYMPLEGMA EVROU	Special Protection Area (Birds Directive)	293km^2 site designated for the 125 bird species it supportscomprising of a forest complex at the southeastern end of the Rodopi mountain. It is characterized by low hills covered with Quercus, Caprinus, Fraxinus and Acer woodland and scrub. Fagus forest dominates the northern area, Pinus forest and plantations occur in the south.		
	KP16.1 682515 , 4532859 0km from pipeline	Pylaias - Kavissou - Ferron Dimou Ferron	Wildlife Refuge	9km^2 designation to protect flora, fauna, habitats and landscapes		
	KP25.9 673799 , 4530455 4.4km from pipeline	Nipsas - Drymou Dimou Traianoupolis	Wildlife Refuge			
	KP50.7 653335 , 4531499 0km from pipeline	Kirki Dimou Alexandroupolis	Wildlife Refuge	14km^2 designated to protect flora, fauna, habitats and landscapes		
	KP52.3 652677 , 4532828 0km from pipeline	Kirki Alexandroupolis	Game breeding station	5km^2 Statutes under sectorial, particularly forestry, legislative and administrative acts providing an adequate protection relevant for fauna, flora and habitat conservation.		
Delta Evrou	KP34.8 666769 , 4526642 1.7km from pipeline	Evros delta	Ramsar Site, Wetland of International Importance	9,267ha site within the river delta, significant reed habitat for birds. Shallow seas, brackish lagoons, freshwater lakes, mudflats, saltmarsh, some freshwater marsh supporting important bird and fish habitats. 8,930ha of Ramsar overlaps with IBA.	Yellow bellied toad (*Bombina variegata*), Italian crested newt (*Triturus cristatus*), Four lined snake, Mediterranean spur-thighed tortoise, Fire bellied toad (*Bombina bombina*), *Triturus karelinii* Pygmy comorant (*Phalacrocorax pygmeus*), Great white pelican (*Pelecanus onocrotalus*), Dalmatian pelican (*Pelecanus crispus*), Greater spotted eagle, Ferruginous	Critical Habitat triggered by DMU for fire-bellied toad and Dalmatian pelican, which overlap the protected area. There is also no wetland habitat present within 2 km of the project, which is likely to exclude the amphibians and reptiles.

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP36.6 664990 , 4526736 2.9km from pipeline	Delta Evrou (GR006)	Important Bird and Biodiversity Area	A coastal wetland complex formed by the delta of the River Evros on the Greece/Turkey border. A very important site for breeding, passage and wintering waterbirds, raptors and passerines.	duck (*Aythya nyroca*), White-headed duck (*Oxyura leucocephala*), White-tailed eagle, Eastern imperial eagle, Lesser kestrel, Audouin's gull (*Larus audouinii*), Moustached warbler (*Acrocephalus melanopogon*), Grey heron (*Ardea cinerea*), Squacco heron (*Ardeola ralloides*), Black stork, Purple heron (*Ardea purpurea*), Spotted Crake (*Porzana porzana*), Montagu's Harrier Twait shad (*Alosa fallax*)	
	KP36.6 664990 , 4526736 2.9km from pipeline	DELTA EVROU	Special Protection Area (Birds Directive)	126km^2 the site protects 244 species, 229 of which are birds. Of great importance for birds occurring in the delta are the reed bed formations dominated by Phragmites australis, Scripus maritimus, Typha angustifolia, T. latifolia, Schoenoplectus lacustris etc., fringing lagoons and freshwater canals and in stagnant waters or slowly flowing of fluctuating depths.		
	KP36.6 664990 , 4526736 2.9km from pipeline	Delta Evrou Kai Dytikos Vrachionas	Site of Community Importance (Habitats Directive)	99km^2 the site protects 14 habitats and 217 species. Delta Evrou is one of the most important wetlands in Greece and Europe containing a diversity of habitats in a that support a diverse avifauna. It is a wintering or intermediate station for migratory birds but also as a breeding site for rare and endangered birds species.		
	KP35.9 665669 , 4526700 2.8km from pipeline	Ethniko ygrotopiko parko delta Evrou	National Park	129km2 designated to protect flora, fauna, habitats and landscapes		
	KP36.9 664653 , 4526754 3.9km from pipeline	Delta Evrou Dimon Tra¿anoupolis Ferron	Wildlife Refuge	55km2		
Ismaris-Vosvozis-Filiouris Catchment	KP59.1 646805 , 4531879 0km from pipeline	Ismaris-Vosvozis-Filiouris (2080009560)	Freshwater Key Biodiversity Area	Site includes the freshwater Ismaris Lake and two lowland rivers and the upper part of both rivers.	European eel (*Anguilla anguilla*), thick shelled river mussel (*Unio crassus*), wild common carp (*Cyprinus carpio*)	Critical habitat triggered by DMU for European eel and thick-shelled river mussel within this KBA.

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Potamos Filiouris	KP95.7 617261 , 4546832 6.9km from pipeline	Limni Ismarida (Mitrikou) (GR010)	Important Bird and Biodiversity Area	The site holds 20,000 waterbirds in winter, on a regular basis (including common shelduck (Tadorna tadorna) 2,500, Eurasian wigeon (Anas penelope) 6,000, Eurasian teal (Anas crecca) 3,500, mallard (Anas platyrhynchos) 10,000, pied avocet (Recurvirostra avosetta) 2,500, black-headed gull (Larus ridibundus) 3,000).	Four lined snake , Mediterranean spur-thighed tortoise, *Triturus karelinii*, Yellow bellied toad Dalmatian pelican , Ferruginous duck , Pygmy cormorant , Squacco heron	Critical habitat triggered by DMU for four-lined snake and Dalmatian pelican. Waterbirds likely to be found in the wetlands associated with the Limni Ismarida (Mitrikou) are unlikely to access the project working areas as the site is not a wetland
	KP77 634396 , 4543526 0km from pipeline	Potamos Filiouris	Site of Community Importance (Habitats Directive)	21km^2 10 species, 6 habitats. The site is a deep sided valley that supports birds of prey and is an important feeding ground for vultures it also supports breeding bird species.		
	KP95.7 617261 , 4546832 6.4km from pipeline	Mavromatio-Limni Mitrikou	Wildlife Refuge	19km^2 Designation types used with the intention to protect fauna, flora, habitats and landscapes		
Filiouri river valley and east Rodopi mountains	KP89.9 622952 , 4547573 6.6km from pipeline	Kilada Filiouri kai Anatoliki Rodopi (GR008)	Important Bird and Biodiversity Area	77,000 ha This is an important site for breeding and passage raptors and species associated with forest and scrub.		
	KP92.7 620206 , 4547417 8.8km from pipeline	Nymfaia Dimou Komotinis	Wildlife Refuge	5km^2 designation to protect fauna, flora, habitats and landscapes		
Chatisio (Kosmiou)	KP98.5 614880 , 4548227 0km from pipeline	Chatisio (Kosmiou)	Wildlife Refuge	13km2 designated to protect flora, fauna, habitats and landscape		
Vistonis Catchment	KP103.3 610463 , 4550156 0km from pipeline	Vistonis (2080009581)	Freshwater Key Biodiversity Area	Vistonis river catchment, including Lake Vistonis.	Vistonis shemaja (*Alburnus vistonicus*), Shad (*Alosa vistonica*)	Critical Habitat triggered by DMUs for European eel and *Alburnus* vistonicus, which overlaps the protected area
Kompsatos valley	KP124.6 590182 , 4552034 0.4km from pipeline	Kilada Kompsatou (GR009)	Important Bird and Biodiversity Area		Golden jackal, Grey wolf (*Canis lupus*). Four lined snake, Mediterranean spur-thighed tortoise, *Triturus karelinii*, yellow bellied toad, *Triturus carnifex* 42 bird species including Levant sparrowhawk (*Accipiter brevipes*), Black stork, Short-toed eagle, Syrian	Critical Habitat triggered by DMUs for European eel and golden jackal which overlap the protected area. Protected area intersected by site is dominated by cultivation on coastal plain with very isolated

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP111.8 602683 , 4550889 3.5km from pipeline	Potamos Kompsatos (Nea Koiti)	Site of Community Importance (Habitats Directive)	One part of three important areas for birds in Greece, this 4km2 wetland contains a diverse array of habitats. Komsatos river supplies freshwater to Vistonida Lake, surrounding hills and valleys contain grazing and forestry.	woodpecker, Peregrine falcon (*Falco peregrinus*). Twait shad	natural habitat present. It is not expected to support amphibians, reptiles, avifauna or fish listed as qualifying features
	KP114.8 599689 , 4550796 3.3km from pipeline	KOILADA KOMPSATOU	Special Protection Area (Birds Directive)	166km2 containing a deep valley surrounded by hills with decidious forest (mature grazed oak forest), scrub and grassland, livestock farming		
	KP109.9 604321 , 4551634 3.1km from pipeline	Kechrou - Kerasias Koinotitas Kechrou	Wildlife Refuge	28km2 Designation to protect fauna, flora, habitats and landscape		
Porto Lagos, limni Vistonida kai parakties limnothalasses	KP112.5 601932 , 4550645 0km from pipeline	Porto Lagos, limni Vistonida kai parakties limnothalasses (GR011)	Important Bird and Biodiversity Area	15,300 ha site containing a wetland complex of freshwater lakes and coastal lagoons, with reedbeds (Phragmites), wet meadows and saltmarsh. The area is important for breeding, passage and wintering waterbirds and raptors, and breeding species associated with reedbeds.	Golden jackal, Grey wolf Four lined snake, Mediterranean spur-thighed tortoise, *Triturus karelinii*, yellow bellied toad Baillon's crake (*Porzana pusilla*), Pygmy cormorant, Osprey (*Pandion haliaetus*), Olive-tree warbler (*Hippolais olivetorum*), Peregrine falcon, Marsh harrier (*Circus aeruginosus*), Golden eagle, Lesser spotted eagle, Purple heron, Grey heron, Black stork, Lesser kestral, Red-backed shrike (*Lanius collurio*). Twait shad	Critical Habitat triggered by DMUs for European eel and golden jackal which overlap the protected area. Protected area intersected by site is dominated by cultivation on coastal plain with very isolated natural habitat present. It is not expected to support amphibians, reptiles, avifauna or fish listed as qualifying features.
	KP119.2 595452 , 4551321 2km from pipeline	Lake Vistonis, Porto Lagos, Lake Ismaris & adjoining lagoons	Ramsar Site, Wetland of International Importance	24,396ha wetland complex of lakes and lagoons, saltmarsh, mudflats, reedbeds , scrub and freshwater marsh.		
	KP123.3 591364 , 4551589 0.7km from pipeline	LIMNES VISTONIS, ISMARIS - LIMNOTHALASSES PORTO LAGOS, ALYKI PTELEA, XIROLIMNI, KARATZA	Special Protection Area (Birds Directive)	182km2 encompassing a series of coastal lakes with varying salinities and river outlets, extensive reedbeds, Tamarix scrub, saltmarsh, dunes, agricultural lands. Important for 238 species of breeding, passage and wintering waterbirds, raptors etc.		
	KP123.5 591275 , 4551666 0km from pipeline	Limnes Kai Limnothalasses Tis Thrakis - Evryteri Periochi Kai Paraktia Zoni	Site of Community Importance (Habitats Directive)	295km2 the site encpmpasses a series of coastal lakes, the largest is brackish/freshwater the others saline, surrounding habitats include extensive reedbeds, Tamarix scrub, saltmarsh, dunes supporting a diverse array of taxa. Important for 219 species of breeding, passage and wintering		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
				waterbirds, raptors etc.		
	KP111.3 603124 , 4551001 0km from pipeline	Periochi oikoanaptixis Ethnikou Parkou Anatolikis Makedonias kai Thrakis	Others			
	KP111.3 603124 , 4551001 0km from pipeline	Ethniko Parko Anatolikis Makedonias kai Thrakis	National Park	929km2 designation to protect flora, fauna, habitats and landscapes		
	KP116.1 598523 , 4551094 0.5km from pipeline	Kompsatou Dimou Iasmou	Wildlife Refuge	37km2 Designation types used with the intention to protect fauna, flora, habitats and landscapes		
	KP122.9 591735 , 4551641 3.1km from pipeline	Limni Vistonida - Lagous Dimou Avdiron	Wildlife Refuge	47km2 designated for flora, fuana, habitats, landscapes		
	KP123.4 591312 , 4551618 0km from pipeline	Prostatevomena topia Ethnikou Parkou Anatolikis Makedonias kai Thrakis	Others	259km2 Designation types used with the intention to protect fauna, flora, habitats and landscapes		
Filia-Simantra (Selerou)	KP129.4 585385 , 4551737 1.5km from pipeline	Filia-Simantra (Selerou)	Wildlife Refuge	4km^2 designation to protect fauna, flora, habitats and landscapes		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Nestos delta and coastal lagoons	KP161.2 558514 , 4540641 0km from pipeline	Delta Nestou kai parakties limnothalasses (GR012)	Important Bird and Biodiversity Area	22,000 ha site, consisting of a series of brackish lagoons and arable fields with fragmented patches of freshwater marsh, grassland, saltmarsh and forest.This is an important site for breeding, passage and wintering waterbirds, raptors and passerines associated with reedbeds.	Nathusius's pipistrelle (*Pipistrellus nathusii*) Golden jackal, Grey wolf Italian crested newt, Mediterranean spur-thighed tortoise, Four lined snake , yellow bellied toad , *Triturus karelinii*, loggerhead turtle (*Caretta caretta*) Mute Swan (*Cygnus olor*), Lesser White-fronted Goose *(Anser erythropus*), Ferruginous Duck, Yelkouan Shearwater (*Puffinus yelkouan*), White Stork (*Ciconia ciconia*), *Ixobrychus minutus*, Great White Egret (*Ardea alba*), Dalmatian Pelican, Pygmy Cormorant, European Shag (*Phalacrocorax aristotelis*), Great Cormorant (*Phalacrocorax carbo*), *Burhinus oedicnemus*, *Charadrius alexandrinus,* Spur-winged Lapwing (*Vanellus spinosus*), Slender-billed Curlew (*Numenius tenuirostris*), Collared Pratincole (*Glareola pratincola*), Mediterranean Gull (*Larus melanocephalus*), Little Tern (*Sternula albifrons*), Greater Spotted Eagle Levant Sparrowhawk (*Accipiter brevipes*), Syrian Woodpecker, Lesser Kestrel , Lesser Grey Shrike (*Lanius minor*), Masked Shrike (*Lanius nubicus*), *Calandrella brachydactyla*, Greater spotted eagle , Lesser spotted eagle , Purple heron, Stone curlew (*Burhinus oedicnemus*), Roller (*Coracias garrulus*), peregrin falcon, common tern (*Sterna hirundo*), Avocet (*Recurvirostra avosetta*), Whooper swan (*Cygnus cygnus*). Bladetail (*Lindenia tetraphylla*), Green gomphid (*Ophiogomphus cecilia*) Twait shad	Critical Habitat triggered by DMUs for European eel, otter, golden jackal and Dalmatian pelican which overlap the protected area
	KP164.5 556863 , 4537809 10km from pipeline	Nestos delta & adjoining lagoons	Ramsar Site, Wetland of International Importance	21,930 ha. Extensive delta complex, including saltmarshes, freshwater lakes supporting nationally rare plant species, coastal lagoons, a dune system, and the largest remaining area of riparian forest in Greece.		
	KP157.9 560832 , 4542486 0km from pipeline	Delta Nestou Kai Limnothalasses Keramotis - Evryteri Periochi Kai Paraktia Zoni	Site of Community Importance (Habitats Directive)	225km2 20 habitats and 210 species, 194 of which are birds. The site consists of Nestos Delta and Keramoti lagoons it is a valuable part of a wetland chain included between Axios river and Delta Evrou in northern Greece. The riparian forest and coastal areas are important for breeding birds, the lagoons for migrating birds and the river for overwintering species.		
	KP161.1 558519 , 4540645 0km from pipeline	DELTA NESTOU KAI LIMNOTHALASSES KERAMOTIS KAI NISOS THASOPOULA	Special Protection Area (Birds Directive)	This 146km2 site is a large Delta and consists of agricultural land with few freshwater lagoons separated from the sea by narrow sandy strips. t still is a valuable part of a wetland chain included between Axios river and Delta of Evros of north Greece.		
	KP153.8 563201 , 4545575 0km from pipeline	Ethniko Parko Anatolikis Makedonias kai Thrakis - Periochi prostasias tis fysis	Nature reserve zone in National Park	223km2 Designation to protect fauna, flora, habitats and landscape		
	KP154.7 562568 , 4545040 0km from pipeline	Kotza Orman Nestou Dimou Topeirou	Wildlife Refuge	83km2 Designation types used with the intention to protect fauna, flora, habitats and landscapes		
	KP159.8 559684 , 4541029	Chrysoupoli Kavalas	Game breeding station	1.45ha, statutes under sectorial, particularly forestry, legislative and administrative acts providing an		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	3.6km from pipeline			adequate protection relevant for fauna, flora and habitat conservation		
	KP176.6 545977 , 4534990 0km from pipeline	Perifereiaki zoni Ethnikou Parkou Anatolikis Makedonias kai Thrakis	National Park - Peripheral zone	2km^2 Designation types used with the intention to protect fauna, flora, habitats and landscapes		
Nestos gorge	KP154 562988 , 4545625 1.8km from pipeline	Stena Nestou (GR013)	Important Bird and Biodiversity Area	14,500 ha site with a large gorge with steep rocky slopes. Forest occupies the bottom of the gorge whilst the surrounding mountain slopes are covered with a mixture of forest and maquis.	Yellow bellied toad, Italian crested newt, Mediterranean spur-thighed tortoise European Bee-eater (*Merops apiaster*), Eurasian Eagle-owl, Eurasian Griffon (*Gyps fulvus*), Pygmy Cormorant, Common tern (*Sterna hirundo*), Osprey (*Pandion haliaetus*), Woodlark (*Lullula arborea*), Red-backed shrike (*Lanius collurio*), Booted eagle, Syrian Woodpecker, Eygptian vulture (*Neophron percnopterus*), Olive-tree warbler (*Hippolais olivetorum*), White Stork, Lesser spotted eagle	Critical Habitat triggered by DMUs for European eel, otter and golden jackal which overlap the protected area
	KP154 562988 , 4545625 3km from pipeline	STENA NESTOU	Special Protection Area (Birds Directive)	88km2 site containing the Nestos river gorge and significant geological features as well as well formed riparian stands comprising of Salix alba, S. fragilis, S. ampexicaulis, S. elaeagnos, Populus alba, P. nigra and sparse Platanus orientalis and Alnus glutinosa. 159 species of birds protected		
	KP154 562988 , 4545625 3.3km from pipeline	Aisthitiko Dasos Nestou	Site of Community Importance (Habitats Directive)	23km2 site contains Nestos gorge with steep slops comprising of metamorphic rocks, marble and in the river-bed sedimentary rocks and alluvial deposits. Well formed riparian stands include Salix alba, S. fragilis, S. ampexicaulis, S. elaeagnos, Populus alba, P. nigra and sparse Platanus orientalis and Alnus glutinosa. 159 species of birds protected		
	KP154 562988 , 4545625 3km from pipeline	Stena Nestou Kavalas - Xanthis	Aesthetic Forest	12km2 designated to protect fauna, flora, habitats and landscapes		
	KP154 562988 , 4545625 3km from pipeline	Stena Nestou	Wildlife Refuge	12km2 designated to protect fauna, flora, habitats and landscapes		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP154 562988 , 4545625 3.3km from pipeline	Stena Nestou-Aristeri Ochthi potamou Nestou	Wildlife Refuge	29km2 designated to protect fauna, flora, habitats and landscapes		
Kastene Ntag Dimou Oreinou	KP179.8 543709 , 4536625 2.7km from pipeline	Kastene Ntag Dimou Oreinou	Wildlife Refuge	25km2 designated to protect fauna, flora, habitats and landscapes		
Agios Timotheos-Koupia	KP191.4 533942 , 4535987 0.7km from pipeline	Dasi Amygdaleona Kavalas	Aesthetic Forest	26km2 designated to protect fauna, flora, habitats and landscapes		
	KP192.9 532885 , 4536694 0km from pipeline	Agios Timotheos-Koupia	Wildlife Refuge	26km2 designated to protect fauna, flora, habitats and landscapes		
Aggitis Catchment	KP192.3 533180 , 4536369 0km from pipeline	Aggitis (2080625500)	Freshwater Key Biodiversity Area	Catchment for tributaries running into first order stream	*Turcorientalia hohenackeri* Greek Brook Lamprey (*Eudontomyzon hellenicus*), Aggitis spined loach (*Cobitis punctilineata*), Aegean Minnow (*Phoxinus strymonicus*)	Critical Habitat triggered by DMUs for Greek brook lamprey and Aggitis spined loach which overlap the protected area
Mount Pangaio	KP207.2 520385 , 4538875 6km from pipeline	Oros Pangaio (GR017)	Important Bird and Biodiversity Area	A mountain dominated by Fagus and Quercus forest with extensive alpine pastures. This is an important site for resident forest species.	Geoffroy's bat Brown bear (*Ursus arctos*) Yellow bellied toad, *Triturus karelinii*, Mediterranean spur-thighed tortoise Rock Partridge (*Alectoris graeca*), *Phylloscopus bonelli*, Skylark (*Alauda arvensis*), Grey heron, Stone curlew, Long-legged buzzard, Roller	Site close tothe limit of foraging range for mobile species (bears, bats and avifauna) within a cultivated plain, with sparse habitat features. Amphibians and reptiles screened out as protected area > 2km away
	KP207.2 520385 , 4538875 6km from pipeline	OROS PANGAIO KAI NOTIES YPOREIES TOU	Special Protection Area (Birds Directive)	244km2 encompassing Mt Pangaion, part of Mt Symvolon and the plain between them, young beech forest, old oak woodland, conifer plantations, mixed and broad leafed woodland, apline and subalpine meadows, the area is also cultivated. 50 species of birds occur including birds of prey and those associated with agricultural landscapes.		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP207.2 520385 , 4538875 7.5km from pipeline	Koryfes Orous Pangaio	Site of Community Importance (Habitats Directive)	10,345ha large mountainous area with extensive beech and chestnut forests, and high altitude pastures with plant species of conservation interest. Habitats are diverse and include small upland wetlands and subalpine meadows.		
	KP221.6 507422 , 4542011 6.5km from pipeline	Pangaio oros Dimon Pangaiou - Eleftheroupolis - Piereon - Orfanou	Wildlife Refuge	64km2 designated to protect fauna, flora, habitats and landscapes		
	KP222.3 506684 , 4541984 5.9km from pipeline	Petra Kormitsas Iliokomis (Iera Moni Eikosifoinissis)	Wildlife Refuge	11km2 designated to protect fauna, flora, habitats and landscapes		
Loungas-Kava-Tzikia-Ntermentersi (Krinidos-Fyllid*	KP226.4 502884 , 4542911 1.1km from pipeline	Loungas-Kava-Tzikia-Ntermentersi (Krinidos-Fyllidos)	Wildlife Refuge	11km^2 designated to protect fauna, flora, habitats and landscapes		
Alistrati-Petroto	KP231 498517 , 4543407 0km from pipeline	Alistrati-Petroto	Wildlife Refuge	11km^2 designated to protect fauna, flora, habitats and landscapes		
Rodolivos-Domiro-Angista-Myrini	KP240.5 490229 , 4540501 5km from pipeline	Rodolivos-Domiro-Angista-Myrini	Wildlife Refuge	12km2 designated to protect fauna, flora, habitats and landscapes		
Koryfes Orous Menoikion - Oros Kouskouras - Ypsoma	KP252.5 479957 , 4540894 5.9km from pipeline	Koryfes Orous Menoikion - Oros Kouskouras - Ypsoma	Site of Community Importance (Habitats Directive)	233km2 containing Mt Menoikio which has rich forests of decidious and coniferous forests as well as rich grassland flora, including Balkan endemics.	Schreiber's bat (*Miniopterus schreibersii*), Lesser mouse eared bat (*Myotis blythii*), Greater mouse eared bat (*Myotis myotis*), Greater horseshoe bat (*Rhinolophus ferrumequinum*) Yellow bellied toad, *Triturus karelinii*	Critical Habitat not triggered as no DMUs identified within the project AOI (lack of suitable habitat, distance from site and/or no apparent ecological connectivity)
	KP244.1 486728 , 4540840 8km from pipeline	Agriani - Anastasia Dimou Neas Zichnis	Wildlife Refuge	15km2 designated to protect fauna, flora, habitats and landscapes.		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Cheimarros Gazorou-Palaia Zichni (Gazorou-Agiou C*	KP252.2 480202 , 4540713 1.4km from pipeline	Cheimarros Gazorou-Palaia Zichni (Gazorou-Agiou Christoforou-N.Zichnis-Anastasias)	Wildlife Refuge	10km^2 designated to protect flora, fauna, habitats and landscapes		
Profitis Ilias (Pentapoleos)	KP257.6 475945 , 4542534 0.9km from pipeline	Profitis Ilias (Pentapoleos)	Wildlife Refuge	7km^2 part of 432km^2 designation to protect flora, fauna, habitats and landscape		
Dimotiko Diamerisma Chrysou Dimou Emmanouil Papa	KP266.6 467308 , 4543084 1.9km from pipeline	Dimotiko Diamerisma Chrysou Dimou Emmanouil Papa	Wildlife Refuge	10km^2 designated to protect flora, fauna, habitats and landscapes		
Mount Kouskouras	KP275.2 461070 , 4544746 4.9km from pipeline	Kouskouras Oros (GR019)	Important Bird and Biodiversity Area	A sparsely forested area of ravines and valleys. Livestock-farming is widespread. This is an important site for species breeding in a mosaic of open forest, scrub and grassland.	Schreiber's Bat, Bechstein's bat (*Myotis bechsteinii*) Lesser mouse-eared bat , Long-fingered bat, Geoffroy's bat, Greater mouse-eared bat, Blasius' horseshoe bat (*Rhinolophus blasii*), Mediterranean horseshoe bat (*Rhinolophus euryale*), Greater horseshoe bat, Lesser horseshoe bat, Mehely's horseshoe bat (*Rhinolophus mehelyi*) Brown bear *Triturus karelinii*, Yellow bellied toad,, Four lined snake, Leopard snake (*Zamenis situla*), Mediterranean spur-thighed tortoise , Herman's tortoise (*Testudo hermanni*) Syrian Woodpecker Greek brook lamprey, Goby (*Proterorhinus marmoratus*)	Project site is dominated by cultivated plains and unsuitable foraging habitat for highly mobile species. Amphibians and reptiles screened out as protected area > 2km away Identified as a DMU for bat species listed as QF
	KP274.5 461504 , 4544319 4.2km from pipeline	Ai Giannis - Eptamyloi (GR1260003)	Site of Community Importance (Habitats Directive)			
	KP275.2 461070 , 4544746 4.9km from pipeline	KOILADA TIMIOU PRODROMOU-MENOIKION (GR1260009)	Special Protection Area (Birds Directive)			
	KP275.1 461168 , 4544700 5km from pipeline	Viros-Iera Moni Agiou Nikolaou (Serron-Oinousas-Eptamylon)	Wildlife Refuge			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Kerkini Catchment	KP287 450247 , 4546931 0km from pipeline	Kerkini (2080623931)	Freshwater Key Biodiversity Area	Site includes the Kerkini lake, lowland and upper part of Strymonas river, Kerkinitis and Bistritsa rivers and many rivlets from the mountains Kerkini, Dysoro and Mavrovuni. The lake serves not only as the heart of a fertile and important nature reserve but also as an essential water resource for thousands of hectares of arable land		Critical Habitat triggered by DMUs for golden jackal which overlap the protected area
Lake Kerkini	KP290 447362 , 4546857 8.9km from pipeline	Limni Kerkini (GR020)	Important Bird and Biodiversity Area	Kerkini is a freshwater reservoir with reedbeds (Phragmites), some wet forest, and arable land.	White-headed Duck (*Oxyura leucocephala*), Greylag Goose (*Anser anser*), Lesser White-fronted Goose (*Anser erythropus*), Common Shelduck (*Tadorna tadorna*), Common Pochard (*Aythya ferina*), Ferruginous Duck, Mallard (*Anas platyrhynchos*), Common Teal (*Anas crecca*), White Stork , Eurasian Spoonbill (*Platalea leucorodia*), Glossy Ibis (*Plegadis falcinellus*), *Egretta garzetta*, *Nycticorax nycticorax*, Squacco Heron , Great White Egret, Dalmatian Pelican, Great White Pelican, Pygmy Cormorant, Great Cormorant (*Phalacrocorax carbo*), Pied Avocet (*Recurvirostra avosetta*), Whiskered Tern (*Chlidonias hybrida*), Black Tern (*Chlidonias niger*), Greater Spotted Eagle , Levant Sparrowhawk	Critical Habitat triggered by DMU for Dalmatian pelican
Er. Makryotissas-Ampelia-Nisi-Rizana (Zevgolateiou)	KP304.4 438476 , 4538562 4km from pipeline	Er. Makryotissas-Ampelia-Nisi-Rizana (Zevgolateiou) (341895)	Wildlife Refuge	Designation types used with the intention to protect fauna, flora, habitats and landscapes (the latter as far as relevant for fauna, flora and for habitat protection) (Code A)		
Dimosio Dasos Flamouriou	KP308.5 435873 , 4535915 4.4km from pipeline	Dimosio Dasos Flamouriou (341879)	Wildlife Refuge	Designation types used with the intention to protect fauna, flora, habitats and landscapes (the latter as far as relevant for fauna, flora and for habitat protection) (Code A)		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Lakes Volvi, Koroneia and Rentina Gorge	KP340.5 415660 , 4517118 8.3km from pipeline	Limnes Volvi, Koroneia kai Stena Rentinas (GR032)	Important Bird and Biodiversity Area	The site comprises two freshwater lakes and a gorge. Lake Koronia is shallow, eutrophic and polluted. Lake Volvi is deeper and overflows through the Rentina gorge. The gorge is dominated by maquis and riverine scrub.	Schreiber's Bat, Bechstein's bat, Greater horseshoe bat Mediterranean spur-thighed tortoise Ferruginous duck , White-headed duck (*Oxyura leucocephala*), Lesser spotted eagle , Booted eagle , long legged buzzard , Lanner falcon (*Falco biarmicus*), Black stork, European roller, Calandra lark (*Melanocorypha calandra*) Thick shelled river mussel (*Unio crassus*), Bladetail (*Lindenia tetraphylla*)	Identified as a DMU for bat species listed as QF
	KP340.5 415660 , 4517118 8.3km from pipeline	Ramsar site of Lakes Volvi and Koroneia	Ramsar Site, Wetland of International Importance	16,388ha site comprises of two freshwater lakes and a gorge, Lake Volvi is the deeper and overflows through Rentina gorge which is dominated by maquis and scrub. Lake Koronia is shallow, eutrophic and polluted. Site is important for passage and wintering water birds including many species of conservation interest.		
	KP337.5 416863 , 4519713 3.4km from pipeline	LIMNES KORONEIAS - VOLVIS, STENA RENTINAS KAI EVRYTERI PERIOCHI (GR1220009)	Special Protection Area (Birds Directive)	Surrounding hilly and mountainous areas, along with cultivated land, support good numbers of birds of prey and other protected species		
	KP340.5 415660 , 4517118 10km from pipeline	Limnes Volvi Kai Lagkada - Evryteri Periochi (GR1220001)	Site of Community Importance (Habitats Directive)			
	KP340.5 415660 , 4517118 8.1km from pipeline	Ethniko Parko ygrotopon ton limnon Koroneias - Volvis kai ton Makedonikon Tempon (125468)	National Park			
	KP348.4 409076 , 4514701 0km from pipeline	Perifereiaki zoni C Ethnikou Parkou ygrotopon ton limnon Koroneias - Volvis kai ton Makedonikon Tempon (349980)	National Park - Peripheral zone			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP338.6 416848 , 4518629 7.1km from pipeline	Exalofos-Polydendro-Chrysavgi (341873)	Wildlife Refuge			
	KP340.5 415660 , 4517118 9.2km from pipeline	Limni Lagkada (341869)	Wildlife Refuge			
Volvi-Koronia Catchment	KP348.4 409072 , 4514700 0km from pipeline	Volvi-Koronia (2080009751)	Freshwater Key Biodiversity Area	Site includes catchments for Lakes Volvi & Koronia	Volvi Bleak (*Alburnus* sp. nov. 'Volvi'), Yalartza (*Alburnus volviticus*), Macedonian Shad (*Alosa macedonica*)	Project site >10km from Lakes Volvi or Koronia
Lake Pikrolimni	KP358.2 400989 , 4512708 4.3km from pipeline	Limni Pikrolimni (GR027)	Important Bird and Biodiversity Area	A salt lake with large seasonal variations in water level. The lake is surrounded by cereal crops and marsh. This is an important site for breeding, passage and wintering waterbirds and also for raptors. Species of global conservation concern that do not meet IBA criteria: Pelecanus crispus (non-breeding).	Lesser Kestrel, Dalmatian Pelican	Project site >5km from Lake Pikrolimni and not likely to interfere with breeding or wintering avifauna, nevertheless a DMU for Dalmatian pelican has been identified as overlapping with this site
	KP358.2 400989 , 4512708 4.3km from pipeline	LIMNI PIKROLIMNI - XILOKERATEA (GR1230004)	Special Protection Area (Birds Directive)			
	KP358.2 400989 , 4512708 4.3km from pipeline	Limni Pikrolimni (GR1230001)	Site of Community Importance (Habitats Directive)			
	KP358 401197 , 4512711 6.2km from pipeline	Limni Pikrolimni Dimou Pikrolimnis (GR95)	Wildlife Refuge			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
River Axios	KP375 3863200 , 4510500 1.3km from pipeline	Axios–Loudias–Aliakmon Delta (59)	Ramsar Site, Wetland of International Importance		Italian crested newt, Four lined snake , European pond turtle (*Emys orbicularis*), Mediterranean spur-thighed tortoise , Hermann's tortoise Pygmy Cormorant, *Himantopus himantopus*, Pied Avocet, Slender-billed Curlew (*Numenius tenuirostris*), Collared Pratincole (*Glareola pratincola*), Mediterranean Gull, Greater spotted eagle, White-tailed eagle, Eurasian Spoonbill, Little bittern (*Ixobrychus minutus*), Little egret, Black-crowned night heron (*Nycticorax nycticorax*), Squacco Heron, Dalmatian Pelican, Pygmy Cormorant, Eurasian oystercatcher (*Haematopus ostralegus*), Kentish Plover (*Charadrius alexandrinus*), Black-tailed Godwit (*Limosa limosa*), Caspian gull (*Larus cachinnans*), Little Tern, Greater short-toed lark (*Calandrella brachydactyla*)	Critical Habitat triggered by DMUs for European eel, otter and Dalmatian pelican which overlap the protected area
	KP361.5 399109 , 4510365 5.1km from pipeline	Ekvoles Gallikou kai limnothalassa Kalochoriou (GR029)	Important Bird and Biodiversity Area	A coastal delta, with salt and freshwater marshes and lagoons.		
	KP374.6 386802 , 4510569 1.4km from pipeline	Delta Axiou, Loudia, Aliakmona (GR028)	Important Bird and Biodiversity Area	A coastal wetland of small lagoons, sandflats, and alluvial forests dominated by Tamarix, Alnus , and Salix. Human activities include rice production, livestock farming, fishing and mussel culture. This is a very important site for breeding, passage and wintering waterbirds.		
	KP376.2 385207 , 4510425 0km from pipeline	Axios Potamos (GR025)	Important Bird and Biodiversity Area	This site contains the River Axios together with patches and islands of riverine forest and pasture. The site is an important corridor for migratory species.		
	KP374.8 386627 , 4510553 0km from pipeline	DELTA AXIOU - LOUDIA - ALIAKMONA - ALYKI KITROUS (GR1220010)	Special Protection Area (Birds Directive)	Important wetland for birds, delta and rivers fringed by a range of natural and artifical waterbodies, lagoons, rice fields, drainage ditches, riverine forests, poular plantations, endemic fish.		
	KP374.8 386627 , 4510553 0km from pipeline	Delta Axiou - Loudia - Aliakmona - Evryteri Periochi - Axioupoli (GR1220002)	Site of Community Importance (Habitats Directive)	337km2 containing a delta formed by the rivers Axios, Loudias and Aliakmonas riverine forests and popular plantations, important spawning area for endemic and other fish species, important area for breeding, feeding and resting of migratory birds.		
	KP375 386397 , 4510532 1.5km from pipeline	Ethniko Parko Axiou - Perioches Prostasias tis Fysis PD1, PD2, PD3, PD4 (392895)	Nature reserve zone in National Park	Designation types used with the intention to protect fauna, flora, habitats and landscapes		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP377.7 384675 , 4509138 1.2km from pipeline	Ethniko Parko Axiou - Perioches Prostasias tis Fysis B1, B2, B3, B4, B5, B6, B7 (392894)	Nature reserve zone in National Park			
	KP377.7 384675 , 4509138 1.2km from pipeline	Ethniko Parko Gallikou, Axiou, Loudia, Aliakmona, Alykis Kitrous, Limnothalassas Kalochoriou (392899)	National Park			
Lower Axios Catchment	KP367.1 393605 , 4509909 0km from pipeline	Lower Axios (2080009900)	Freshwater Key Biodiversity Area	Site includes catchment for Lower Axios		
Area of Anthofito	KP371.3 389837 , 4511348 8.6km from pipeline	Area of Anthofito (GR026)	Important Bird and Biodiversity Area	A village 8km west of Lake Pikrolimni. It is surrounded by cereal farming.	Long-legged Buzzard, White Stork, Hen Harrier (*Circus cyaneus*), Montagu's Harrier, Roller, Lesser Kestrel, Red-footed Falcon, Swallow (*Hirundo rustica*), Calandra Lark (*Melanocorypha calandra*), Bee-eater, Scops Owl (*Otus scops*), Spanish Sparrow (*Passer hispaniolensis*)	Majority of protected area is beyond the 10km threshold for mobile species. Limited foraging habitat in project site.
	KP371.3 389837 , 4511348 8.6km from pipeline	PERIOCHI ANTHOFYTOU (GR1230006)	Special Protection Area (Birds Directive)			
Aliakmon Naoussa Catchment	KP382.2 381345 , 4507098 0km from pipeline	Aliakmon Naoussa (2080009930)	Freshwater Key Biodiversity Area	Site includes catchment for Aliakmon Naoussa	*Paladilhiopsis neaaugustensis*	No springs that may support qualifying species have been identified on the project site
Apsalos and Moglenitsa gorges	KP418 347431 , 4511395 7.8km from pipeline	Stena Apsalou and Moglenitsas (GR040)	Important Bird and Biodiversity Area	Two small river valleys and surrounding hills dominated by scrub and pastures. The area is important for breeding raptors and passerines characteristic of mixed pasture and forest.	Geoffroy's bat Grey wolf Hermann's tortoise, Italian crested newt, Yellow bellied toad Syrian woodpecker , Lesser spotted eagle , Long legged buzzard , Booted eagle , Eagle owl (*Bubo bubo*)	Critical Habitat not triggered as no DMUs identified within the project AOI (lack of suitable habitat, distance from site and/or no apparent ecological connectivity)
	KP418 347431 , 4511395 7.8km from	Stena Apsalou - Moglenitsas (GR1240005)	Site of Community Importance (Habitats Directive)			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	pipeline					
	KP418.9 346593 , 4511033 5.7km from pipeline	OROS PAIKO, STENA APSALOU KAI MOGLENITSAS (GR1240009)	Special Protection Area (Birds Directive)			
Agra artificial lake	KP438.3 329824 , 4509779 8.5km from pipeline	Techniti Limni Agra (GR041)	Important Bird and Biodiversity Area	An artificial lake with extensive reedbeds (Phragmites). The adjacent hills are dominated by scrub, pastures and orchards with small areas of forest. This is an important site for species associated with reedbeds.	Brown bear , Golden jackal Yellow bellied toad , Italian crested newt, Four lined snake , Hermann's tortoise, Mediterranean spur-thighed tortoise Whiskered Tern (*Chlidonias hybridus*), Pygmy Cormorant, Ferruginous Duck, Dalmatian Pelican	Critical Habitat triggered by DMUs for brown bear and Dalmatian pelican which overlap the protected area Reedbed and wetland habitat does not extend from protected area to project site
	KP438.3 329824 , 4509779 8.2km from pipeline	LIMNI KAI FRAGMA AGRA (GR124006)	Special Protection Area (Birds Directive)	Reservoir, overgrown with emergent vegetation, extensive reedbeds, powers hydroelectric plant.		
	KP438.3 329824 , 4509779 9.3km from pipeline	OROS VORAS (GR1240008)	Special Protection Area (Birds Directive)			
	KP438.3 329824 , 4509779 8.2km from pipeline	Limni Agra (GR1240004)	Site of Community Importance (Habitats Directive)			
	KP434.2 333373 , 4509600 9.7km from pipeline	Sotiras (341875)	Wildlife Refuge			
	KP438.3 329824 , 4509779 8.4km from pipeline	Limni Agra Dimou Edessis (341450)	Wildlife Refuge	12km2 designated to protect fauna, flora, habitats and landscapes		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Flamouria - Grammatikou Dimou Edessas	KP437.9 330094 , 4509601 0km from pipeline	Flamouria - Grammatikou Dimou Edessas (341376)	Wildlife Refuge	Designation types used with the intention to protect fauna, flora, habitats and landscapes (the latter as far as relevant for fauna, flora and for habitat protection) (Code A)	Brown bear , Grey wolf Fire bellied toad (*Bombina bombina*) and European pond turtle	Critical Habitat triggered by DMUs for brown bear which overlap the protected area
Oros Vermio	KP442 326731 , 4507895 2km from pipeline	Oros Vermio (GR1210001)	Site of Community Importance (Habitats Directive)	site containing a small and large gorge as well as pasture land with Paliurus scrub and oriental plane trees, Moglenitsa River flows most of the year. It is a flyway for migratory birds and provides nesting habitat for birds of prey.	Schreiber's bat , Lesser mouse eared bat , Long fingered bat, Geoffroy's bat , Greater mouse eared bat Grey wolf Yellow bellied toad, *Triturus carnifex*, Four lined snake, Hermann's tortoise	Critical Habitat triggered by DMUs for brown bear and a number of bat species which overlap the protected area Site screened out for amphibians, reptiles and invertebrates as > 2km from the project
	KP443.9 325015 , 4507439 5.4km from pipeline	Dasos Dimou Naousas kai Dason Seliou - Tsanakli kai Giannakochoriou (341317)	Wildlife Refuge			
Korona (Mesovouniou)	KP452.6 318004 , 4505853 5km from pipeline	Korona (Mesovouniou) (341865)	Wildlife Refuge			
Lake Vegoritis and Lake Petron	KP460.3 311207 , 4504006 0.4km from pipeline	Limni Vegoritida and Limni Petron (GR045)	Important Bird and Biodiversity Area	The site is important for wintering ducks and geese. Species of global conservation concern that do not meet IBA criteria: Aythya nyroca (wintering), Haliaeetus albicilla (non-breeding).	Yellow bellied toad , *Triturus caarnifex*, Hermann's tortoise Pygmy Cormorant, Ferruginous Duck, White-tailed eagle	
	KP460.1 311306 , 4504177 6.5km from pipeline	LIMNI PETRON (GR1340004)	Special Protection Area (Birds Directive)	Breeding, resting, nesting ground for birds these two calcareous lakes suppport reed beds and submereged, rooted and floating vegetation.		
	KP460.3 311205 , 4504003 0.4km from pipeline	Limnes Vegoritida - Petron (GR1340004)	Site of Community Importance (Habitats Directive)	Site with two calcareous lakes between bare mountains, the reedbed dominated wetlands are important for breeding, resting and feeding birds. It is also important for birds of prey.		
	KP460.1 311306 , 4504177 4.2km from pipeline	Ampelia Dimou Amyntaiou (341516)	Wildlife Refuge			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Kouri (Ptolema¿das)	KP477.2 304416 , 4490835 0km from pipeline	Kouri (Ptolema¿das) (341861)	Wildlife Refuge			
Lake Chimaditis and Lake Zazaris	KP489.9 293363 , 4491356 1.1km from pipeline	Limni Chimaditida and Limni Zazari (GR046)	Important Bird and Biodiversity Area	Two eutrophic lakes at the foot of Mount Verno. They are surrounded by extensive reedbeds (Phragmites). Beyond the lakes is a mosaic of woodland, pastures and arable fields.	Grey wolf Italian crested newt, Hermann's tortoise Ferruginous Duck, Pygmy Cormorant, Dalmatian Pelican, Whiskered Tern (*Chlidonias hybrida*), Lesser Kestrel, Golden Eagle	Critical Habitat triggered by DMUs for brown bear and Dalmatian pelican which overlap the protected area
	KP490.5 292812 , 4491254 1.6km from pipeline	LIMNES ChEIMADITIDA KAI ZAZARI (GR1340008)	Special Protection Area (Birds Directive)	Lake Cheimaditida and Lake Zazari support a large number of nesting birds, more important being the Teal Anas crecca (The first discovered nesting site in Greece), the Ferruginous Duck Aythya nyroca, the Purple Heron Ardea purpurea and the Little Bittern Ixobrychus minutus, the Marsh Harrier Circus aeruginosus and the Pochard Aythya ferina. Other species of interest include the Golden Eagle Aquila chrysaetos, the Little and Great Crested Grebe and the Bee-eater.		
	KP490.5 292745 , 4491238 1.7km from pipeline	Limnes Cheimaditida - Zazari (GR1340005)	Site of Community Importance (Habitats Directive)	Wetland with reed beds used by birds to rest, nest and feed, notable rooted, submereged and floating vegetation, also important for birds of prey and herpetofauna.		
	KP495.3 288654 , 4491612 1.8km from pipeline	Chintsko kai Cheimaditida Dimou Aetou kai Koinotiton Lechovou kai Varikou (341519)	Wildlife Refuge			
Kastoria Catchment	KP499.1 285314 , 4490750 0km from pipeline	Kastoria (2080634661)	Freshwater Key Biodiversity Area	Site includes catchment for Kastoria river	Pelagos trout (*Salmo pelagonicus*), *Bithynia kastorias, Unio crassus*	Critical Habitat triggered by DMUs for *Unio crassus* which overlap the protected area

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Oros Vernon - Koryfi Vitsi	KP503.7 281419 , 4491633 6.5km from pipeline	Oros Vernon - Koryfi Vitsi (GR1340006)	Site of Community Importance (Habitats Directive)	82km^2 contains small resident brown bear population, subalpine grasslands and beech woodlands it is also within a military area and is a popular ecotourism destination. The area is important for vascular plants and butterflies.	Bechstein's bat Brown bear Yellow bellied toad , *Tritrus carnifex*, Leopard snake (*Zamenis situla*), Hermann's tortoise	Critical Habitat triggered by DMUs for brown bear which overlap the protected area Amphibians, reptiles and bats scoped out as protected area > 5km from the project site
Lake Kastoria (Orestiada)	KP514.5 273769 , 4485524 0.9km from pipeline	Limni Kastorias (Orestiada) (GR048)	Important Bird and Biodiversity Area	An inland freshwater lake with the town of Kastoria on its shore. Around the north-western part of the lake an area of riverine forest remains.	Greater horseshoe bat , Geoffroy's bat , Schreiber's bat Hermann's tortoise; Mediterranean spur-thighed tortoise Ferruginous Duck, Common Merganser (*Mergus merganser*), Pygmy Cormorant, Squacco Heron, Dalmatian Pelican	Identified as a DMU for Dalmatian pelican and bat species listed as QF
	KP513.8 274088 , 4486145 0.6km from pipeline	Limni Kastorias SCI (GR1320001)	Site of Community Importance (Habitats Directive)	47km2 containing freshwater lake surrounded by partly forested mountains the wetland provided important breeding, feeding and wintering place for birds. It supports a diverse avifauna including rare and threatened species and birds of prey.		
	KP514.5 273769 , 4485524 0.9km from pipeline	LIMNI ORESTIAS (KASTORIAS) SPA (GR1320003)	Special Protection Area (Birds Directive)	An important site for breeding and wintering waterbirds, and an important foraging area for Pelecanus crispus. Species of concern include: Phalacrocorax pygmeus, Pelecanus crispus, Ardeola ralloides, Aythya nyroca and Mergus merganser		
	KP514.5 273769 , 4485524 0.8km from pipeline	Limni-Vouno Kastorias (GR95)	Wildlife Refuge			
Upper Aliakmon Catchment	KP532.4 261305 , 4484500 0km from pipeline	Upper Aliakmon (2080642700)	Freshwater Key Biodiversity Area	Site includes catchment for the Upper Aliakmon river	Pelagos trout, Note *Heleobia tritonum* is listed as a QF for this site however in-country scientists have confirmed that this species is only known from two sites in the Peloponnese, hundreds of kilometres away. With a restricted range of 100 km^2, this species could therefore not also be present in the Aliakmon and the species in the Aliakmon is likely to be a different species under the *Heleobia* genus.	Critical Habitat triggered by DMUs for Pelagos troutwithin this catchment KBA
Albania						

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Prespa Lakes	KP550.2 249781 , 4494974 6km from pipeline	Lake Mikri Prespa and Lake Megali Prespa (GR047)	Important Bird and Biodiversity Area	Two freshwater lakes, Mikri and Megali Prespa, in a mountainous area. The lakes have extensive reedbeds (Phragmites) and small areas of wet meadow. The site lies adjacent to Albanian IBAs 003 and 004 and to site 006 in the FYR Macedonia. his is an important site for breeding, passage and wintering waterbirds.	Greater horseshoe bat , Lesser horseshoe bat Brown bear, Wolf Yellow bellied toad, *Tritrus carnifex*, Four lined snake , Leopard snake , Dahl's whip snake (*Coluber najadum*), smooth snake (*Coronella austriaca*) Tufted Duck (*Aythya fuligula*), Squacco Heron, Dalmatian Pelican, Great White Pelican, Pygmy Cormorant; Great Cormorant Large blue butterfly (*Maculinea arion*)	Critical habitat triggered under Criterion 5 for the Prespa Lakes region. Critical habitat also triggered by DMUs for brown bear, large blue butterfly, pygmy cormorant and bats which overlap the protected area Amphibians and reptiles scoped out as protected area > 5km from project site
	KP19 498,967 , 4,509,030 6.9km from pipeline	Ethnikos Drymos Prespon SPA and SCI (GR1340001)	Special Protection Area (Birds Directive)	266km^2 Ethnikos Drymos Prespon includes the lakes Mikri and part of Megali Prespa separated by a sandy bar of alluvial deposits and surrounded by high mountains, important for breeding waterbirds, high numbers of endemic fish, also important for plants and butterflies.		
	KP19 498,967 , 4,509,030 6.9km from pipeline	Ethniko Parko limnon Mikris kai Megalis Prespas - National Park (GR96 / code 392905)	National Park			
	KP19 504,699 , 4,497,028 5.9km from pipeline	Sfikas Dimou Prespon (WDPA ID 341518)	Wildlife Refuge	Designation types used with the intention to protect fauna, flora, habitats and landscapes		
	KP19 496062 , 4506521 3.1km from pipeline	Prespa National Park (AL000003)	Emerald Site	The protected area is located at the south east of Albania, at the border triangle with Greece and Macedonia. The Prespa National Park comprises both terrestrial and aquatic components and its boundaries are corresponding with the watershed of both Prespa Lakes. The terrestrial ecosystem is dominated by the calcareous mountain massif of Mali i Thate (Dry Mountain). The mountain ridge of Mali i Thate continues form the Albanian - Macedonian border to the south extending the Galicica Mountain range (Galicica National Park area). In the southeast the NP has joint borders with the National Park in Greece. The		

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
				aquatic component includes all Albanian waters of the Lakes Greater Prespa and Lesser Prespa and the Island Maligrad.		
	KP18.8 496801 , 4505711 3.3km from pipeline	Prespa National Park	National Park (category II)			
	KP20.8 492896 , 4506713 1.5km from pipeline	Mali I Thate	Corine Biotope			
	KP24.5 489718 , 4508188 2.6km from pipeline	Liqenet E Prespave	Corine Biotope			
Morava Mountains	KP23.5 489984 , 4505450 0km from pipeline	Morava Protected Landscape (AL000013)	Emerald Site		Brown bear, Wolf	Critical Habitat triggered by brown bear DMU which overlaps the protected area
	KP40.1 484873 , 4492655 7.3km from pipeline	Bredhi i Drenoves (101425)	National Park (category II)			
	KP18 493432 , 4503362 0.4km from pipeline	Cangonji	Managed Nature Reserve (category IV IUCN)			
	KP52.4 481199 , 4480590 7.7km from pipeline	Nikolice	Protected Landscape (category V IUCN)			

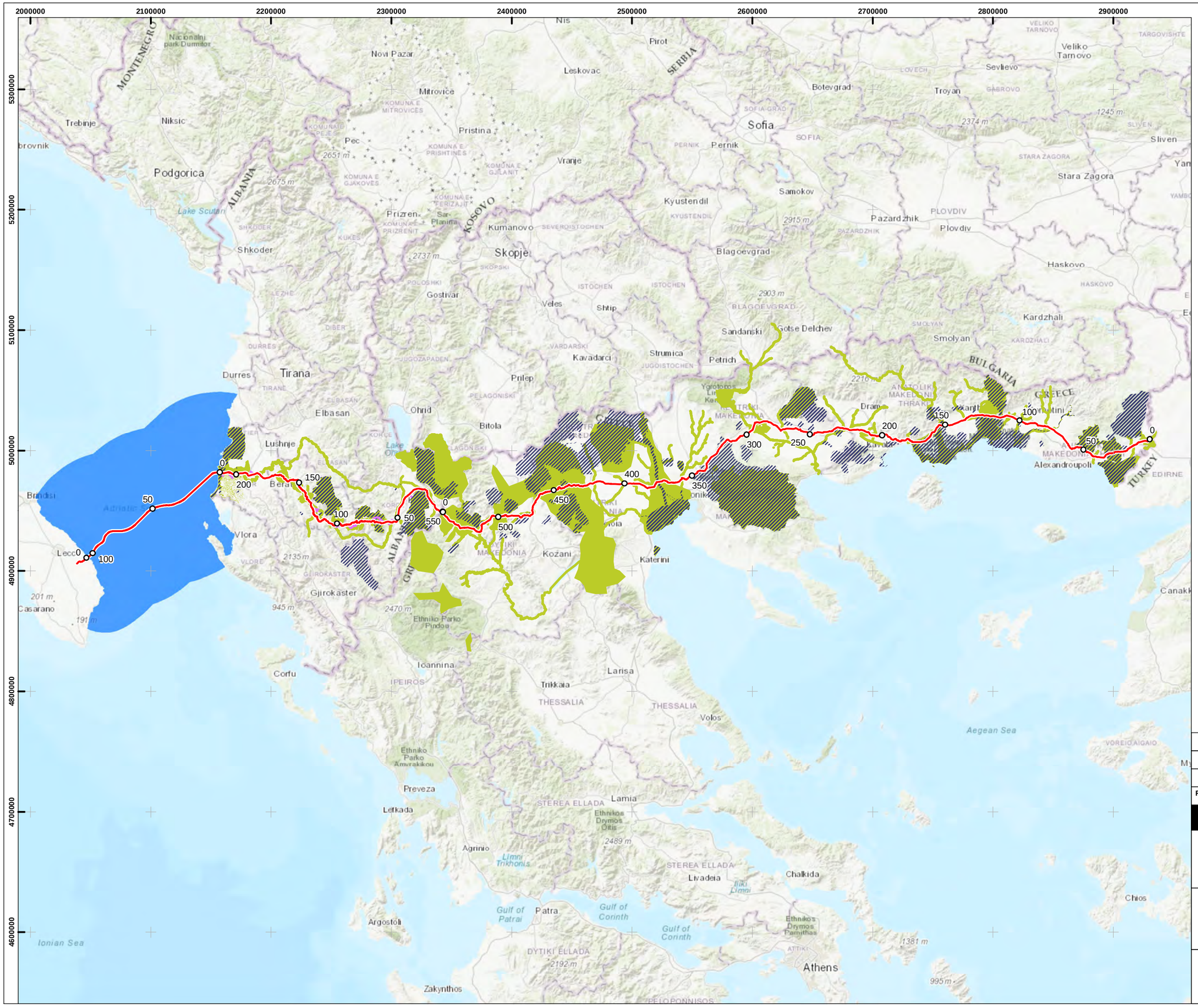
Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
	KP24.4 489123 , 4505574 0km from pipeline	Cangonj-Bredhi Drenoves-Nikolice	Corine Biotope			
	KP52.4 478619 , 4477760 8.1km from pipeline	Gramoz	Corine Biotope			
Vithkuq-Ostrovice	KP62.7 465422 , 4484072 0km from pipeline	Vithkuq-Ostrovice	Corine Biotope		Brown bear, wolf	Critical Habitat triggered by DMUs for brown bear, greater spotted eagle, eagle owl, lesser spotted eagle, four-lined snake, mountain tea, deadly nightshade, Albanian lily and yellow monk's-hood, which overlap the site
Tomorrit	KP131.1 420625 , 4497147 2.5km from pipeline	Tomori National Park (AL000006)	Emerald Site	The Tomorri Mountain National Park is positioned in southern mountainous region of Albania. Its borders are defined by the DCM No. 472, dated 18.07.2012, which establishes the natural ecosystem Tomorri Mountain as "national park" with surface of 24,723.1 ha. Forests are most the most abundant habitat within the park. They are composed by beech forests and shrubs, pine forests and mixed forests. The entire National Park area is rich in pastures. They are used by local communities as grazing grounds and nutrition base for livestock. Together with meadow habitats, pastures are the second habitat for surface.	Lesser horseshoe bat , Schreiber's bat , Long-fingered bat Brown bear, wolf Yellow-Bellied Toad, Italian crested newt, Leopard Snake, four-lined snake, Hermann's tortoise Eagle owl, Golden Eagle, Peregrine Falcon Rosalia longicorn (*Rosalia alpina*), Esper's marbled white butterfly (*Melanargia russiae*) , Great Capricorn beetle (*Cerambyx cerdo*)	This protected site is separated from the project AOI by the main Berat-Corovode highway, which is a considerable barrier to movement. DMUs for large carnivores, four-lined snake and bats have been defined along the pipeline corridor in the vicinity of this Park and would join with habitats within the Park were it not for this highway (and adjacent development). DMUs for the insects limited to the eastern facing slopes of the mountains in the protected area. The project site occurs to the south west of these DMUs are unlikely to be used for foraging by these insects.
	KP110.7 429905 , 4489188 2.5km from pipeline	Mali I Tomorrit	National Park (category II)			
	KP110.3 431984 , 4490301 4.3km from pipeline	Tomorr-Kulmak	Corine Biotope			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Bogove	KP119.2 425345 , 4489426 1.3km from pipeline	Bogove (11681)	Managed Nature Reserve (category IV IUCN)		Brown bear, wolf	This protected site is separated from the project AOI by the main Berat-Corovode highway, which is a considerable barrier to movement. DMUs for large carnivores have been defined along the pipeline corridor in the vicinity of this site and would join with habitats within the Park were it not for this highway (and adjacent development).
Semanit	KP199.1 374125 , 4518770 2.7km from pipeline	Kurora E Lumit Të Vjetër, Seman (Libofshë-Adriatik)	Nature Monument (Category III IUCN)		Nesting habitat	Critical Habitat not triggered as no DMUs identified within the project AOI (lack of suitable habitat, distance from site and/or no apparent ecological connectivity)
Semanit-Pishe Poro	KP209.8 363645 , 4508430 8.3km from pipeline	Pishat E Zeza Në Bregdetin E Poros	Nature Monument (Category III IUCN)		Migrant, shorebird, raptor and wildfowl species	Critical Habitat triggered by DMUs for golden jackal, pygmy cormorant, Albanian pool frog and four-lined snake which overlap the protected area
	KP209.9 365277 , 4516535 0km from pipeline	Grykederdhja Semanit-Pishe Poro	Corine Biotope			
Karavasta Lagoon	KP211.5 363230 , 4520248 3.1km from pipeline	Karavasta National Park (AL000016)	Emerald Site		Golden jackal Waterfowl and waders	Critical Habitat triggered by DMUs for golden jackal, pygmy cormorant, Albanian pool frog and four-lined snake which overlap the protected area
	KP211.5 363230 , 4520248 3.1km from pipeline	Karavasta Ramsar Site	Ramsar Wetland of International Importance			
	KP211.5 363297 , 4520372 3.2km from pipeline	Divjake-Karavasta (4679)	National Park (category II)			
	KP204.5 371614 , 4525406 8.5km from pipeline	Laguna Karavastase	Corine Biotope			

Locality (Co-located Areas)	Location Approx KP Easting, Northing Distance to pipeline	Protected/Designated Area Name	Designation	Site description	Qualifying Features	Implications for assessment of Critical Habitat / Priority Biodiversity Features
Italy						
Palude dei Tamari	KP0 277909 , 4465173 3.3km from pipeline	Palude dei Tamari SCI (IT9150022)	Site of Community Importance (Habitats Directive)	11ha Only example in Salento of hydric wood of tamarisk, although probably not indigenous origin but now perfectly naturalized. Protects 20 species and 2 habitats on the Habitats Directive lists.	*Triturus carnifex*, Four lined snake, Leopard snake variety of birds listed in Article 4 of Directive 2009/147/EC and Annex II of Directive 92/43/EEC	Critical Habitat not triggered as no DMUs identified within the project AOI (lack of suitable habitat, distance from site and/or no apparent ecological connectivity)
Le Cesine	KP0.8 277266 , 4464958 3.2km from pipeline	Le Cesine Ramsar (168)	Ramsar	620ha, A coastal, wetland complex, separated from the sea by a dune system. Habitats include open brackish pools, reedbeds and associated saltmarsh, bordered by Mediterranean scrub and woodland. The site is important for the nesting, staging and wintering of numerous species of waterbirds.	Four lined snake , Leopard snake Moustached Warbler (*Acrocephalus melanopogon*), Kingfisher (*Alcedo atthis*), Pintail (*Anas acuta*), Shoveler (*Anas clypeata*), Teal (*Anas crecca*), Wigeon (*Anas penelope*), Mallard (*Anas platyrhynchos*), Garganey (*Anas querquedula*), Purple Heron, Squacco Heron, Pochard (*Aythya ferina*), Tufted Duck (*Aythya fuligula*), Ferruginous Duck, Bittern (*Botaurus stellaris*), Knot (*Calidris canutus*), Whiskered Tern (*Chlidonias hybridus*), Black Tern, Marsh Harrier, Hen Harrier, Montagu's Harrier, Woodpigeon (*Columba palumbus*), Quail (*Coturnix coturnix*), Great White Egret, Little Egret, Coot (*Fulica atra*), Snipe (*Gallinago gallinago*), Great Snipe (*Gallinago media*), Moorhen (*Gallinula chloropus*), Crane (*Grus grus*), Oystercatcher (*Haematopus ostralegus*), Black-winged Stilt (*Himantopus himantopus*), Little Bittern (*Ixobrychus minutus*), Red-crested Pochard (*Netta rufina*), Night Heron (*Nycticorax nycticorax*), Osprey (*Pandion haliaetus*), Cormorant, Ruff (*Philomachus pugnax*), Greater Flamingo (*Phoenicopterus ruber*), Spoonbill (*Platalea leucorodia*), Glossy Ibis (*Plegadis falcinellus*), Golden Plover (*Pluvialis apricaria*), Little Crake (*Porzana parva*), Spotted Crake (*Porzana porzana*), Water Rail (*Rallus aquaticus*), Avocet (*Recurvirostra avosetta*), Little Tern (*Sterna albifrons*), Sandwich Tern (*Sterna sandvicensis*), Spotted Redshank (*Tringa erythropus*), Wood Sandpiper (*Tringa glareola*), Greenshank (*Tringa nebularia*), Redshank (*Tringa totanus*), Redwing (*Turdus iliacus*), Blackbird (*Turdus merula*), Song Thrush (*Turdus philomelos*)	Critical Habitat not triggered as no DMUs identified within the project AOI (lack of suitable habitat, distance from site and/or no apparent ecological connectivity)
	KP0.4 277488 , 4465021 2.3km from pipeline	Le Cesine SPA (IT9150014)	Special Protection Area (Birds Directive)			
	KP0.8 277266 , 4464958 3.2km from pipeline	Le Cesine SCI (IT9150032)	Site of Community Importance (Habitats Directive)			
	KP0.8 277266 , 4464958 3.2km from pipeline	Le Cesine State Nature Reserve (6070)	State Nature Reserve			

APPENDIX 6
FIGURES

Figure 10 Critical habitat overview



TAP base case route centreline

Kilometre points (KP)

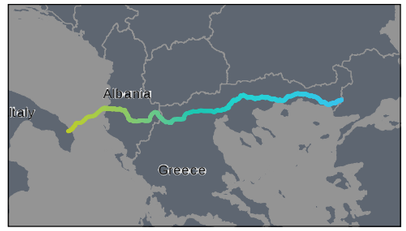
TAP access road

Critical Habitat DMU - Terrestrial

Critical Habitat DMU - Offshore

Protected Site

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Critical Habitat Overview

CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 265 of 406 Sheet 1 of 1

0 25 50 75 100
Kilometers
SCALE: 1:3,000,000 @ A3

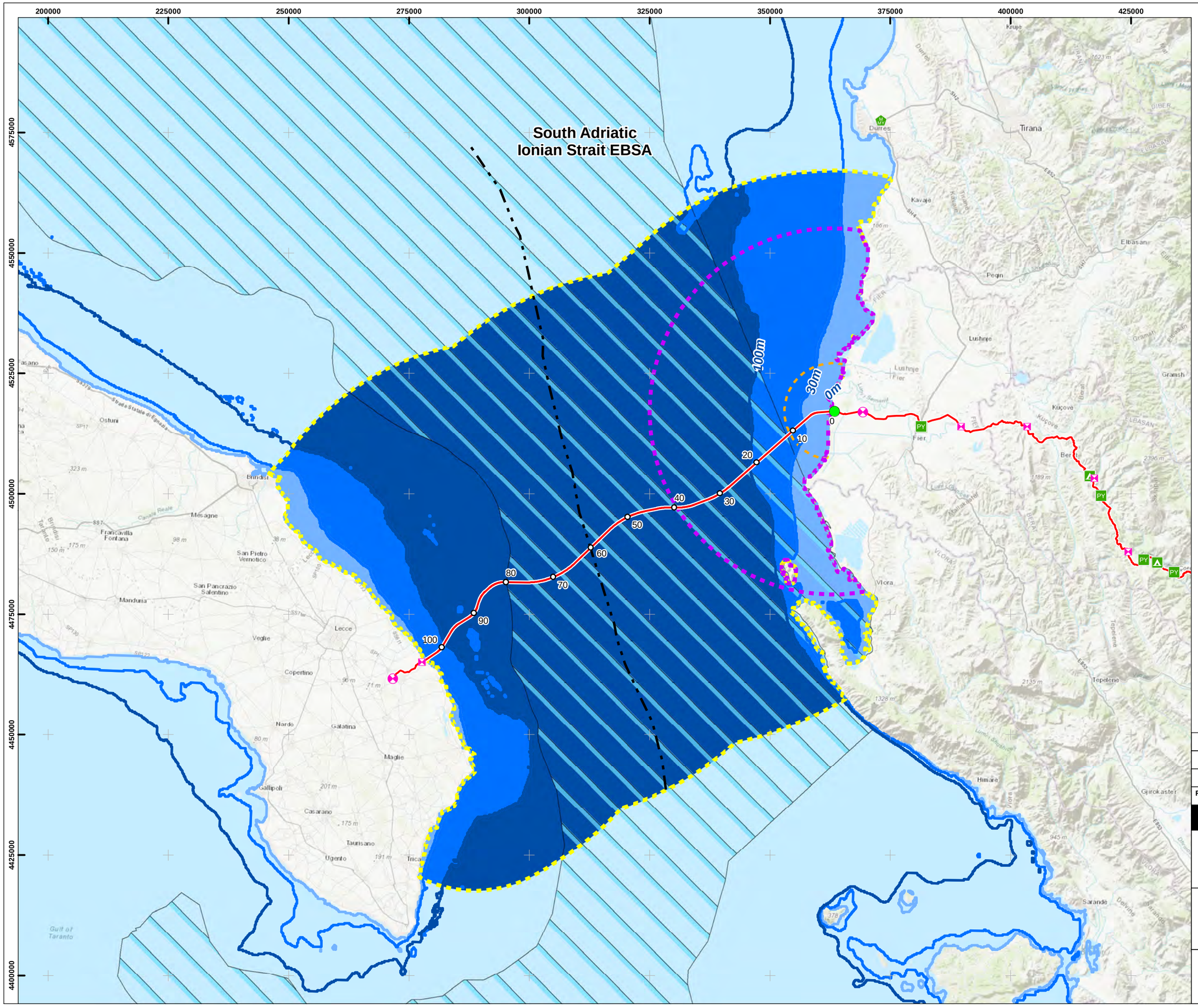
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-014[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 11 Offshore DMUs



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Main marshalling yard

Landfall Site

Albania-Italy Boundary Agreement

Marine DMU

Coast DMU (0-30m Depth)

Nearshore DMU (30-100m Depth)

Offshore DMU (>100m Depth)

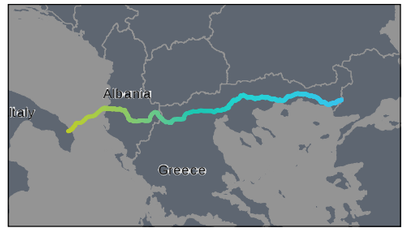
Sediment Plume - 10km Buffer

Seascape - 50km Buffer

Underwater Noise - 38km Buffer

Ecologically or biologically sensitive area (EBSA)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	02/02/2016	Final Issue	TOD	NOD	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Marine DMUs

CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 267 of 406 Sheet 1 of 1

0 5 10 15 20 25
Kilometers
SCALE: 1:750,000 @ A3

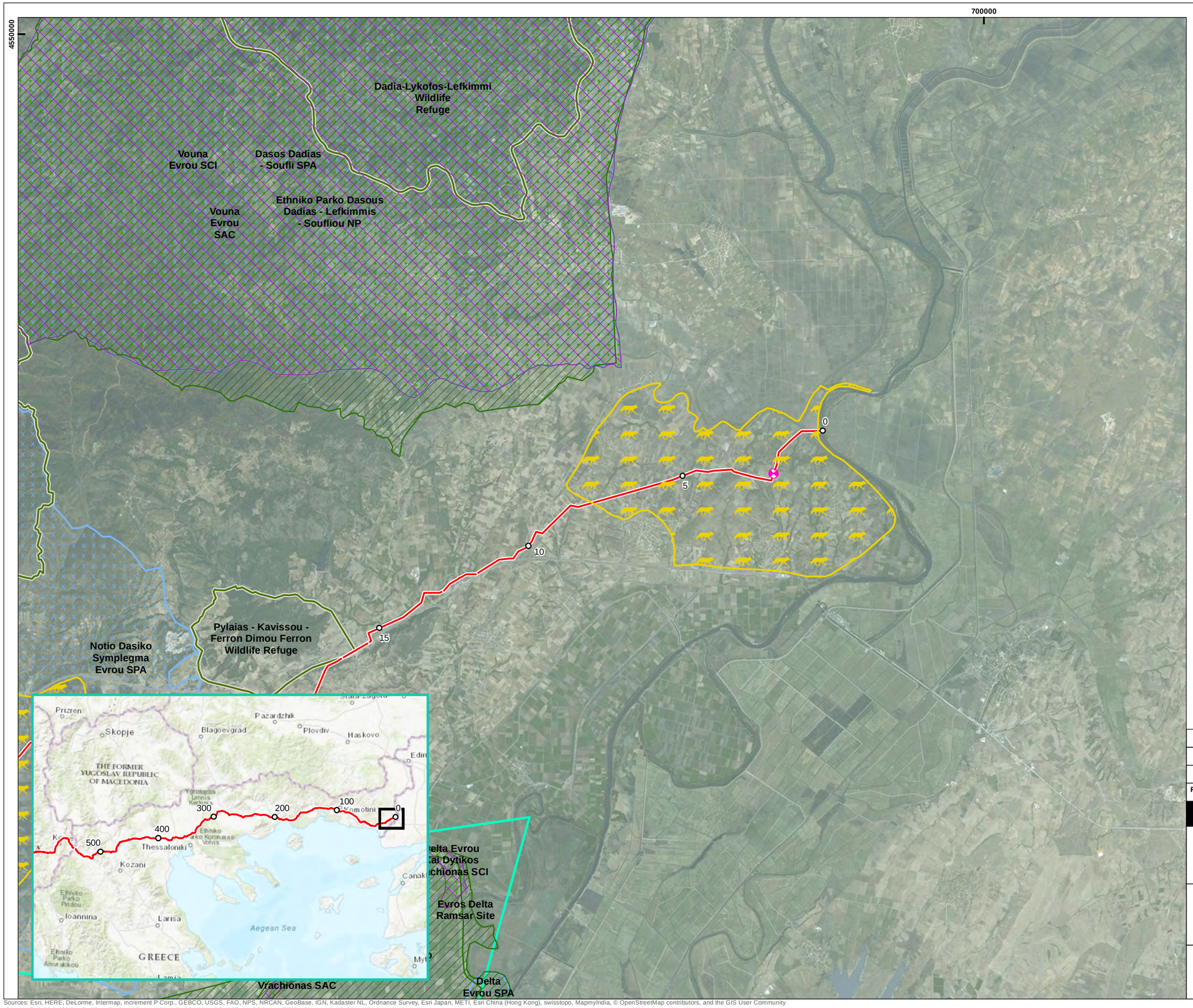
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-015[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 12 Large carnivore DMUs in Greece



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Pipe yard

Threatened species

Canis aureus (Golden Jackal) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

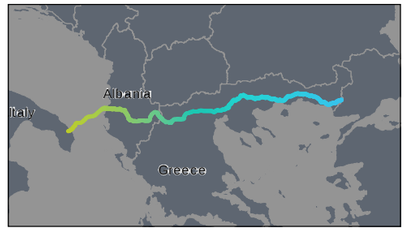
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 269 of 406 Sheet 1 of 7

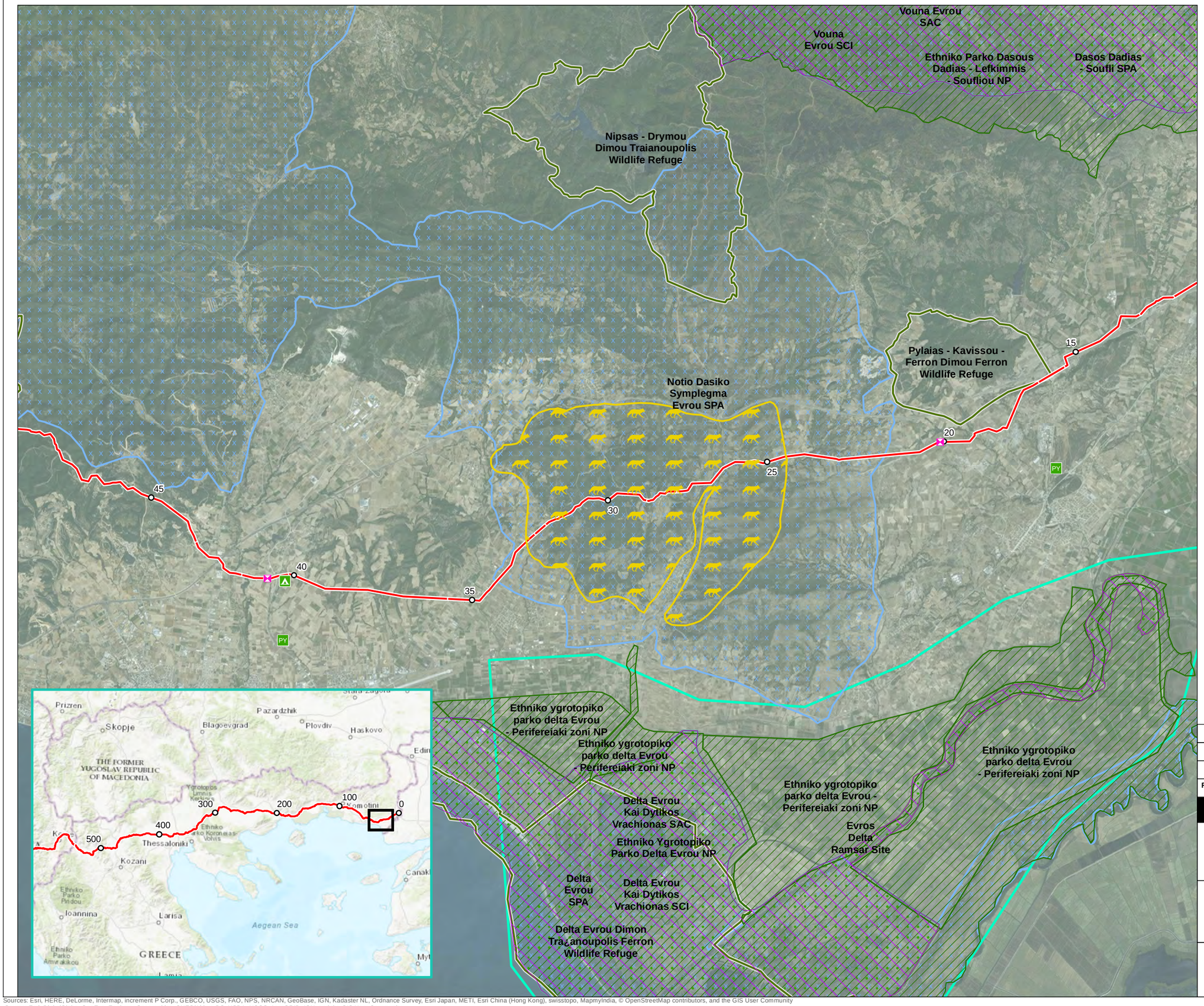
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Canis aureus (Golden Jackal) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

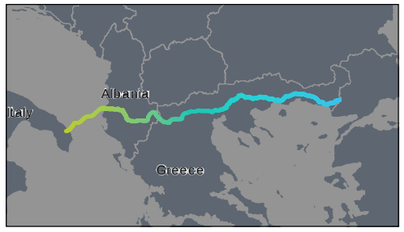
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 270 of 406 Sheet 2 of 7

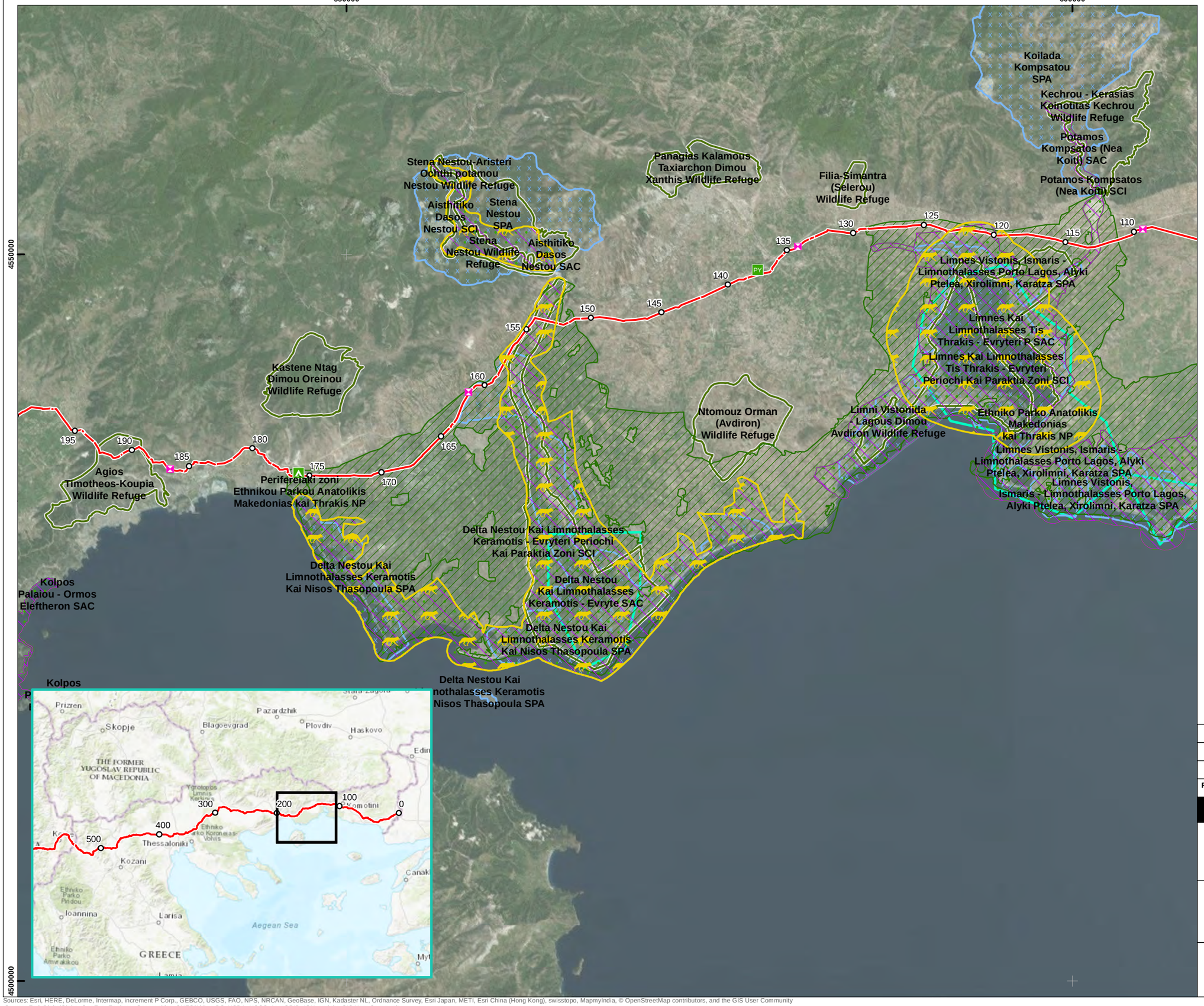
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Canis aureus (Golden Jackal) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

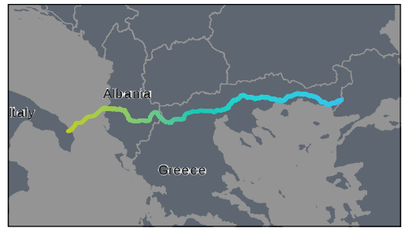
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 271 of 406 Sheet 3 of 7

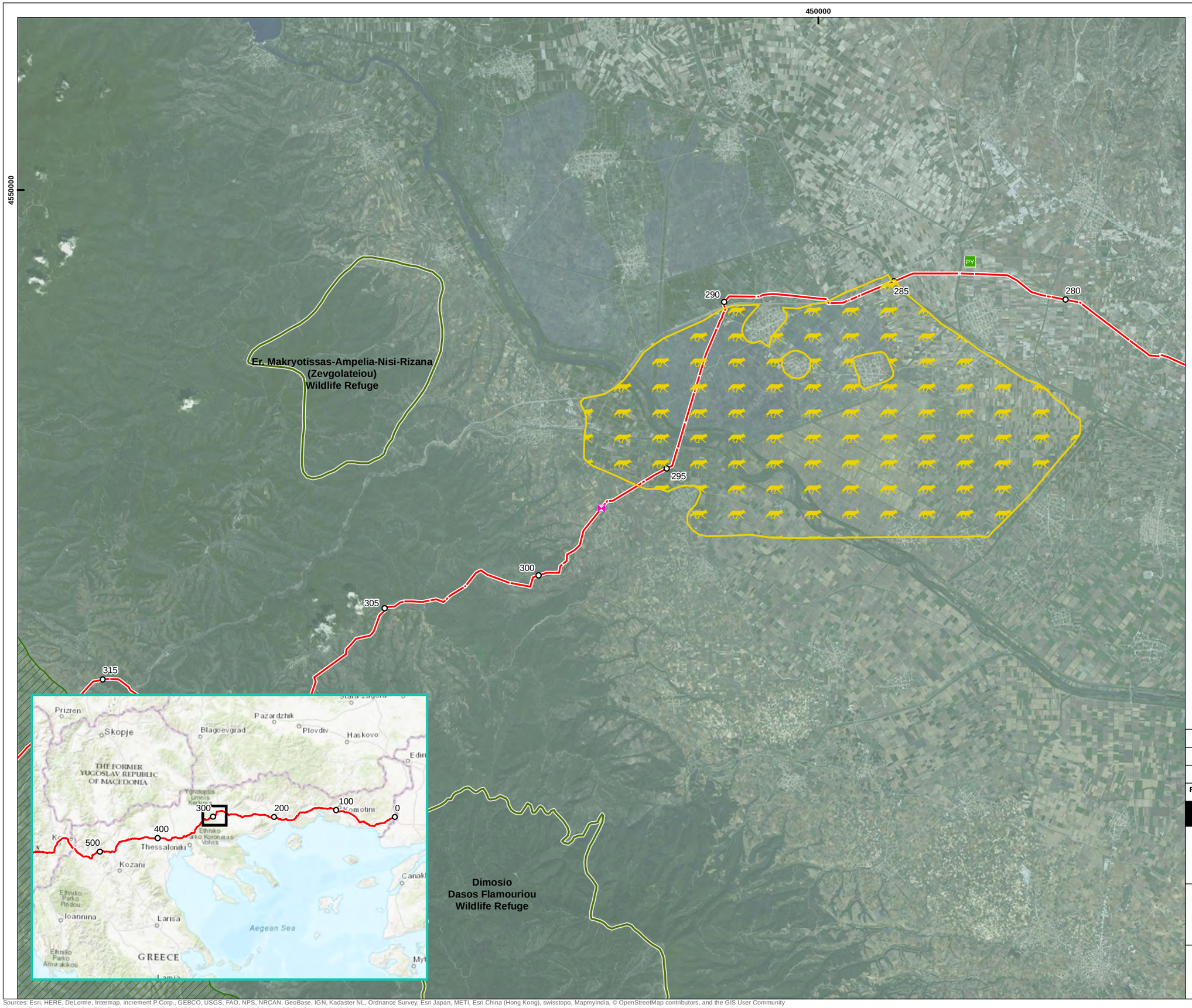
0 2 4 6 8 10
Kilometers
SCALE: 1:250,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

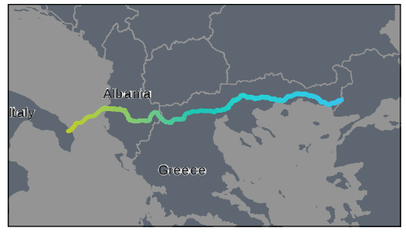
Canis aureus (Golden Jackal) DMU

Designated/Protected Site

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 272 of 406 Sheet 4 of 7

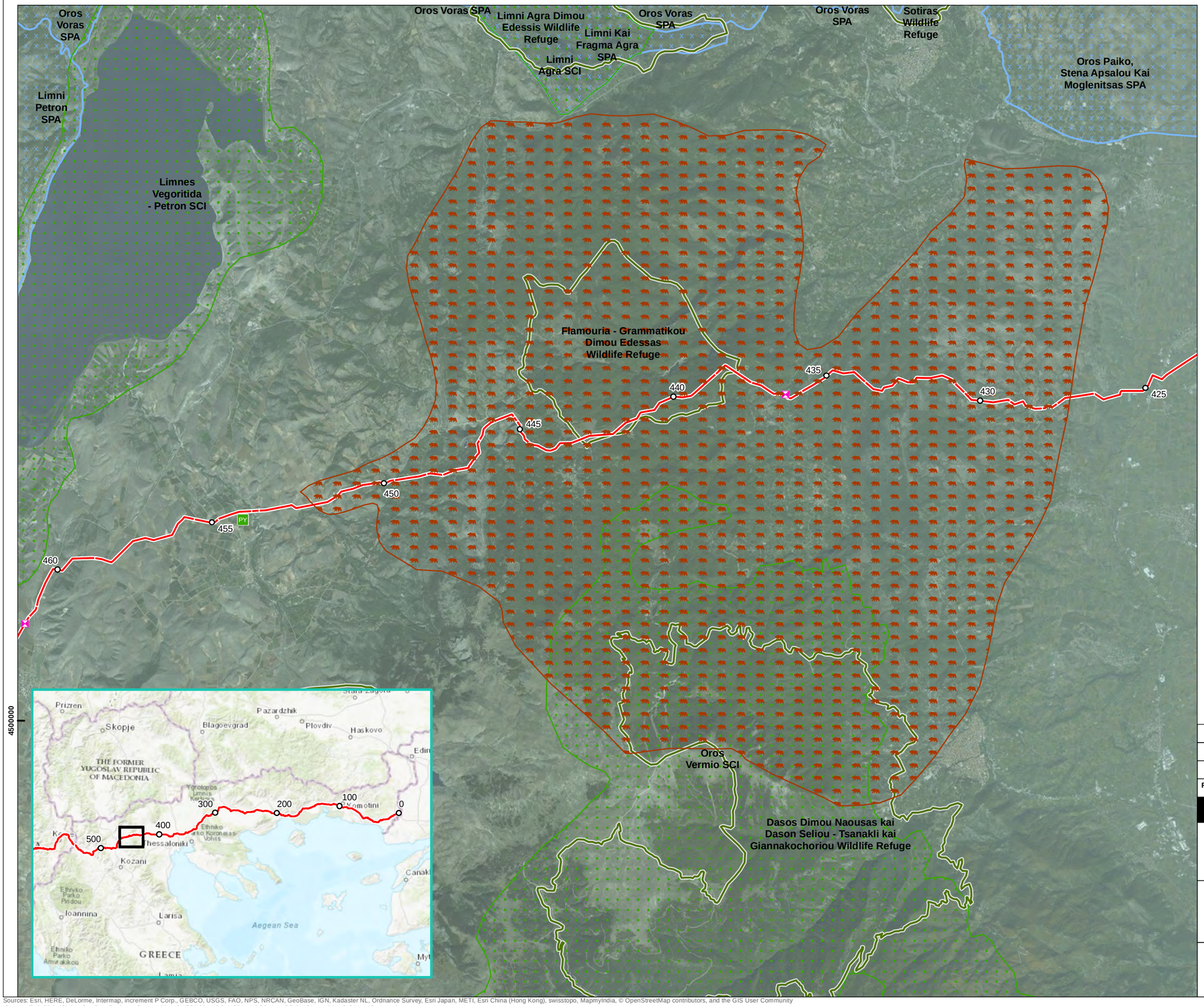
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

Ursus arctos (Brown Bear) DMU

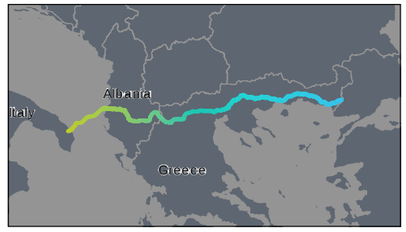
Designated/Protected Site

Site of Community Importance (Habitats Directive)

Special Protection Area (Birds Directive)

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 273 of 406 Sheet 5 of 7

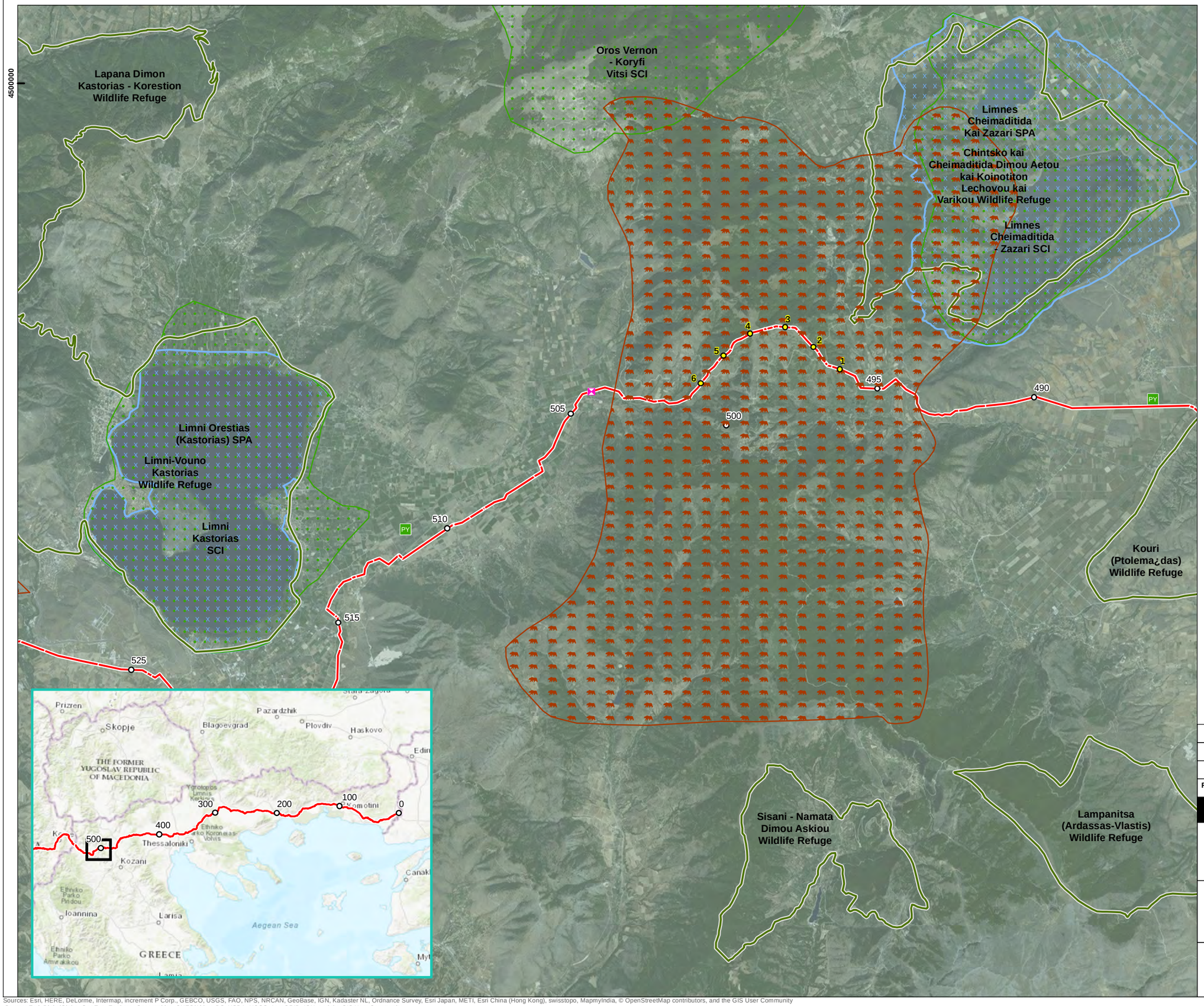
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Ursus arctos (Brown Bear) DMU

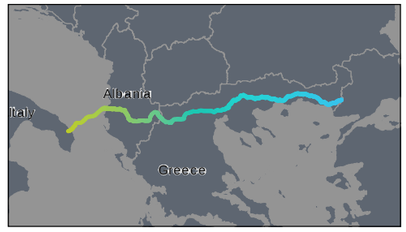
Designated/Protected Site

Site of Community Importance (Habitats Directive)

Special Protection Area (Birds Directive)

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 274 of 406 Sheet 6 of 7

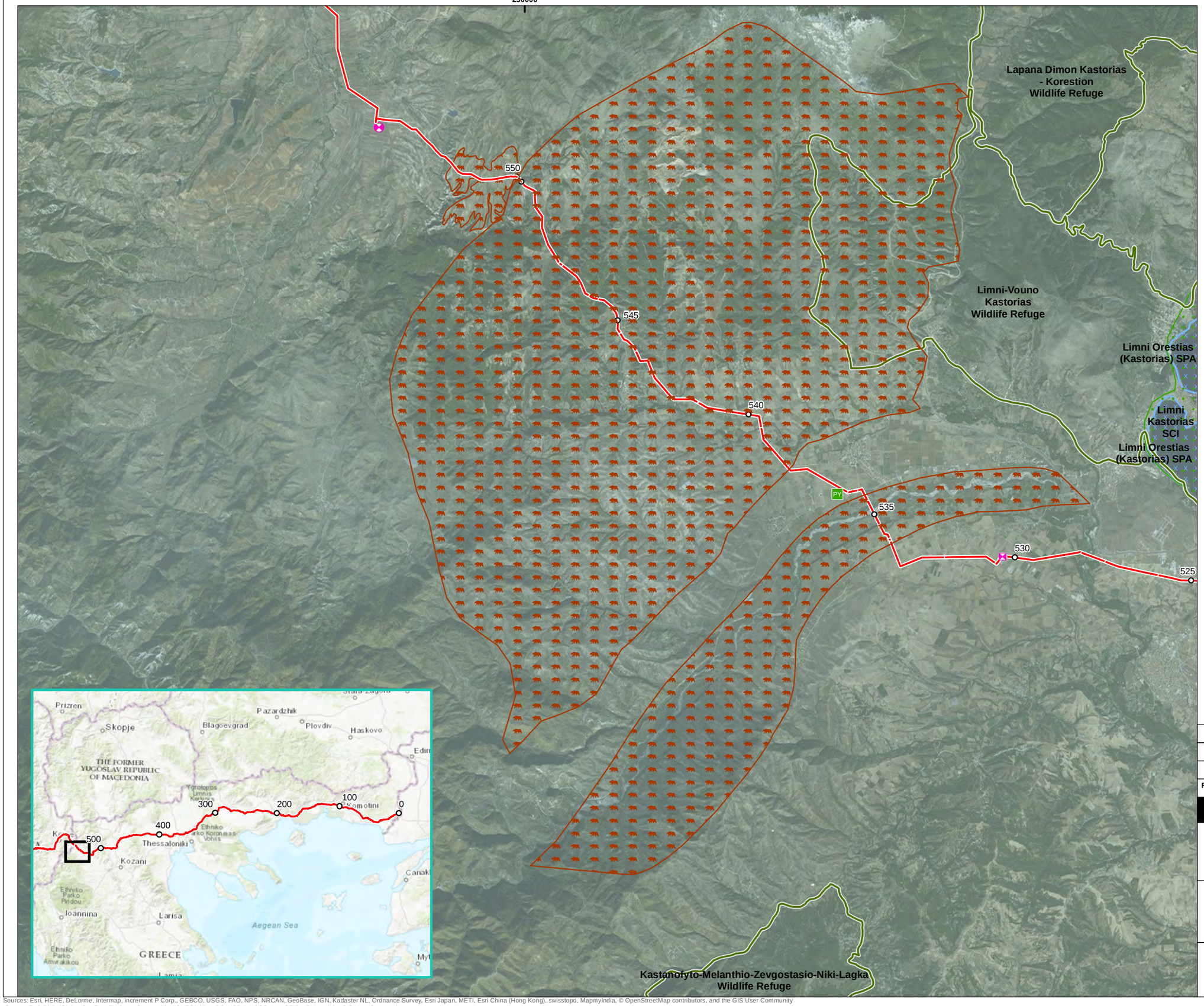
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Pipe yard

Threatened species

Ursus arctos (Brown Bear) DMU

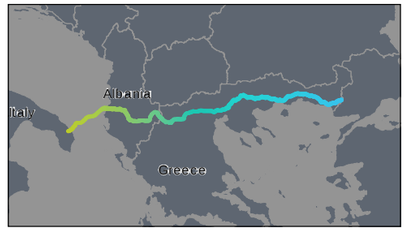
Designated/Protected Site

Site of Community Importance (Habitats Directive)

Special Protection Area (Birds Directive)

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 275 of 406 Sheet 7 of 7

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

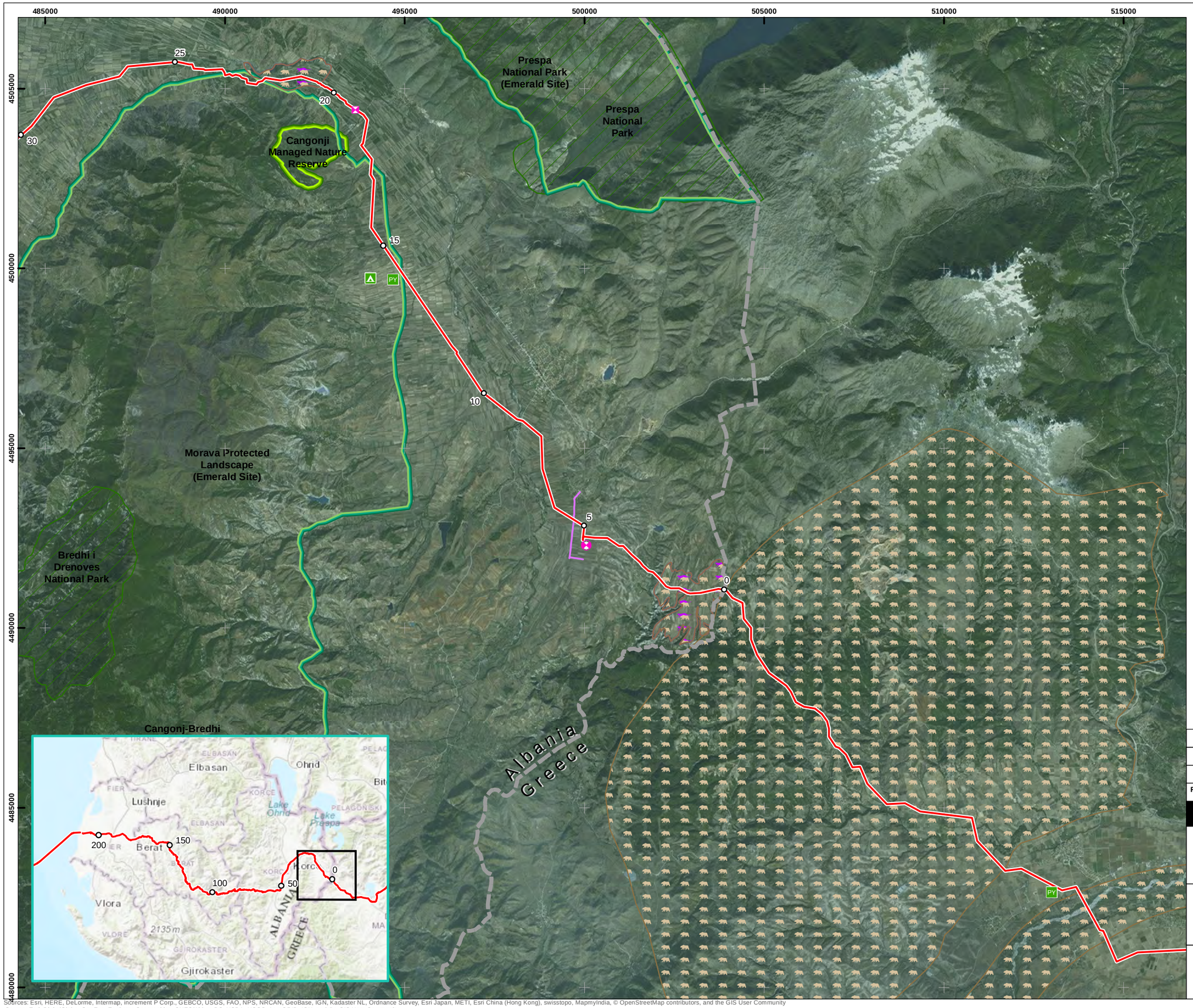
N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-005[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 13 Large carnivore DMUs in Albania



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Felis silvestris (Wildcat) DMU

Ursus arctos (Brown Bear) DMU

Protected/Designated Site

National Park

Emerald Site

Managed Nature Reserve

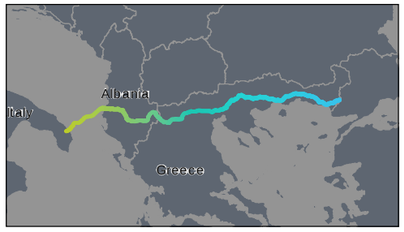
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 277 of 406 Sheet 1 of 4

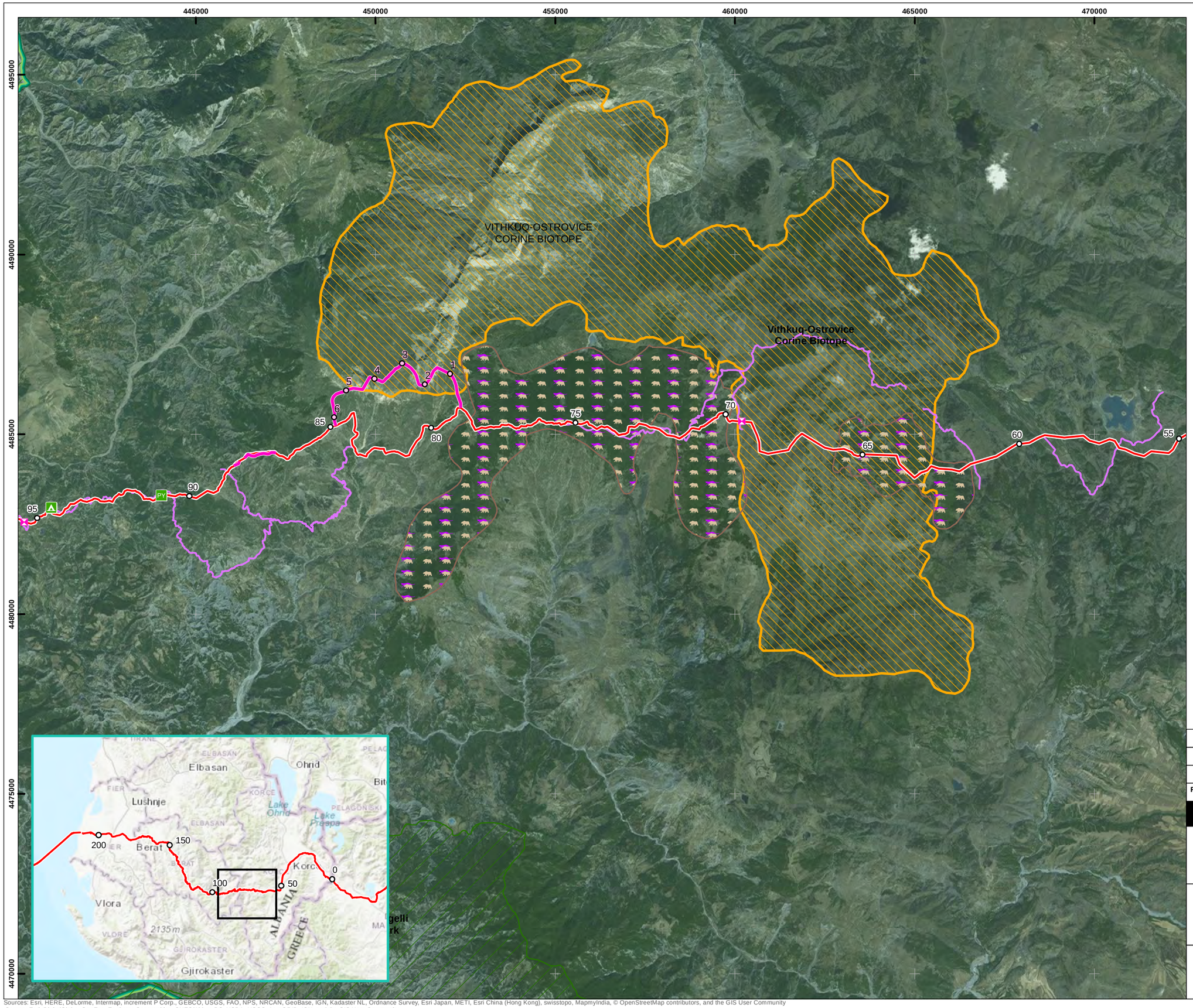
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-006[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Felis silvestris (Wildcat) DMU

Ursus arctos (Brown Bear) DMU

Protected/Designated Site

National Park

Emerald Site

Managed Nature Reserve

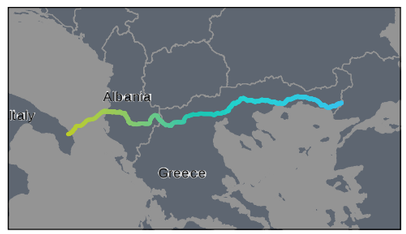
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 278 of 406 Sheet 2 of 4

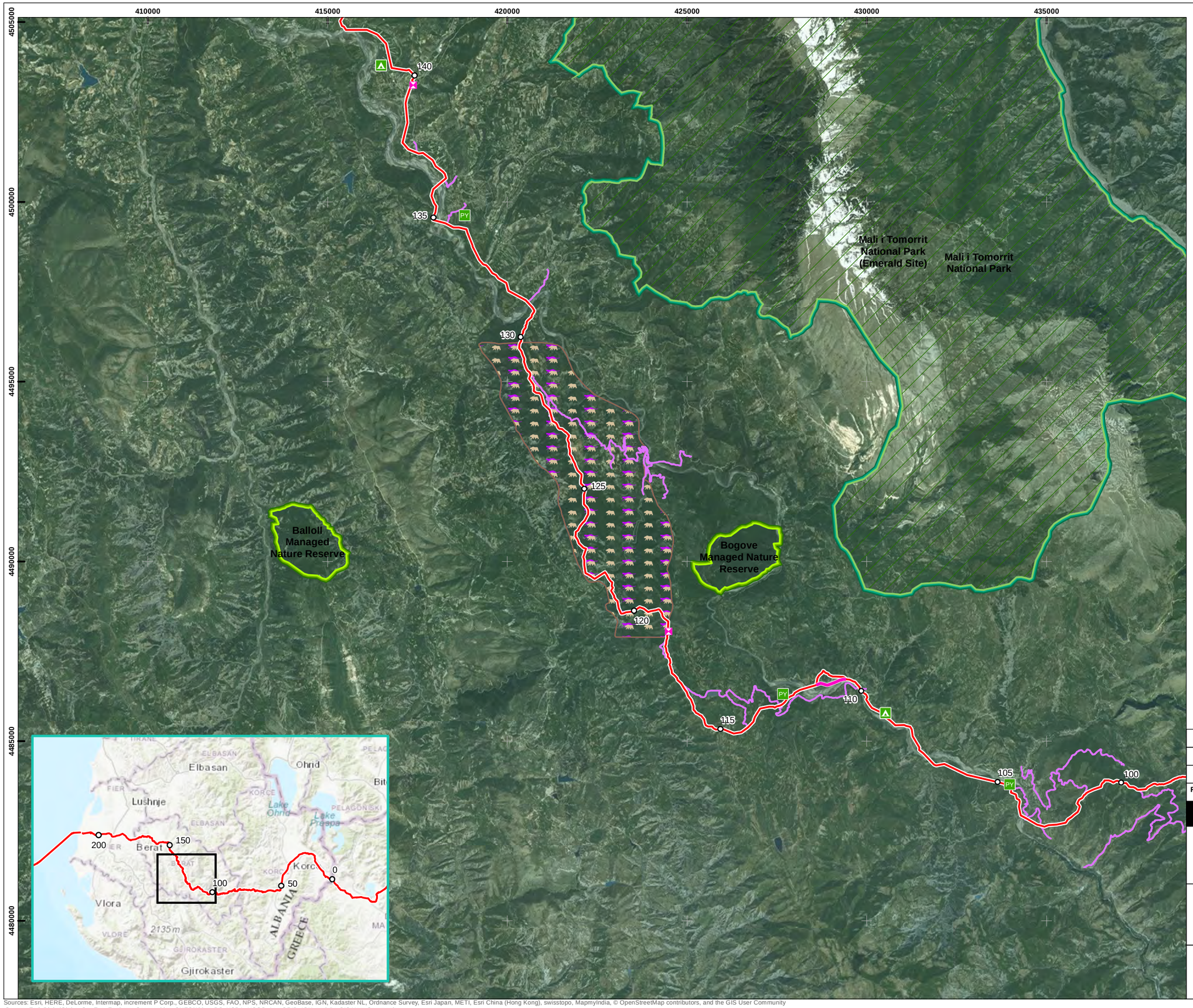
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-006[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Felis silvestris (Wildcat) DMU

Ursus arctos (Brown Bear) DMU

Protected/Designated Site

National Park

Emerald Site

Managed Nature Reserve

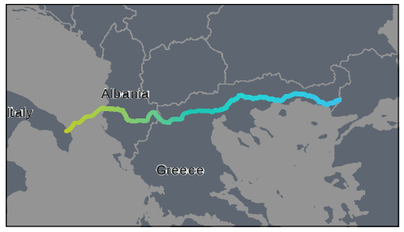
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 279 of 406 Sheet 3 of 4

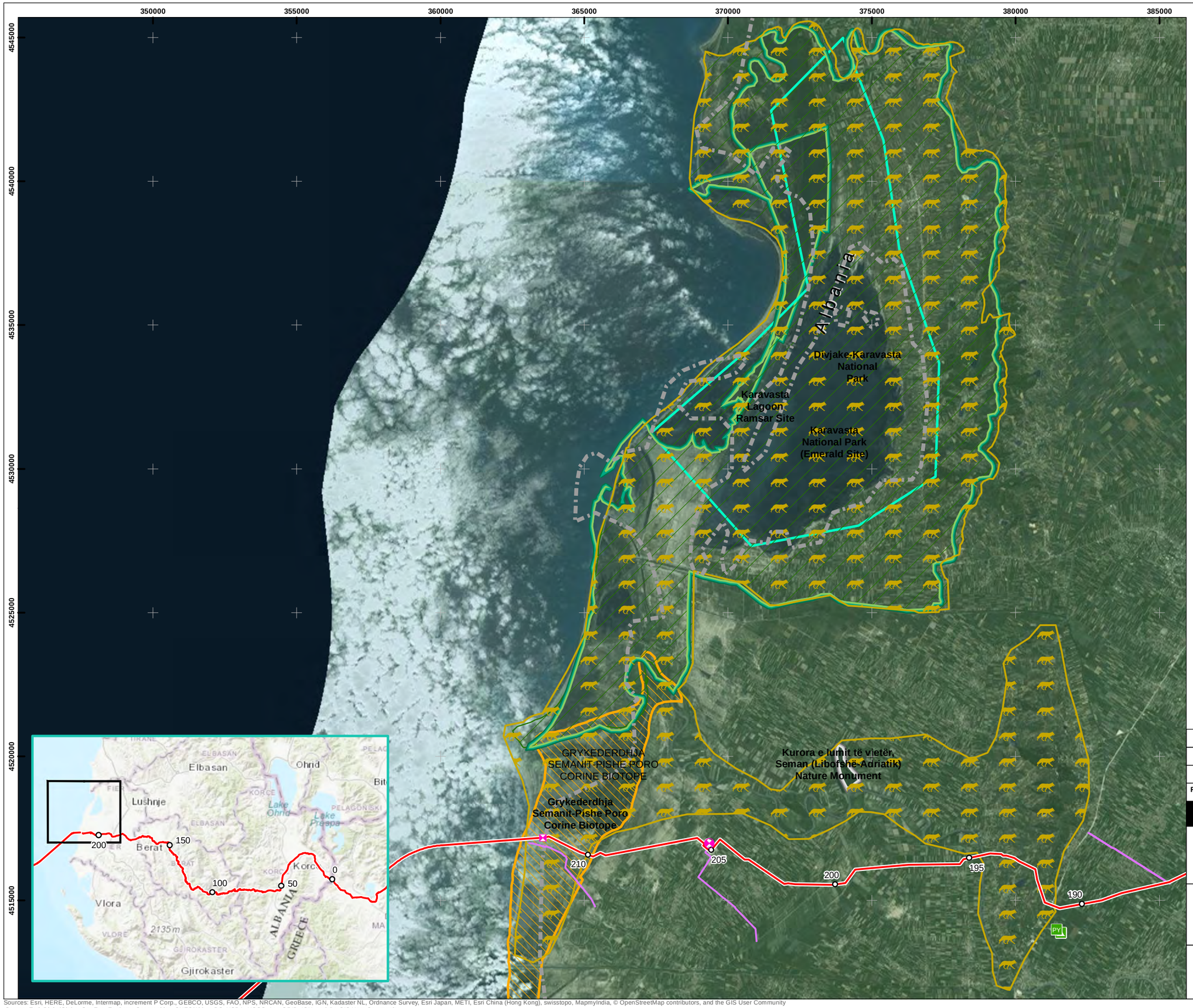
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-006[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Canis aureus (Golden Jackal) DMU

Protected/Designated Site

National Park

Emerald Site

Managed Nature Reserve

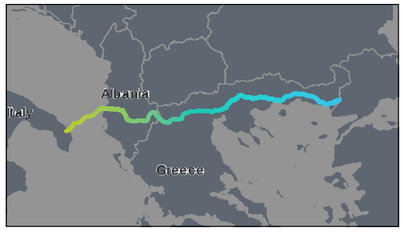
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Large Carnivores - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 280 of 406 Sheet 4 of 4

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

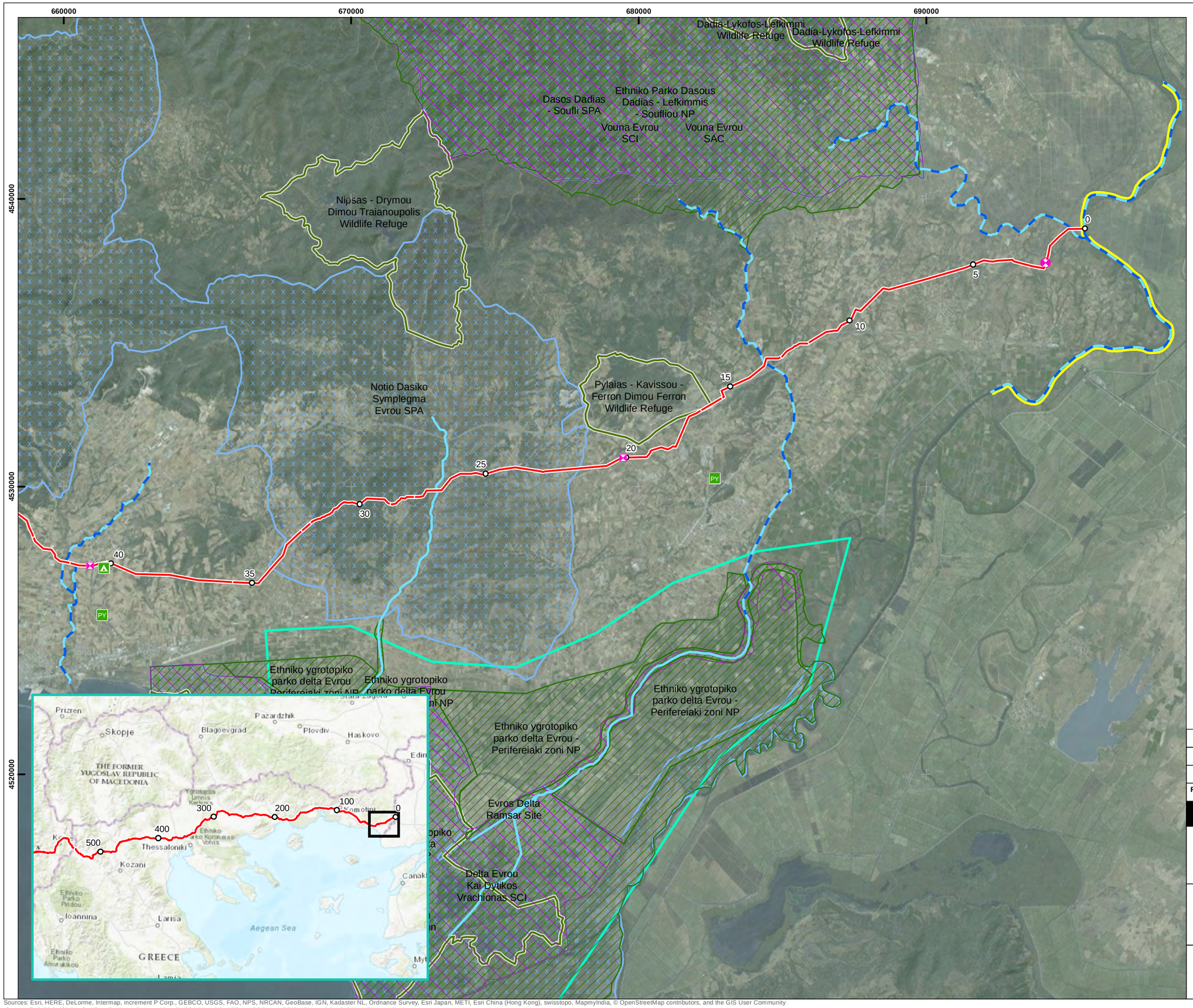
N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-006[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 14 DMUs for aquatic species in Greece



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Threatened Species

Anguilla anguilla (European eel) DMU

Cobitis puncticulata DMU

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

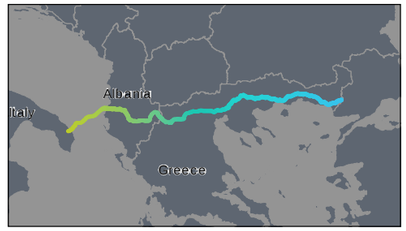
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 282 of 406 Sheet 1 of 10

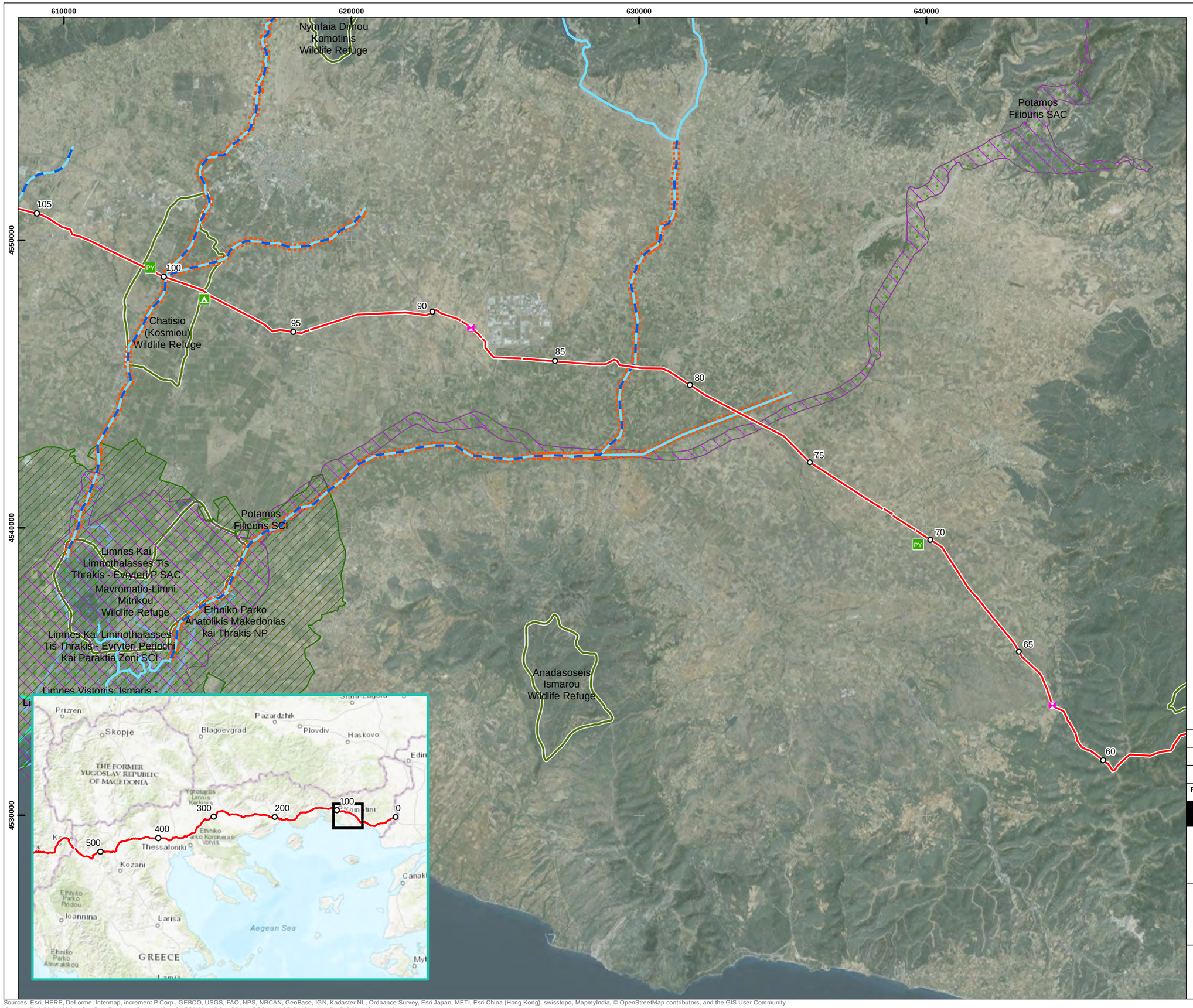
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Alburnus vistonicus DMU

Anguilla anguilla (European eel) DMU

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

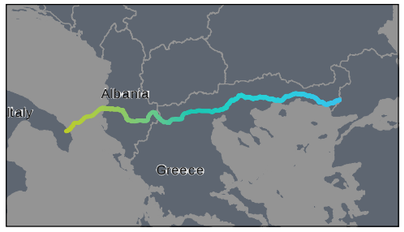
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 283 of 406 Sheet 2 of 10

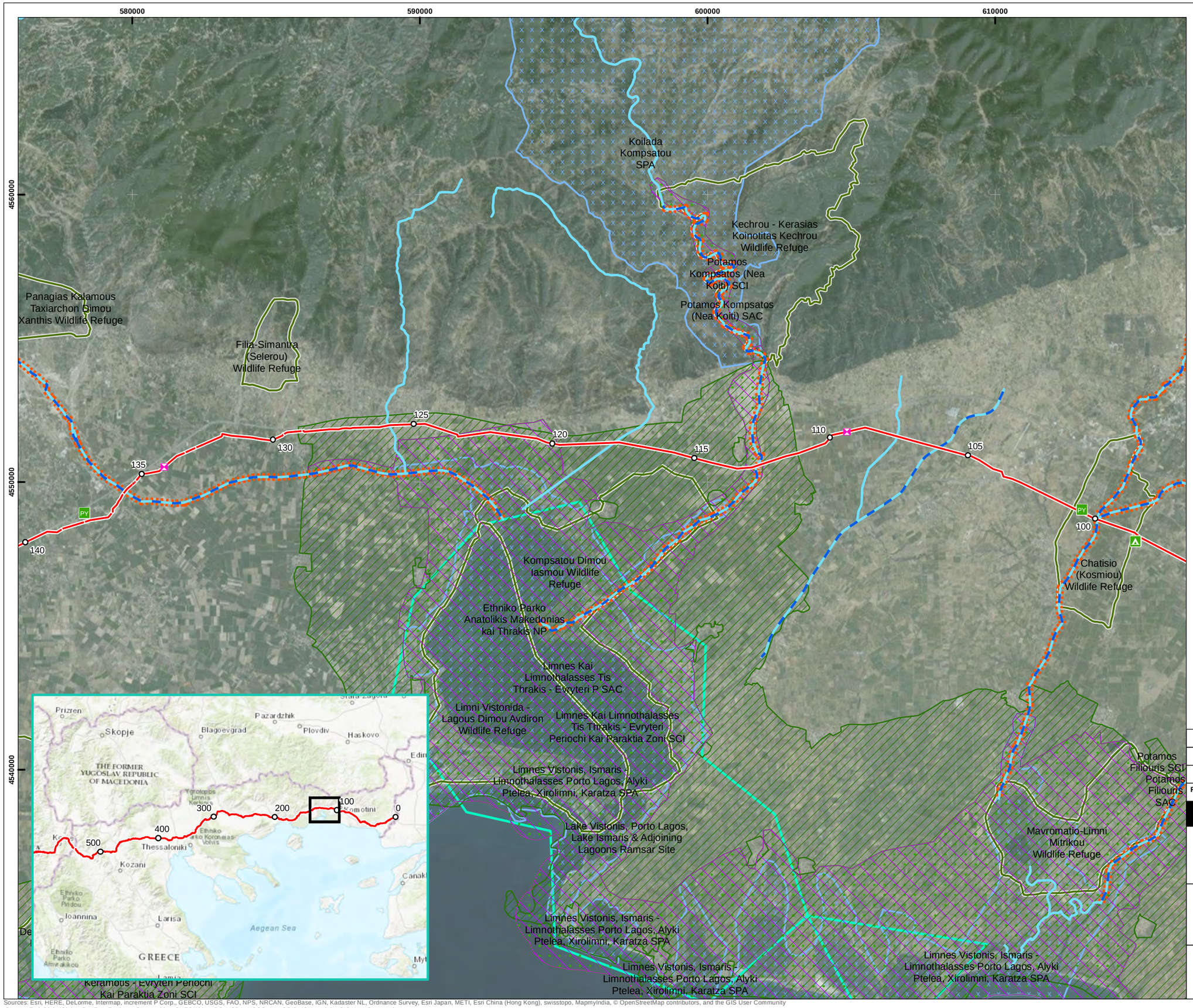
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Alburnus vistonicus DMU

Anguilla anguilla (European eel) DMU

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

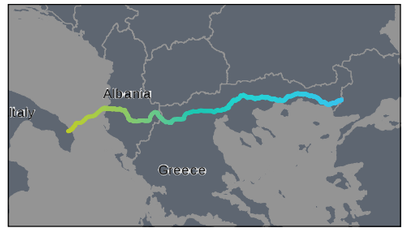
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 284 of 406 Sheet 3 of 10

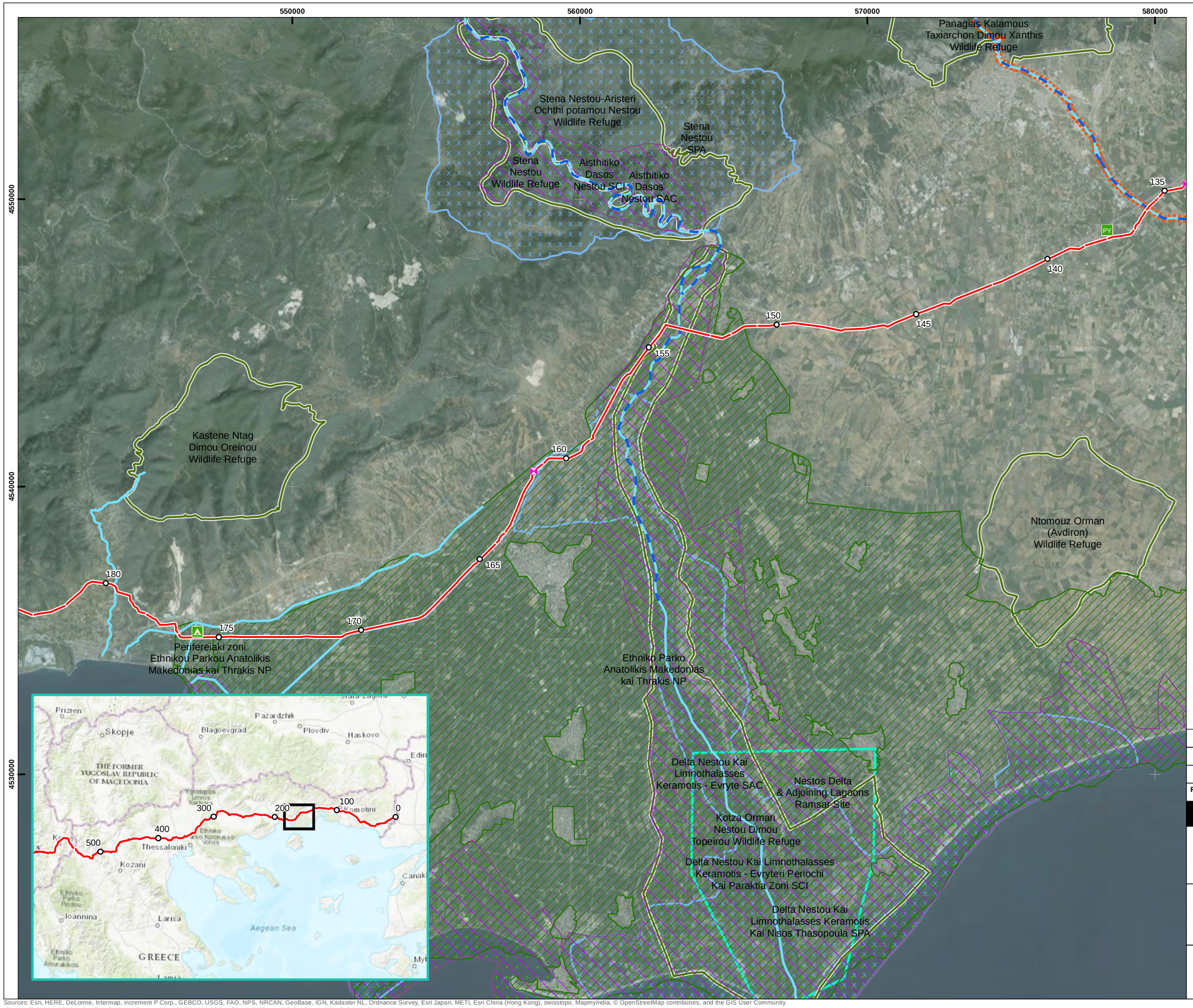
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Alburnus vistonicus DMU

Anguilla anguilla (European eel) DMU

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

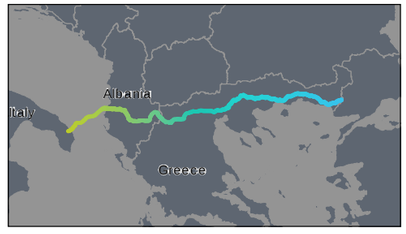
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 285 of 406 Sheet 4 of 10

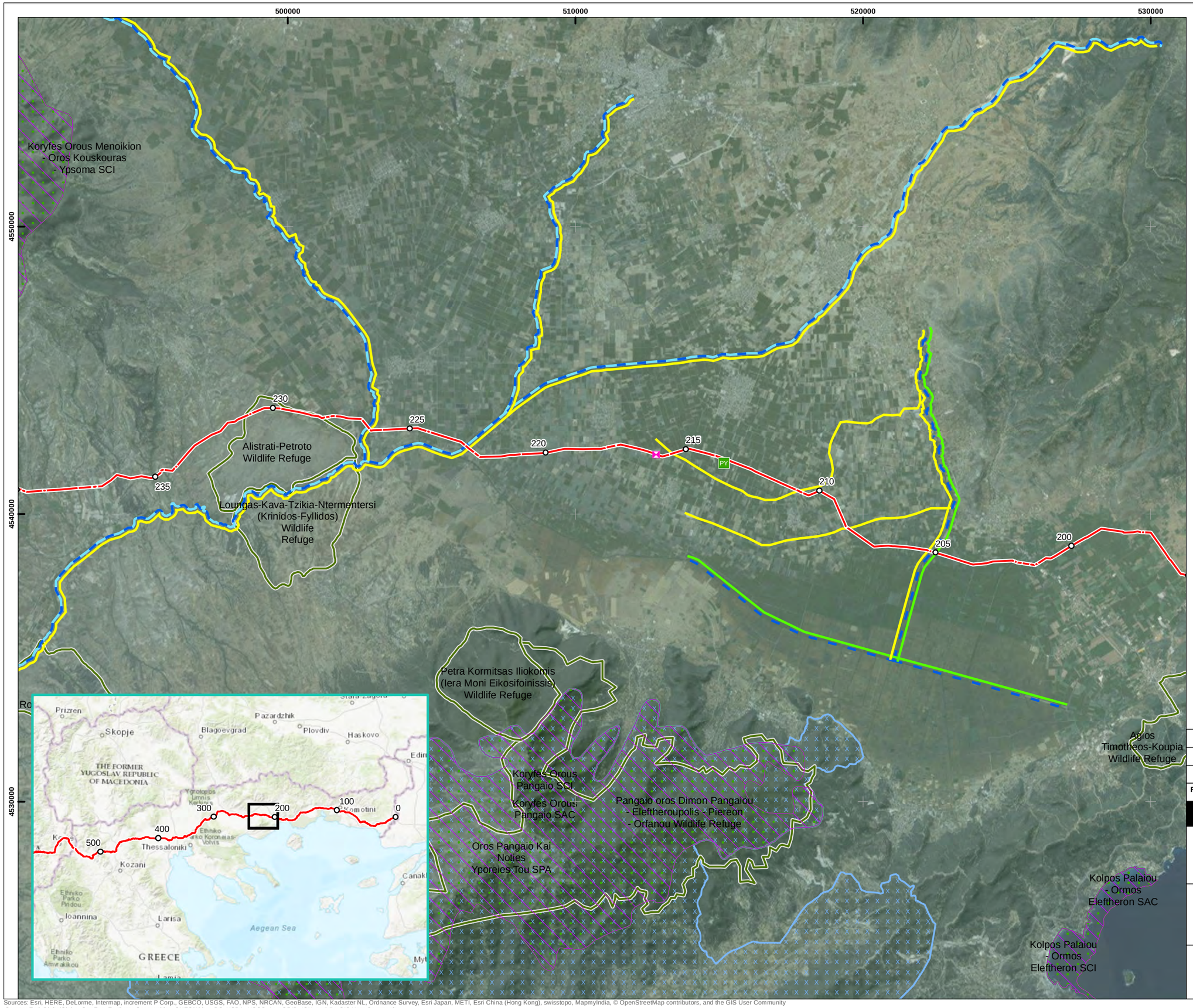
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened Species

Anguilla anguilla (European eel) DMU

Cobitis punctilineata (Aggitis spined loach) DMU

Eudontomyzon hellenicus (Greek brook lamprey) DMU

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

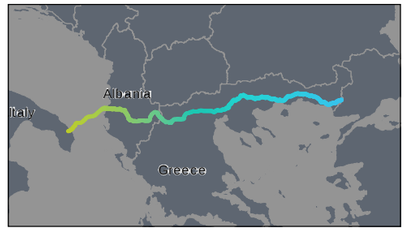
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 286 of 406 Sheet 5 of 10

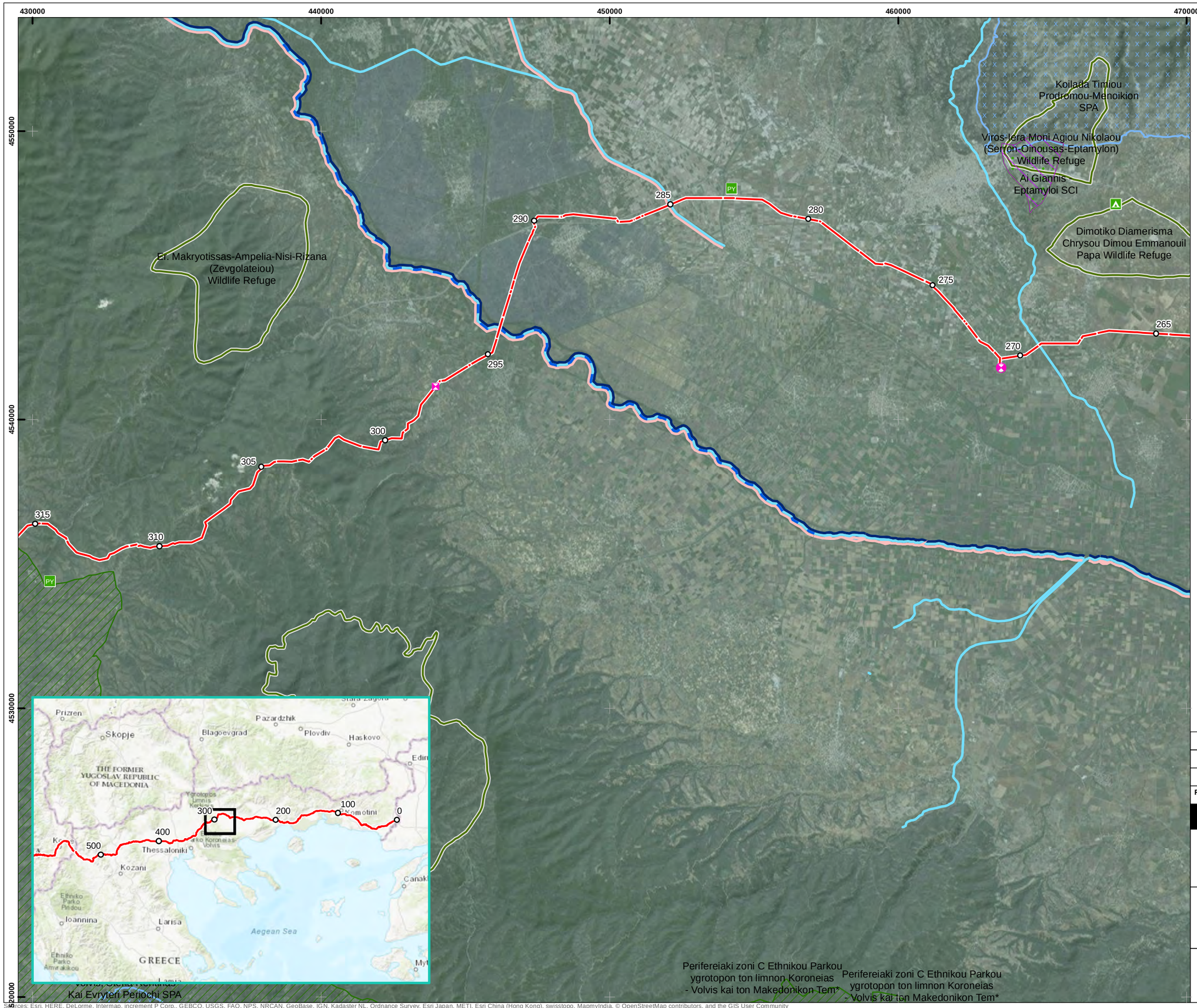
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 287 of 406 Sheet 6 of 10

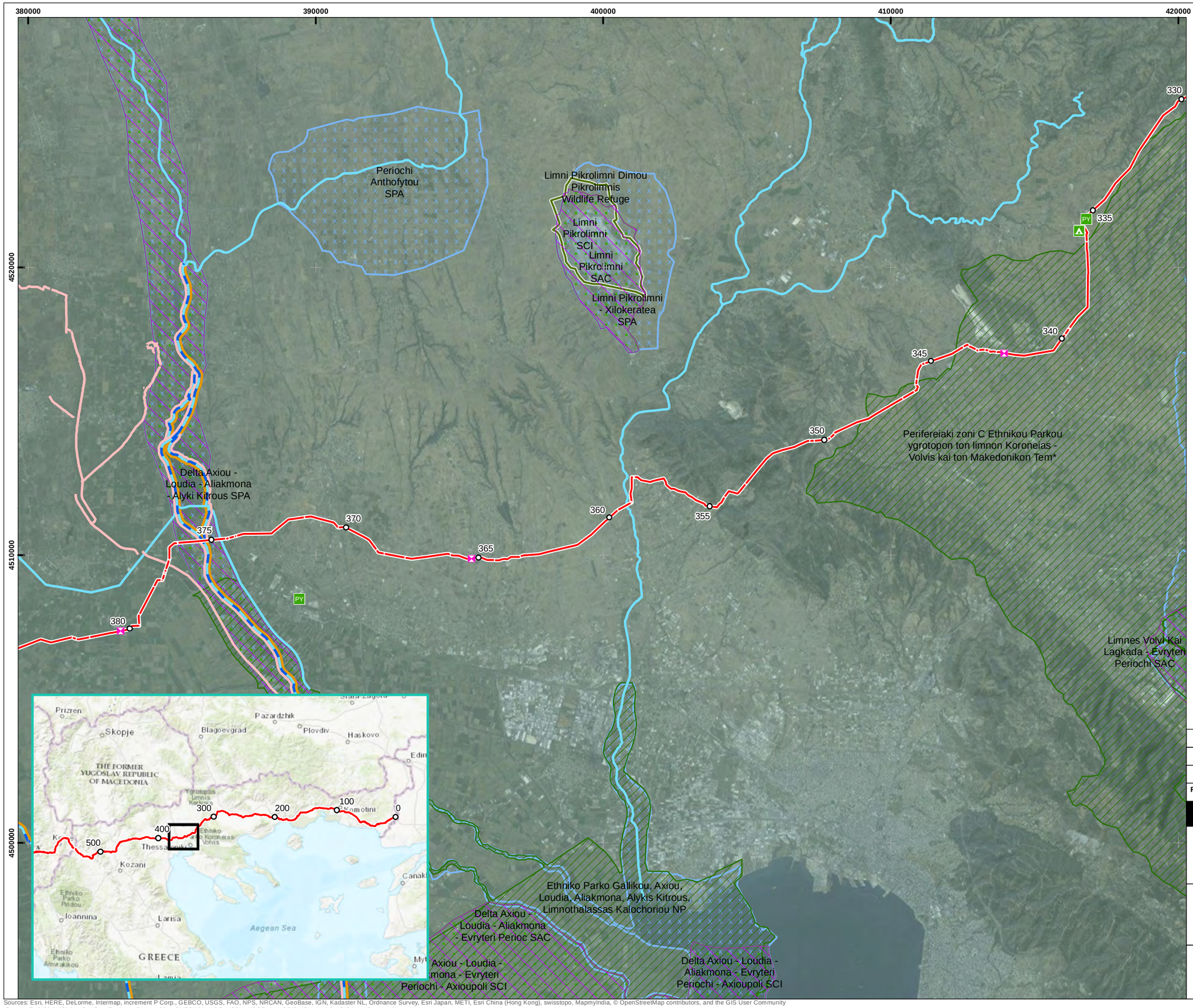
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Anguilla anguilla (European eel) DMU

Barbus macedonicus (Macedonian barbus) DMU

Lutra lutra (Eurasian otter) DMU

Salmo pelagonicus (Pelagos trout) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

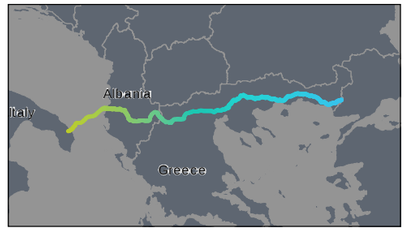
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 288 of 406 Sheet 7 of 10

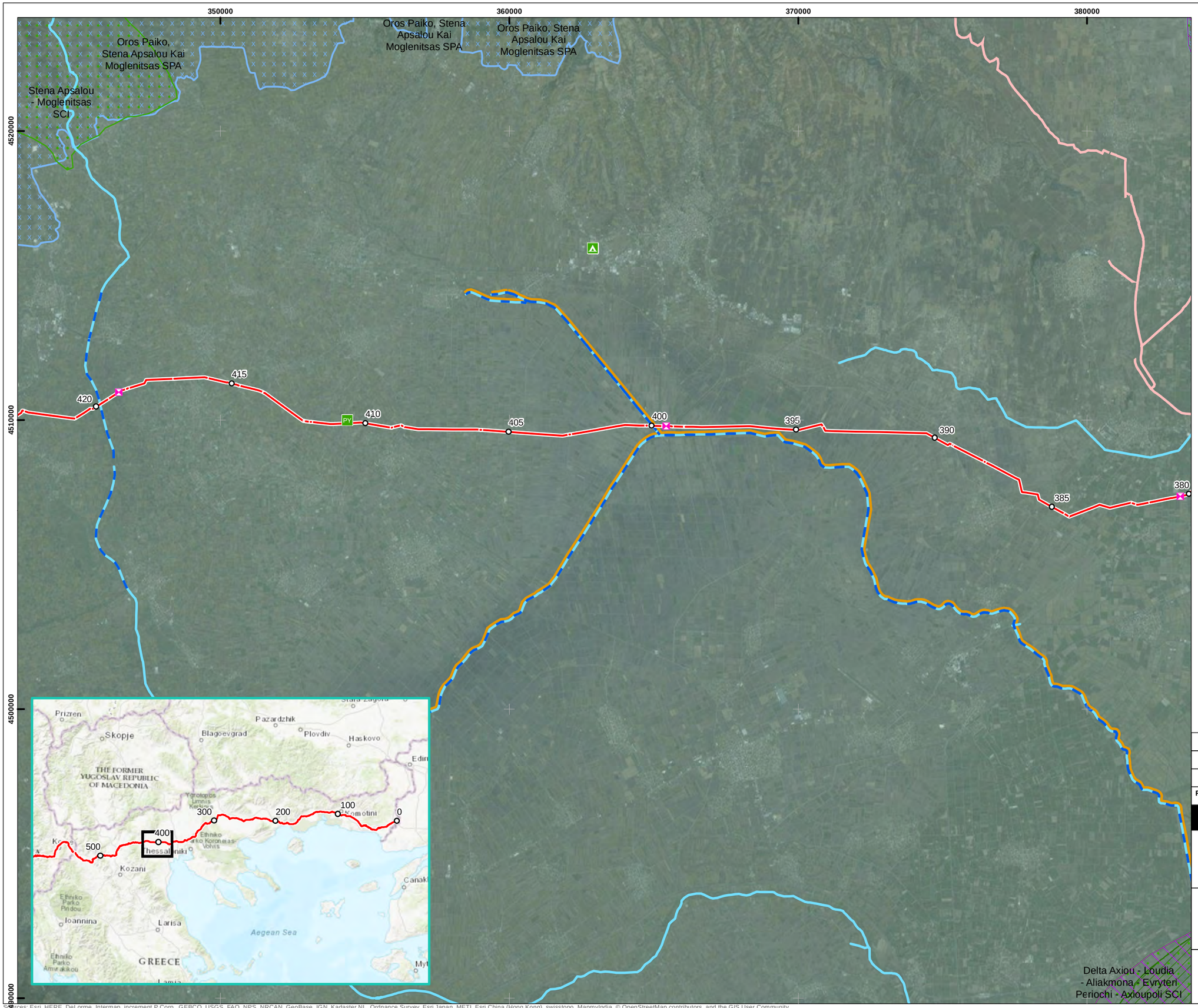
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Anguilla anguilla (European eel) DMU

Barbus macedonicus (Macedonian barbus) DMU

Lutra lutra (Eurasian otter) DMU

Salmo pelagonicus (Pelagos trout) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

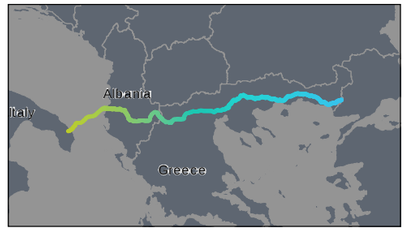
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 289 of 406 Sheet 8 of 10

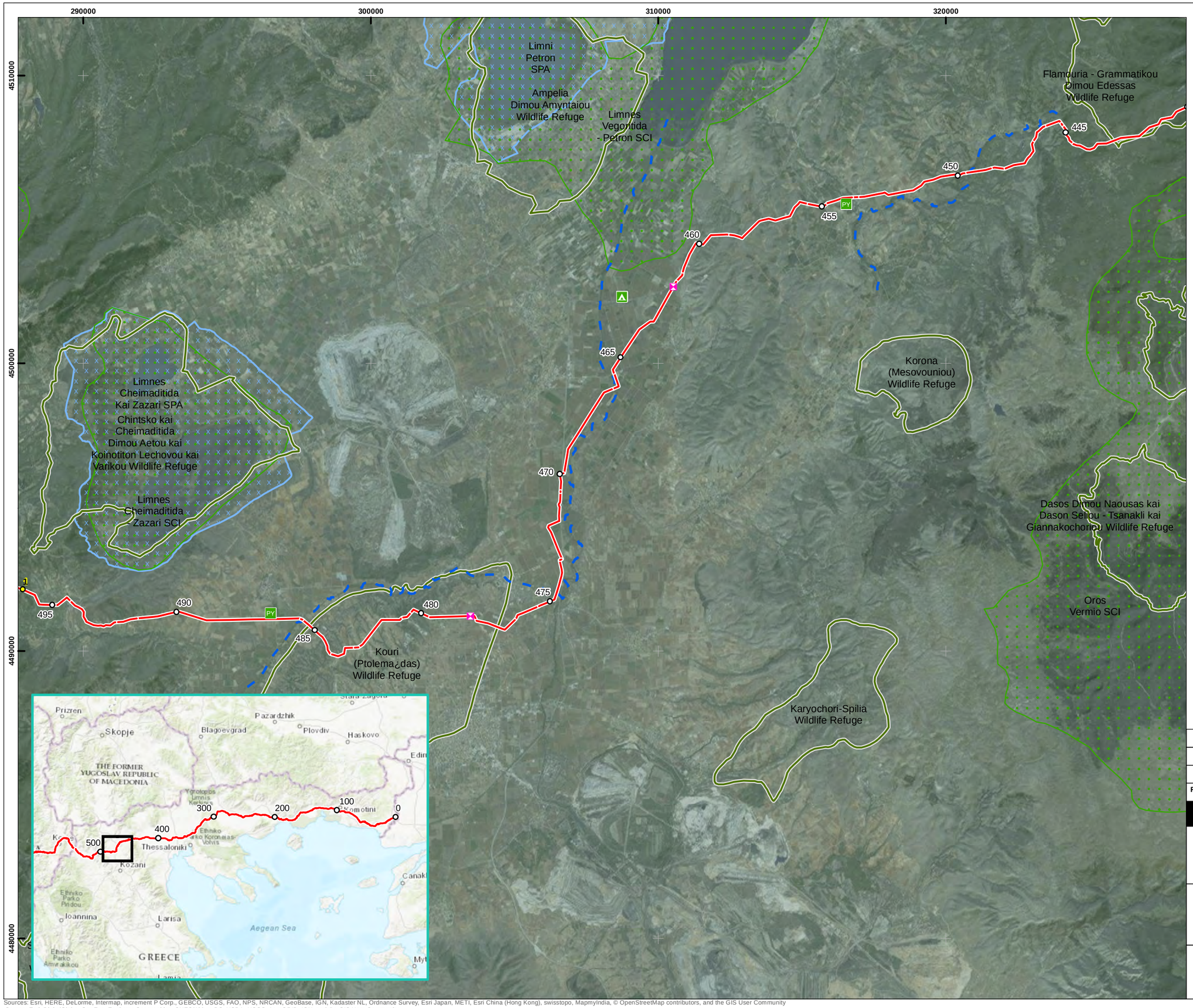
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Lutra lutra (Eurasian otter) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

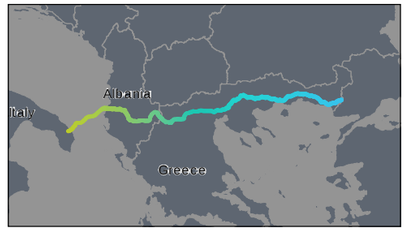
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 290 of 406 Sheet 9 of 10

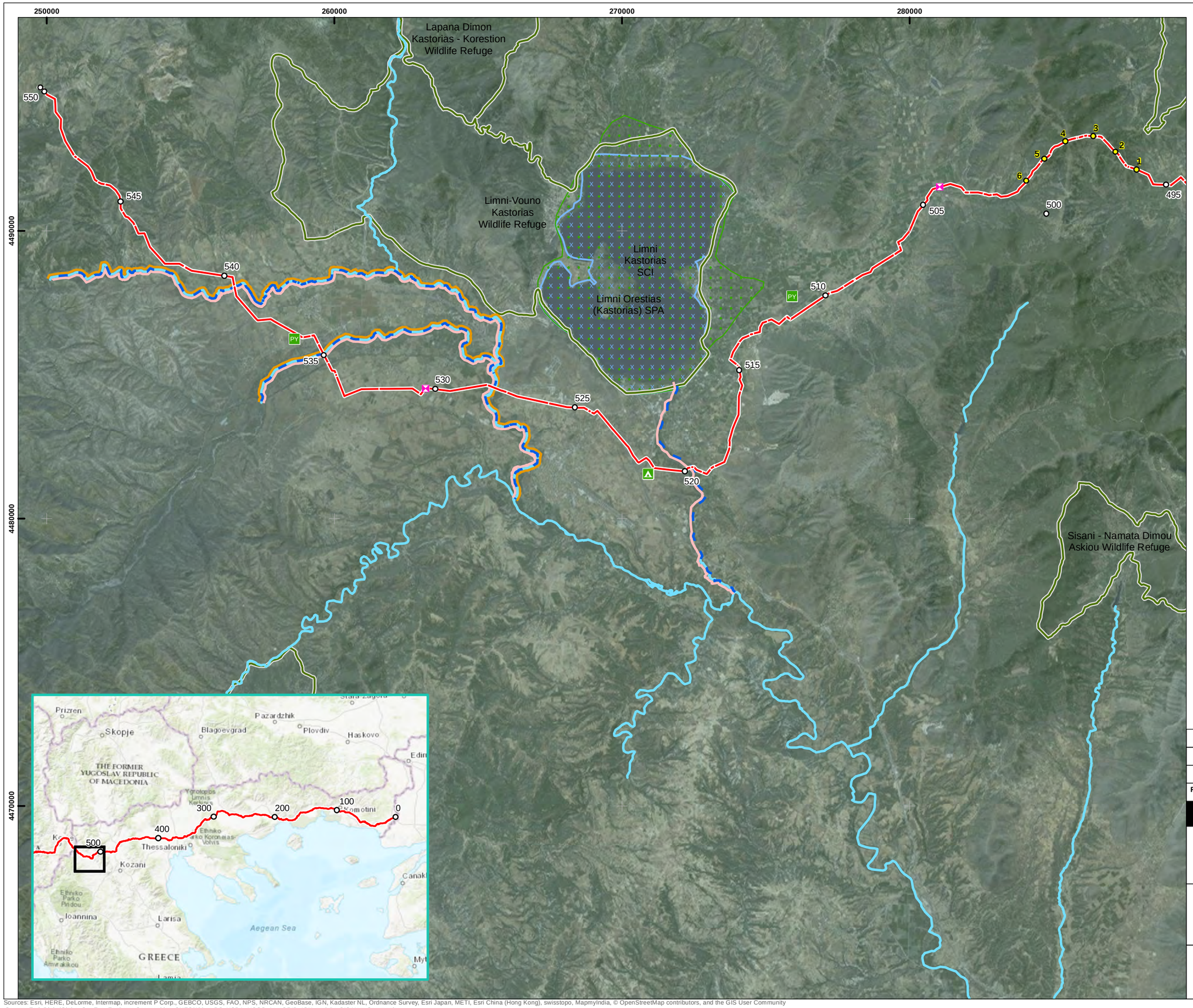
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened Species

Anguilla anguilla (European eel) DMU

Barbus macedonicus (Macedonian barbus) DMU

Lutra lutra (Eurasian otter) DMU

Salmo pelagonicus (Pelagos trout) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

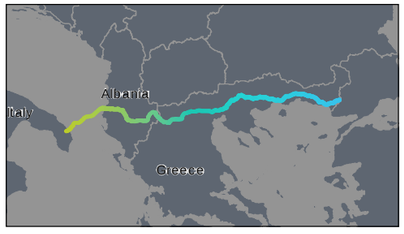
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: GGRS 1987
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Aquatic Fauna - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 291 of 406 Sheet 10 of 10

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

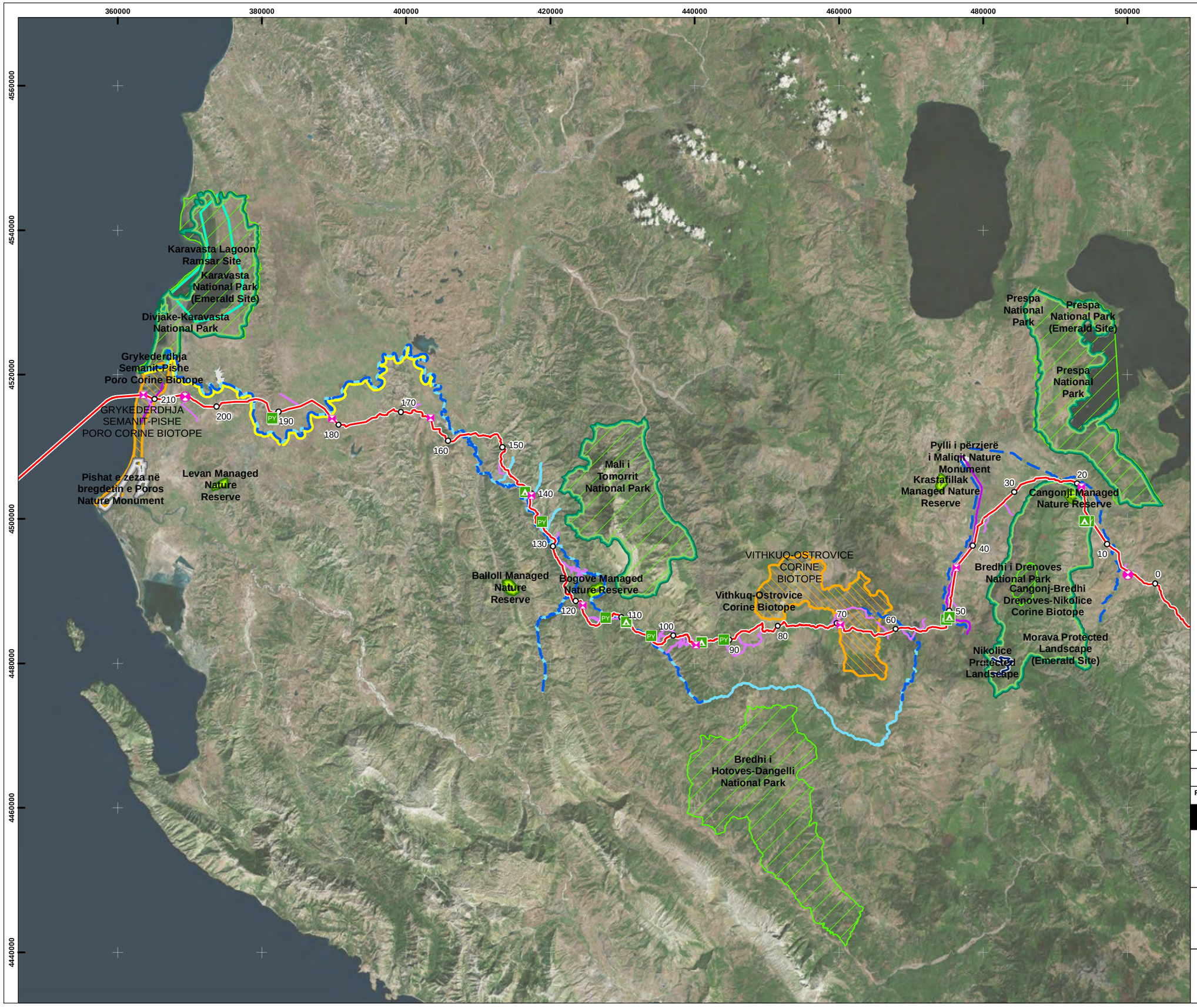
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-007[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 15 DMUs for aquatic species in Albania



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Anguilla anguilla European eel DMU

Lutra lutra (Eurasian otter) DMU

Oxynoemacheilus pindus DMU

Pelasgus prespensis DMU

Designated/Protected Site

National Park

Protected Landscape

Emerald Site

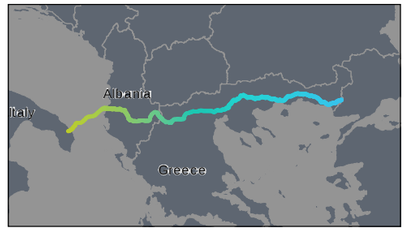
Managed Nature Reserve

Nature Monument

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Aquatic species - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 293 of 406 Sheet 1 of 1

0 5 10 15 20
Kilometers
SCALE: 1:500,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-008[2].mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 16 DMU for avifauna in Greece

650000
660000
670000
680000
4550000
4540000
4530000
4520000

Dadia-Lykofos-Lefkimmi Wildlife Refuge
Ethniko Parko Dasous Dadias - Lefkimmis - Soufliou NP
Vouna Evrou SAC
Vouna Evrou SCI
Dasos Dadias - Soufli SPA
Nipsas - Drymou Dimou Traianoupolis Wildlife Refuge
Notio Dasiko Symplegma Evrou SPA
Kirki Dimou Alexandroupolis Wildlife Refuge
Pylaias - Kavissou - Ferron Dimou Ferron Wildlife Refuge
Ethniko ygrotopiko parko delta Evrou Perifereiaki zoni NP
Ethniko ygrotopiko parko delta Evrou - Perifereiaki zoni NP
Ethniko Ygrotopiko Parko Delta Evrou NP
Ethniko ygrotopiko parko delta Evrou - Perifereiaki zoni NP
Ethniko ygrotopiko parko delta Evrou - Perifereiaki zoni NP
Delta Evrou SPA
Evros Delta Ramsar Site
Delta Evrou Kai Dytikos Vrachionas SAC
Delta Evrou Kai Dytikos Vrachionas SCI
Delta Evrou Dimon Tra¿anoupolis Ferron Wildlife Refuge

0 5 10 15 20 25 30 35 40 45 50 55 60

PY

Prizren
Skopje
Pazardzhik
Blagoevgrad
Plovdiv
Haskovo
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
Thessaloniki
Kozani
Ioannina
Larisa
Aegean Sea
GREECE
0 100 200 300 400 500

TAP base case route centreline
Kilometre points (KP)
Block valve station
Camp site
Pipe yard

Threatened species

Aquila clanga (Greater spotted eagle) DMU
Pelecanus crispus Dalmatian pelican DMU
Clanga pomarina (Lesser spotted eagle) DMU
Hieraaetus pennatus (Booted eagle) DMU
Milvus migrans (Black kite) DMU

Designated/Protected Site

Ramsar Site
Site of Community Importance (Habitats Directive)
Special Area of Conservation (Habitats Directive)
Special Protection Area (Birds Directive)
National Park
Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter

Albania
Italy
Greece

Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK
Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 295 of 406 Sheet 1 of 8

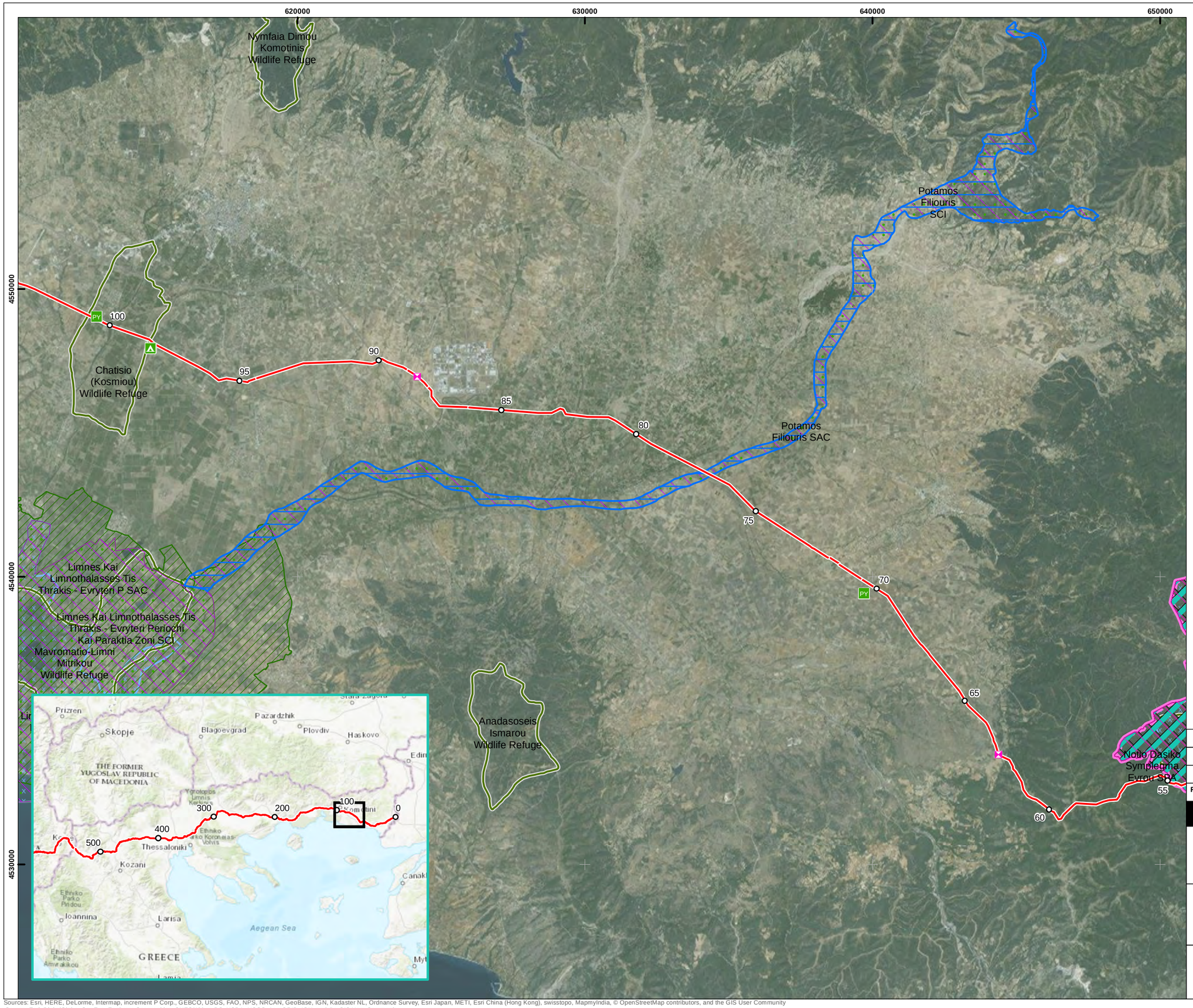
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Aquila clanga (Greater spotted eagle) DMU

Pelecanus crispus Dalmatian pelican DMU

Clanga pomarina (Lesser spotted eagle) DMU

Hieraaetus pennatus (Booted eagle) DMU

Milvus migrans (Black kite) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

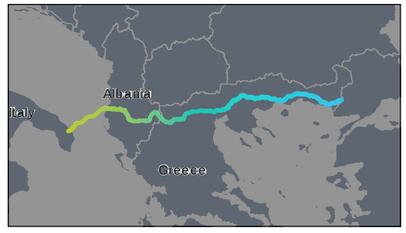
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 296 of 406 Sheet 2 of 8

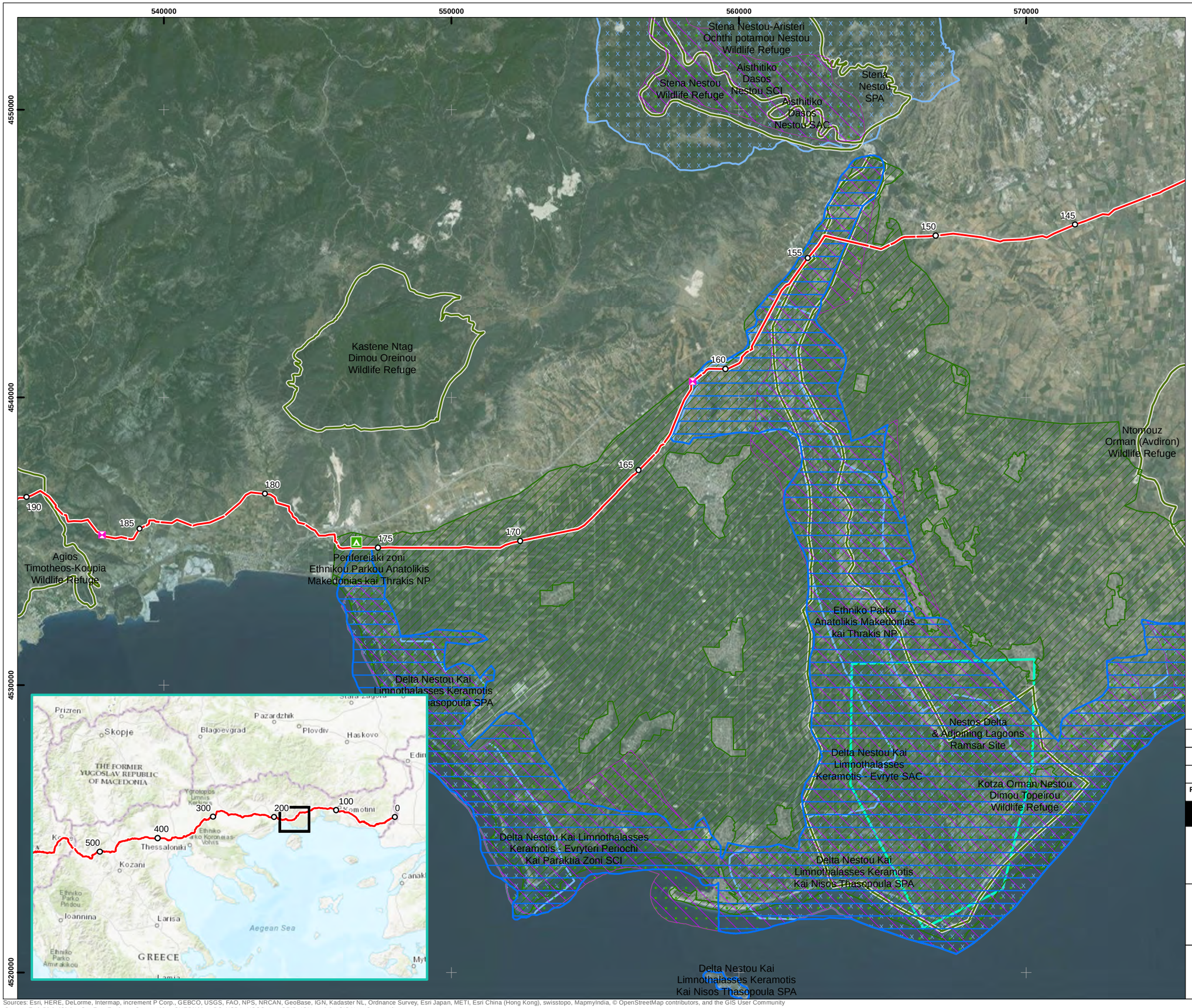
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

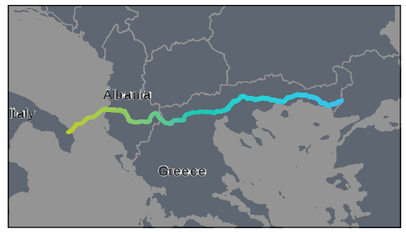
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 297 of 406 Sheet 3 of 8

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Pipe yard

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

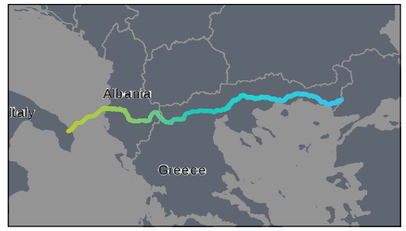
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 298 of 406 Sheet 4 of 8

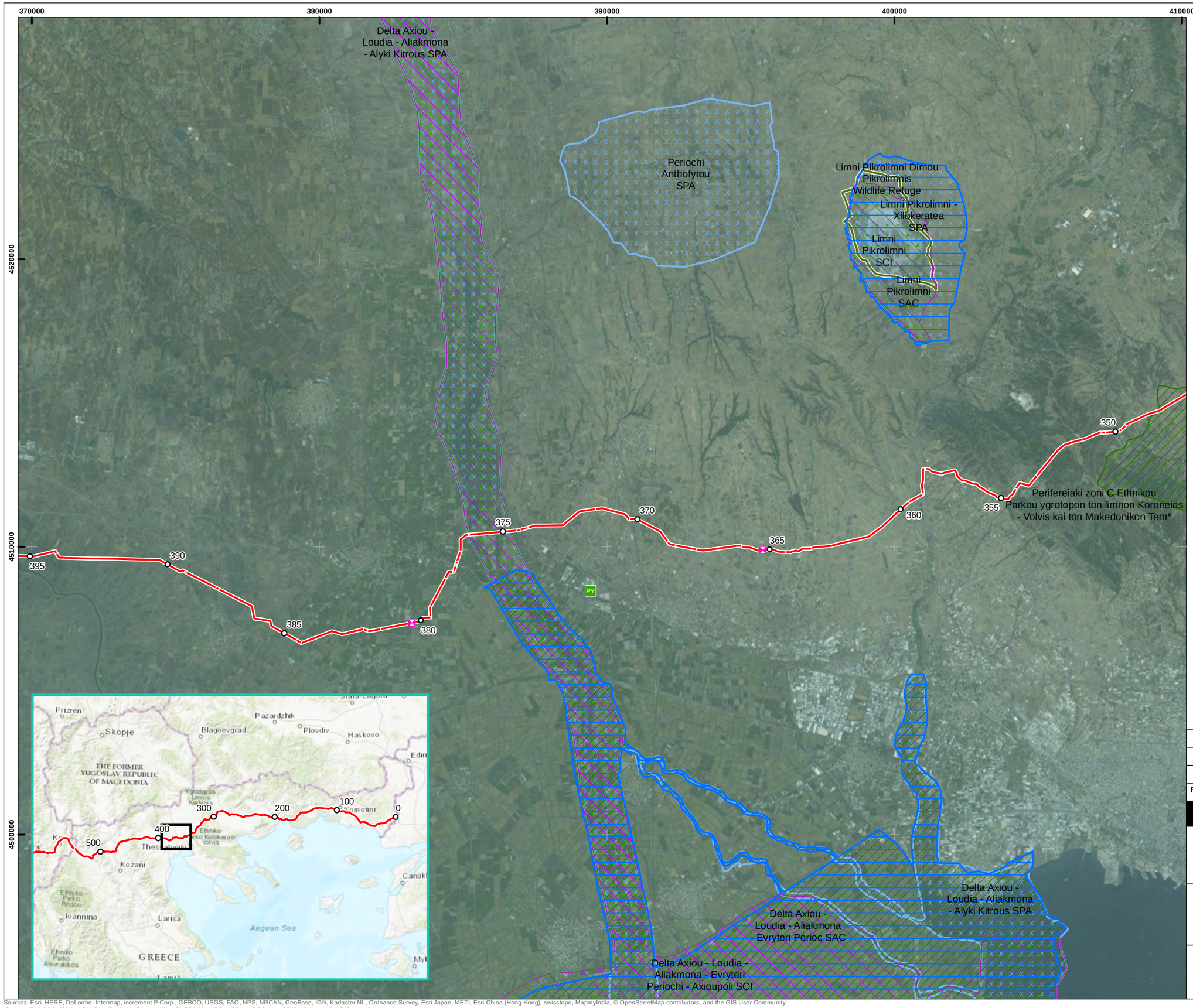
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

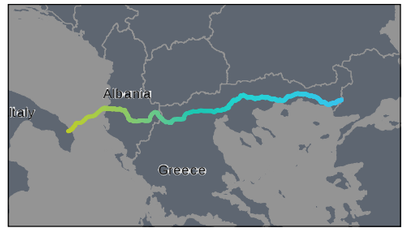
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 299 of 406 Sheet 5 of 8

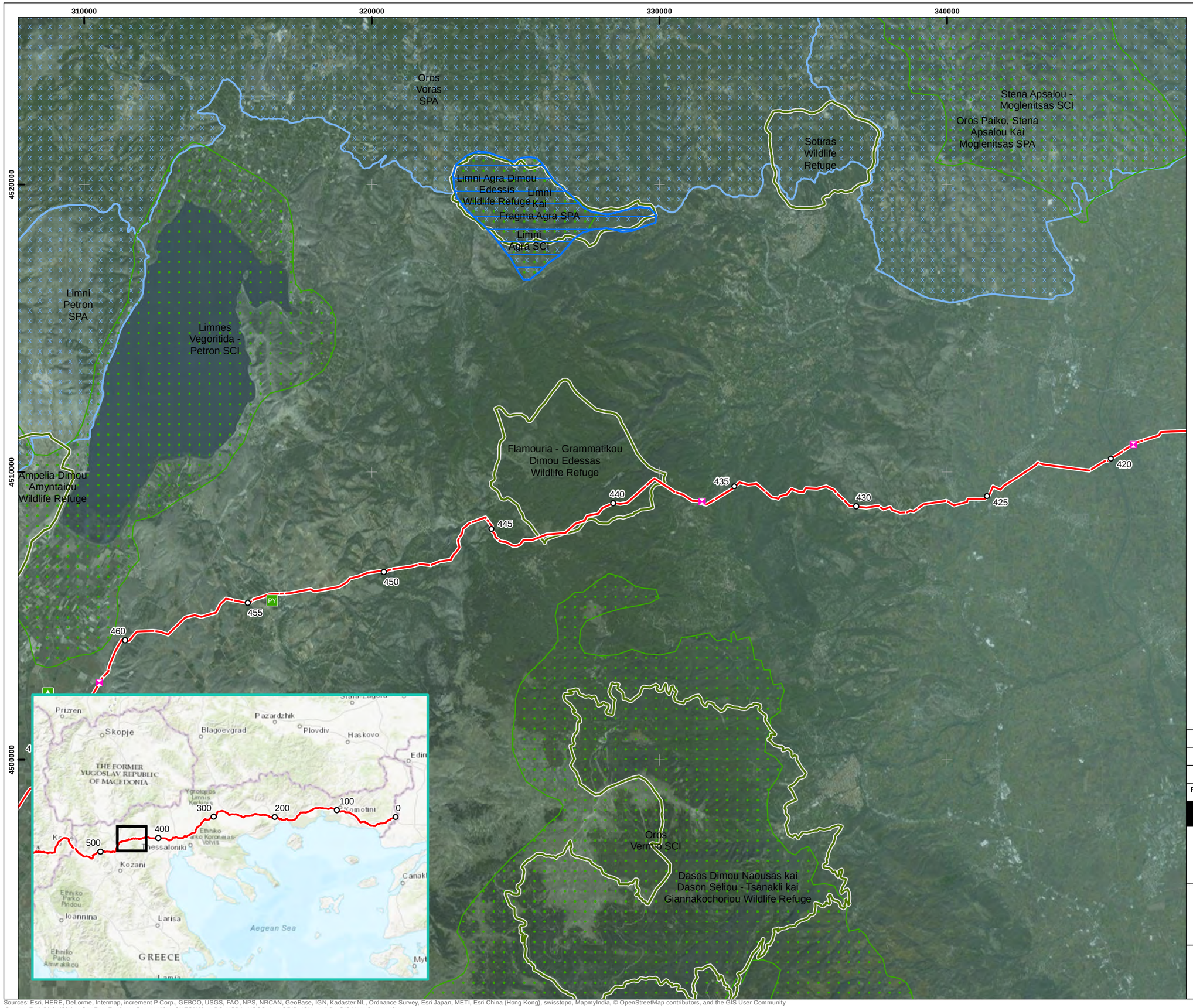
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

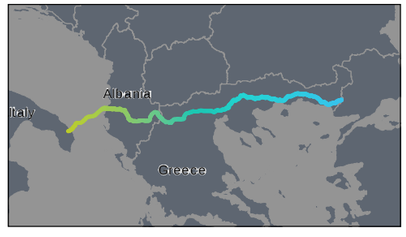
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 300 of 406 Sheet 6 of 8

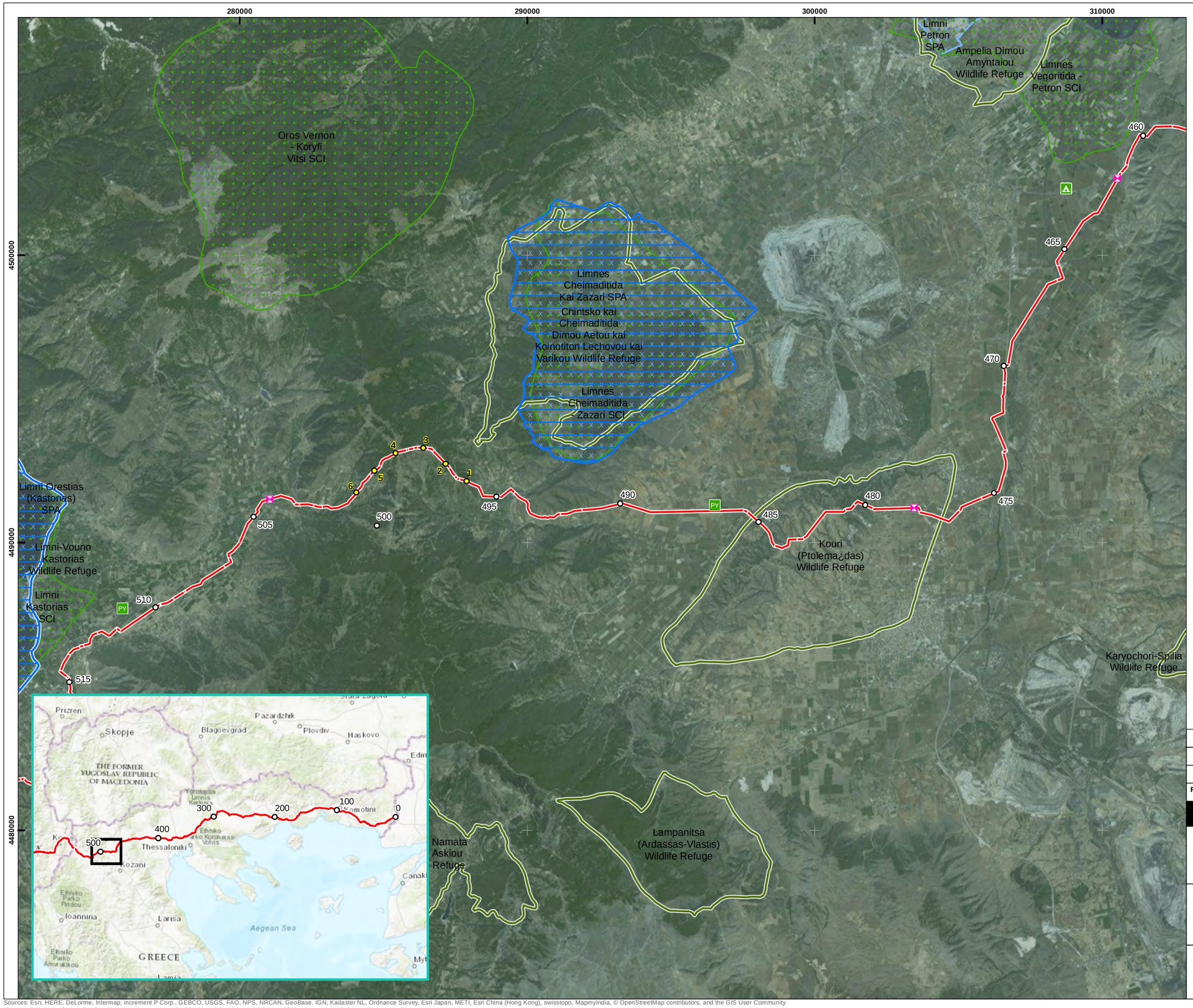
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

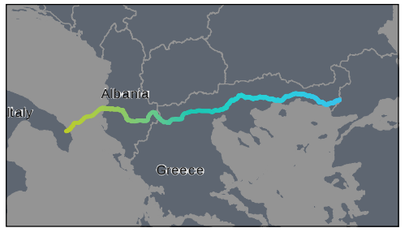
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 301 of 406 Sheet 7 of 8

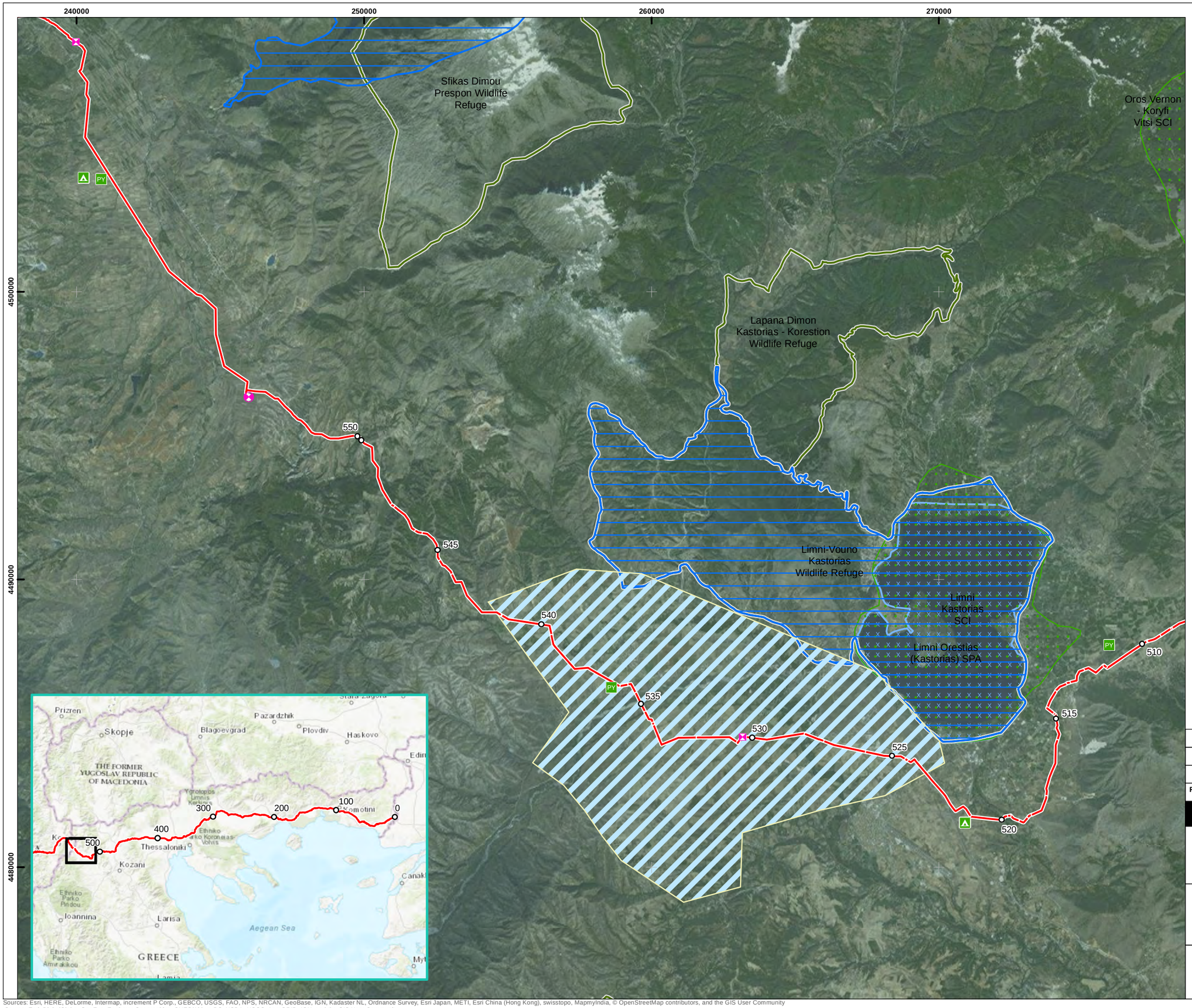
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Threatened species

Pelecanus crispus Dalmatian pelican DMU

Circus pygargus (Montagu's Harrier) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

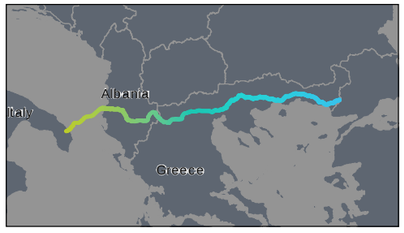
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 302 of 406 Sheet 8 of 8

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

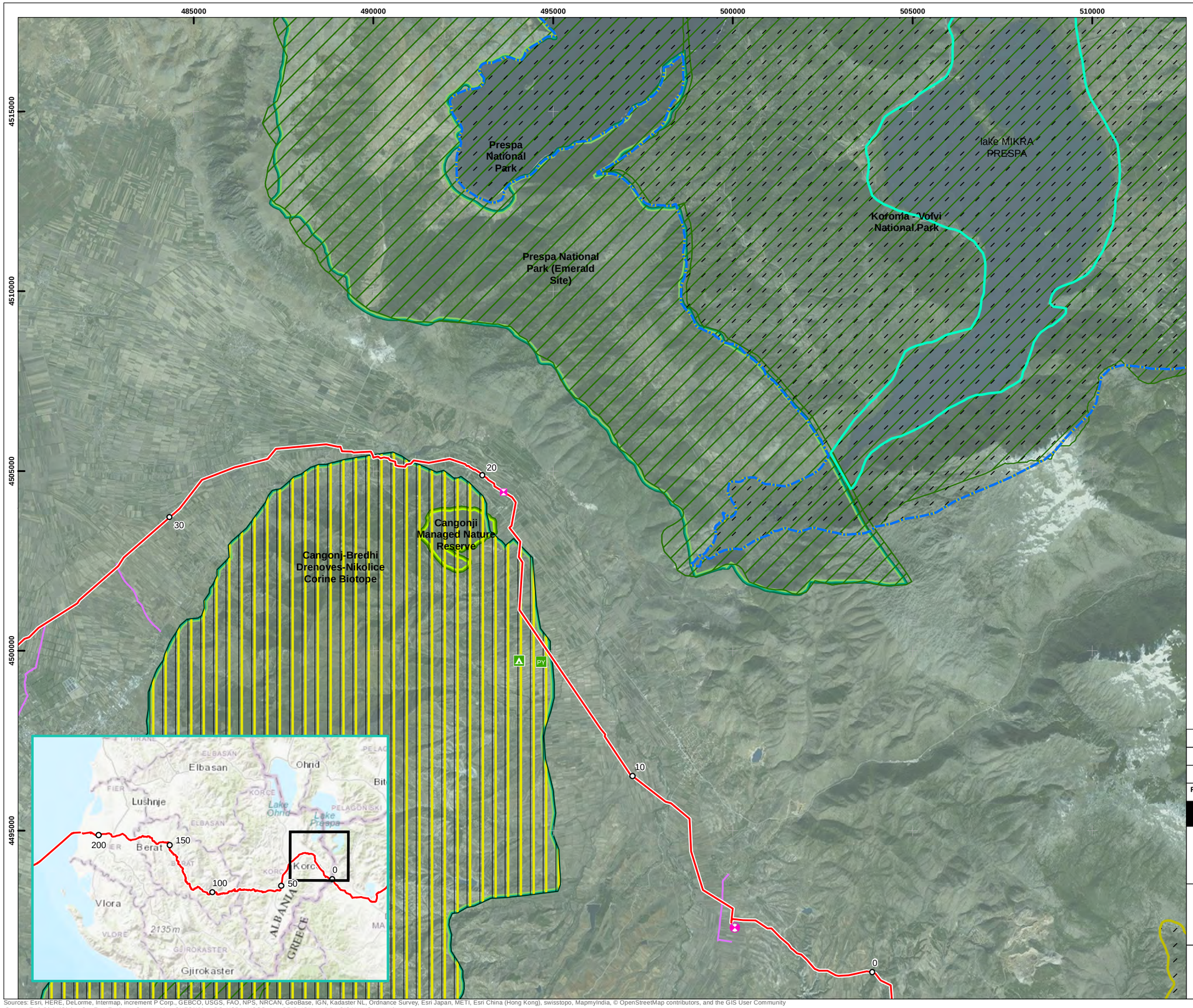
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-009[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 17 DMUs for avifauna in Albania



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Pelecanus crispus (Dalmatian pelican) DMU

Milvus migrans (Black kite) DMU

Microcarbo pygmeus (pygmy cormorant) DMU

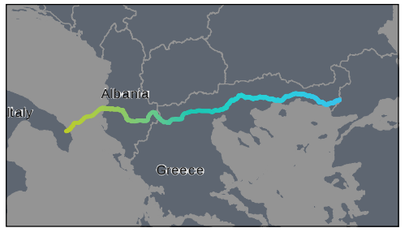
Designated/Protected Site

National Park

Emerald Site

Managed Nature Reserve

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 304 of 406 Sheet 1 of 3

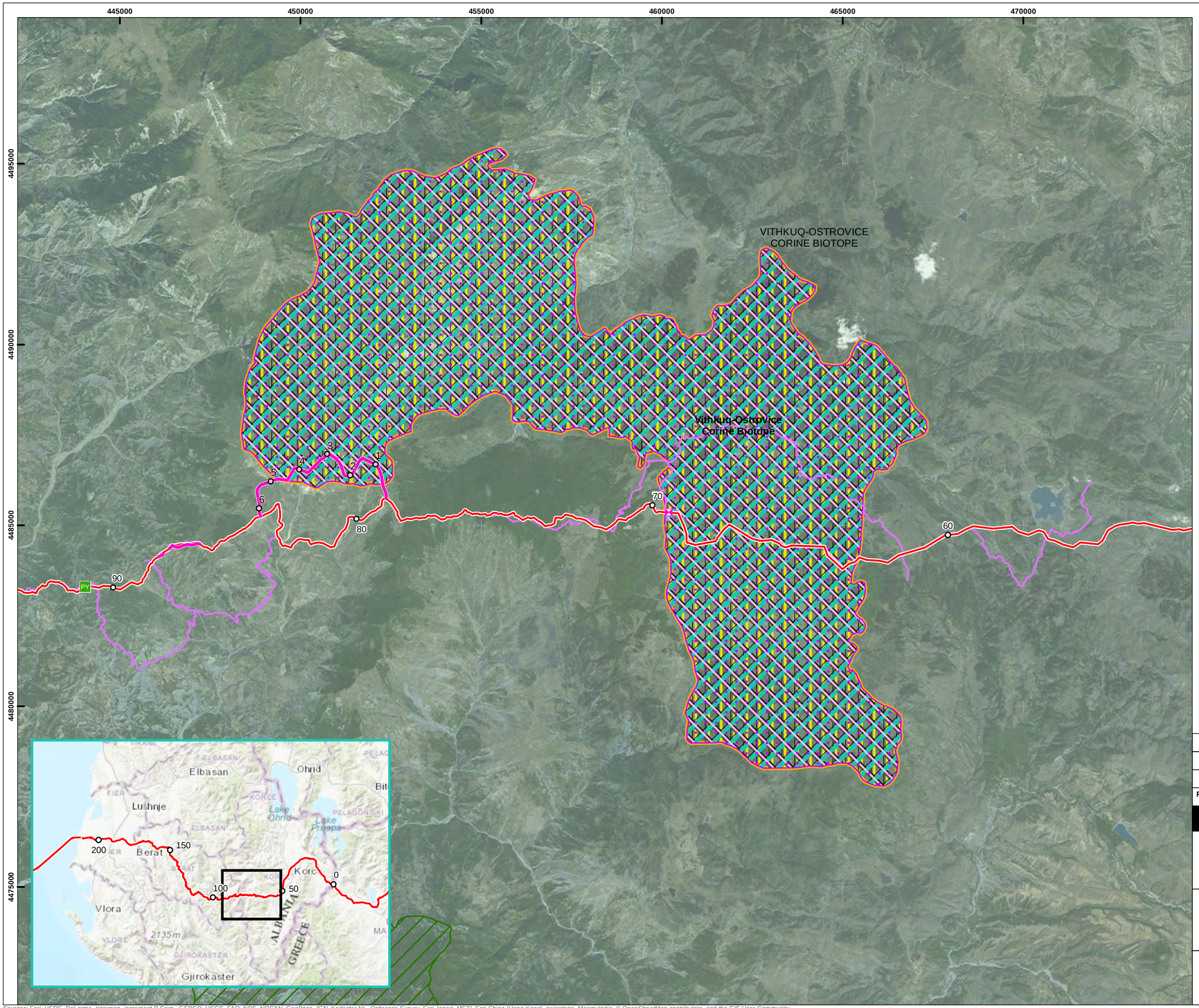
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-010[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Pipe yard

TAP access road

Threatened Species

Hieraetus pennatus (Booted eagle) DMU

Milvus migrans (Black kite) DMU

Aquila clanga (Greater spotted eagle) DMU

Clanga pomarina (Lesser spotted eagle) DMU

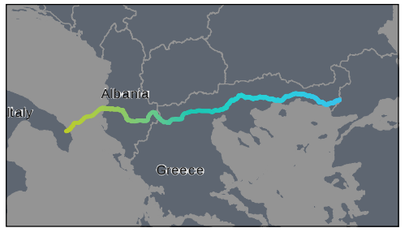
Bubo bubo (Eagle owl) DMU

Designated/Protected Site

National Park

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 305 of 406 Sheet 2 of 3

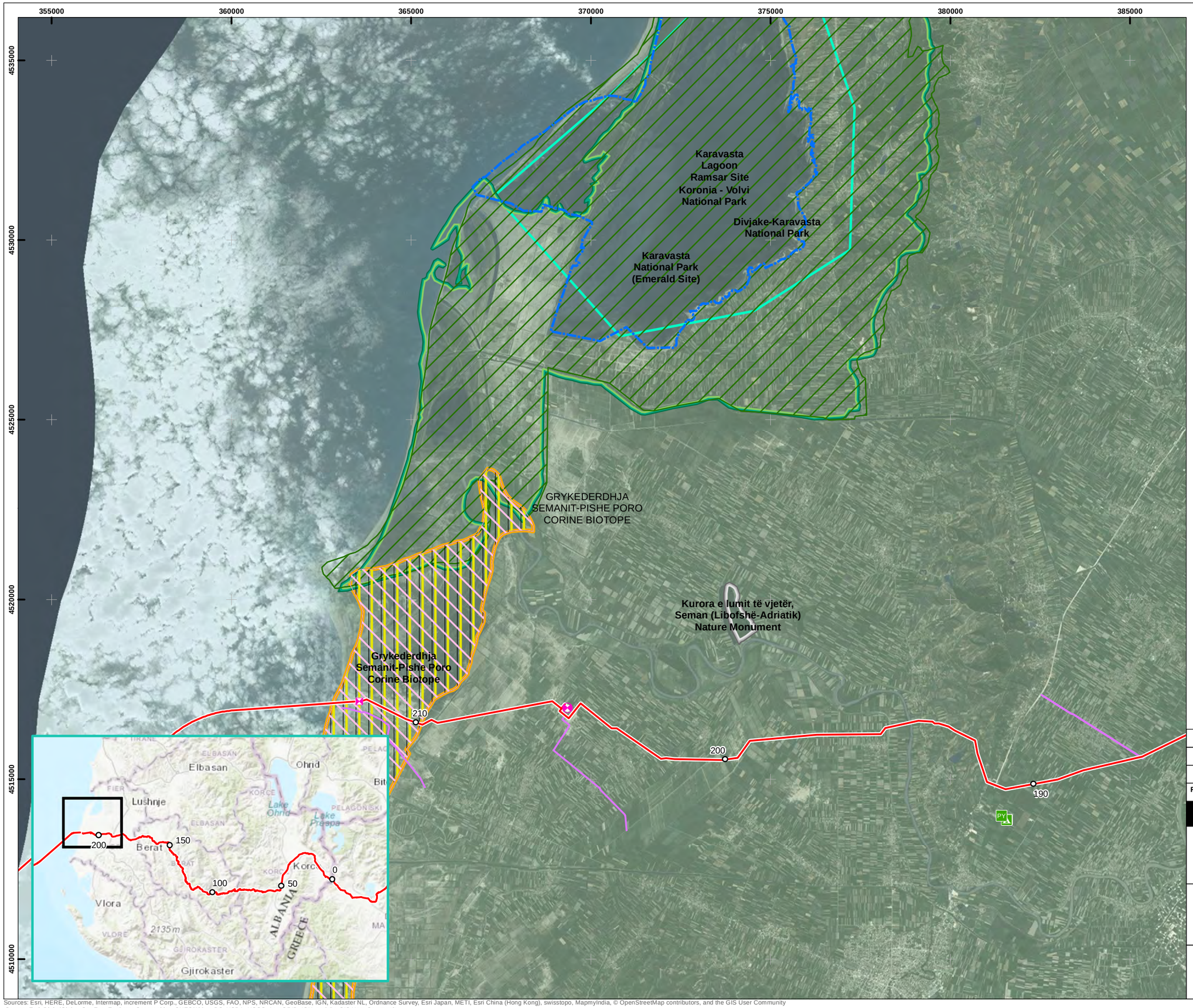
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-010[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Threatened Species

Milvus migrans (Black kite) DMU

Aquila clanga (Greater spotted eagle) DMU

Microcarbo pygmeus (pygmy cormorant) DMU

Designated/Protected Site

National Park

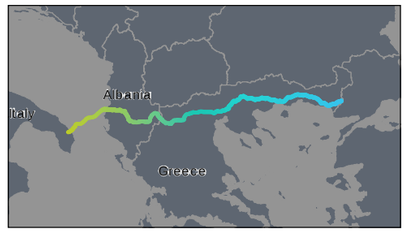
Emerald Site

Nature Monument

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Birds - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 306 of 406 Sheet 3 of 3

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-010[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 18 DMUs for amphibians and reptiles in Greece

TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Bombina bombina (Fire-bellied toad) DMU

Elaphe quatuorlineata (Four-lined snake) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

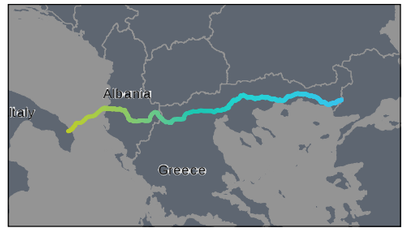
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 308 of 406 Sheet 1 of 8

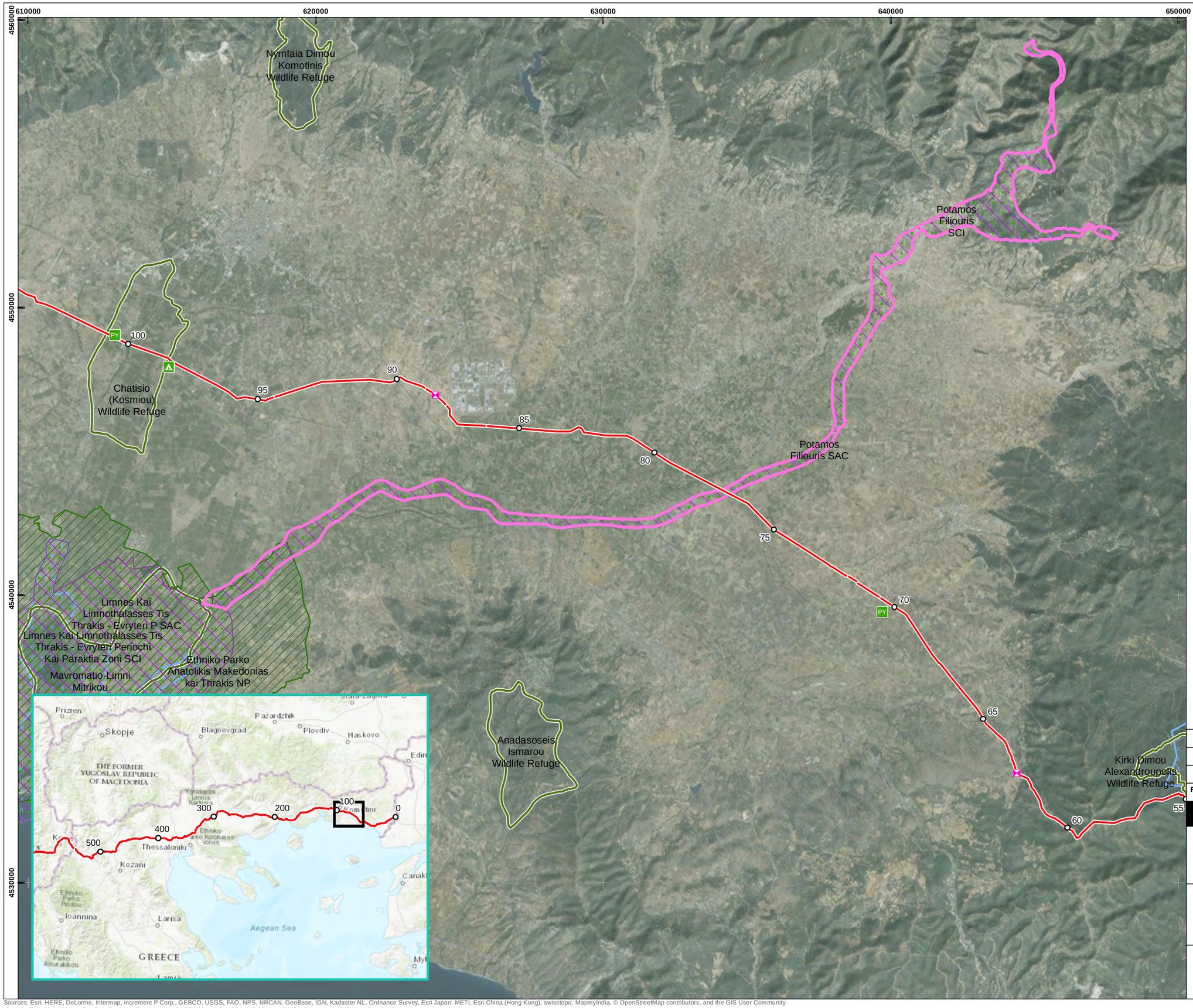
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Elaphe quatuorlineata (Four-lined snake) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

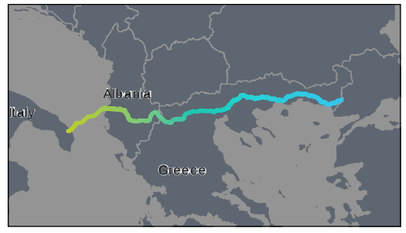
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 309 of 406 Sheet 2 of 8

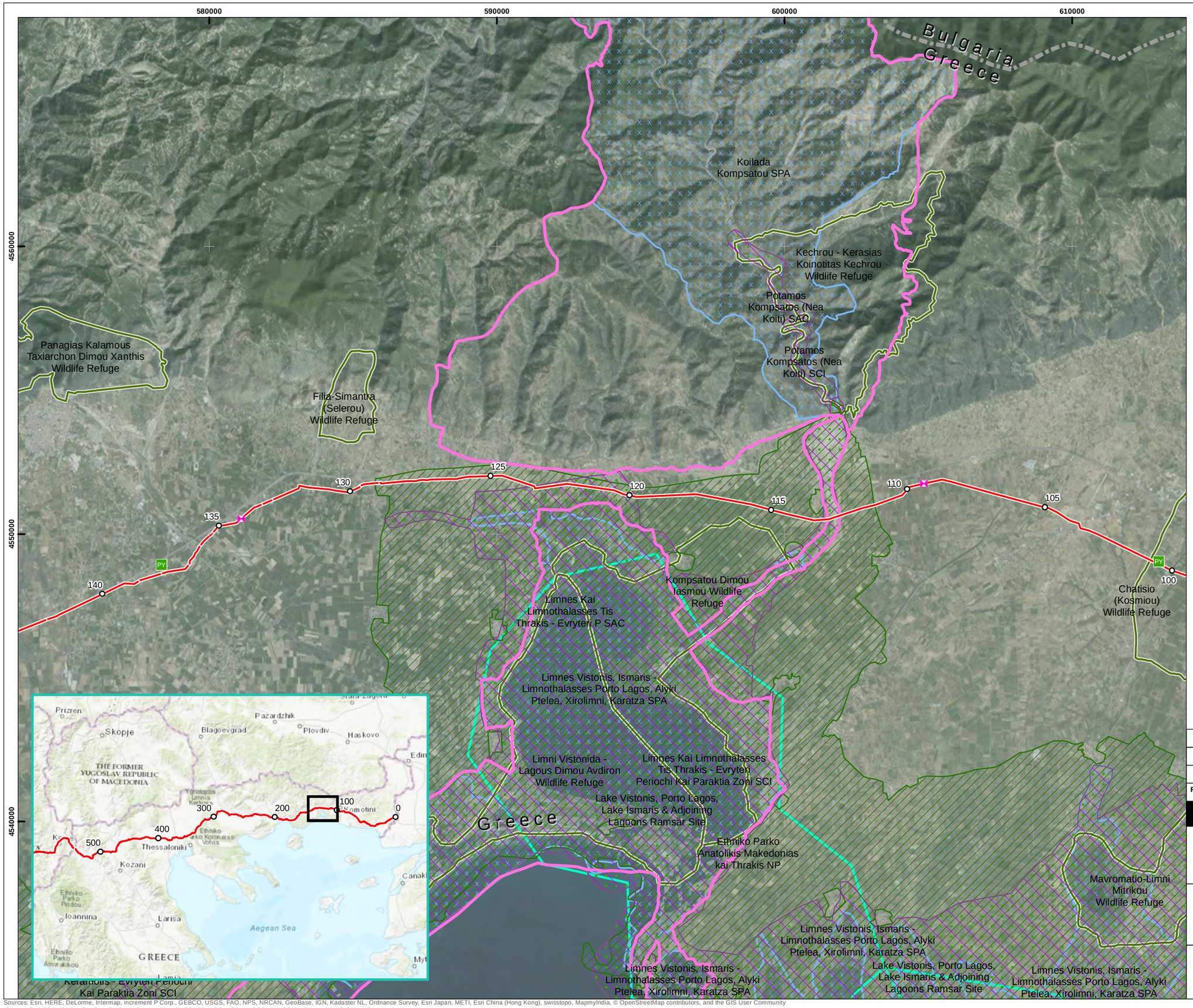
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Pipe yard

Threatened species

Elaphe quatuorlineata (Four-lined snake) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

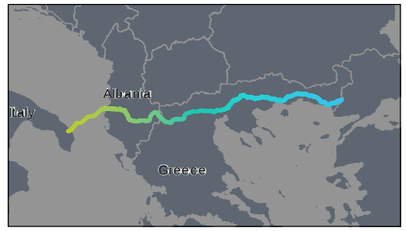
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 310 of 406 Sheet 3 of 8

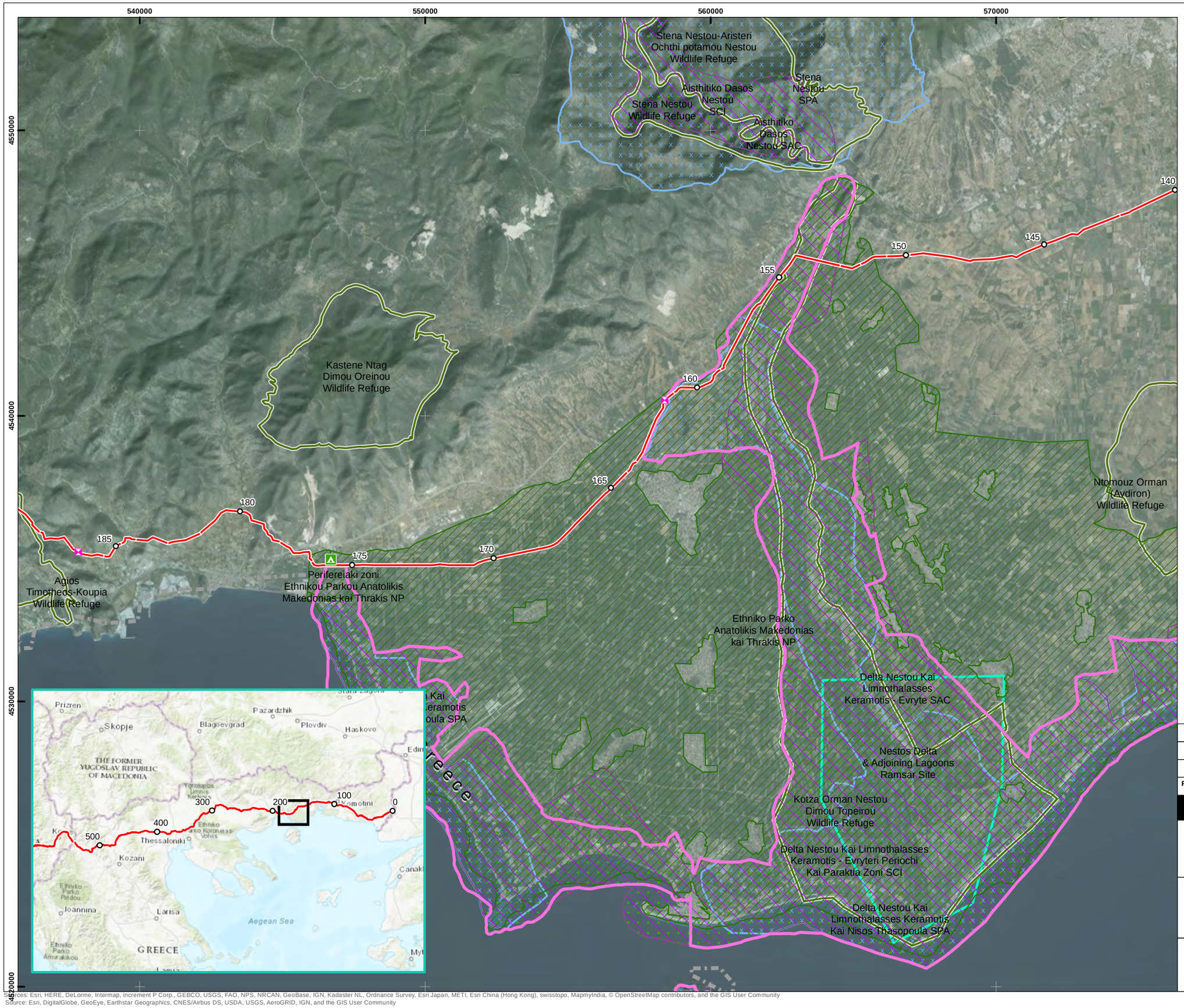
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Threatened species

Elaphe quatuorlineata (Four-lined snake) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

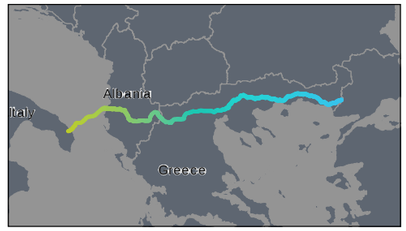
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 311 of 406 Sheet 4 of 8

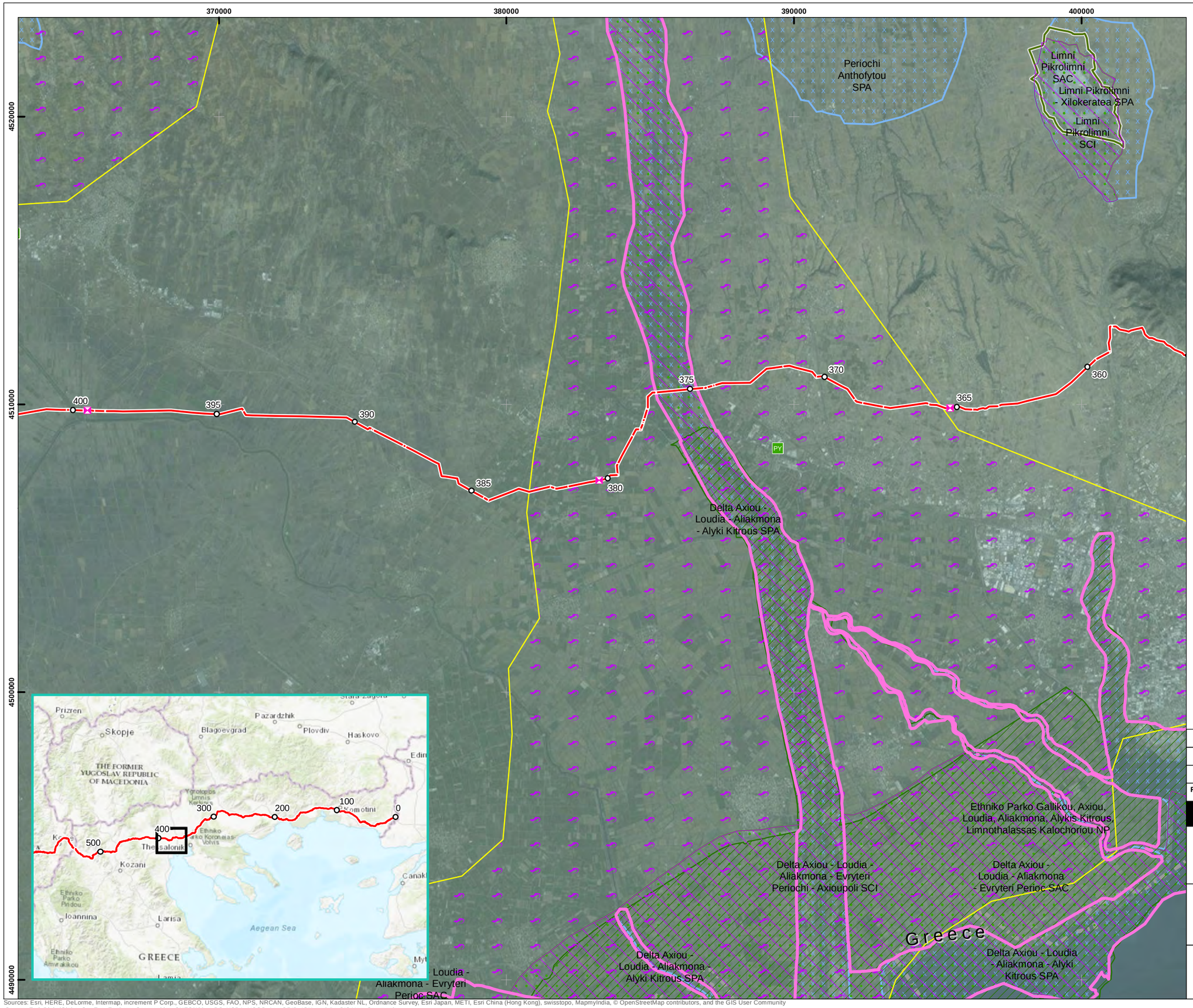
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Elaphe quatuorlineata (Four-lined snake) DMU

Triturus macedonicus (Macedonian crested newt) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

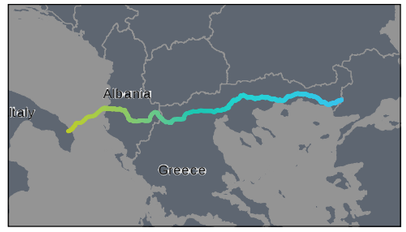
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 312 of 406 Sheet 5 of 8

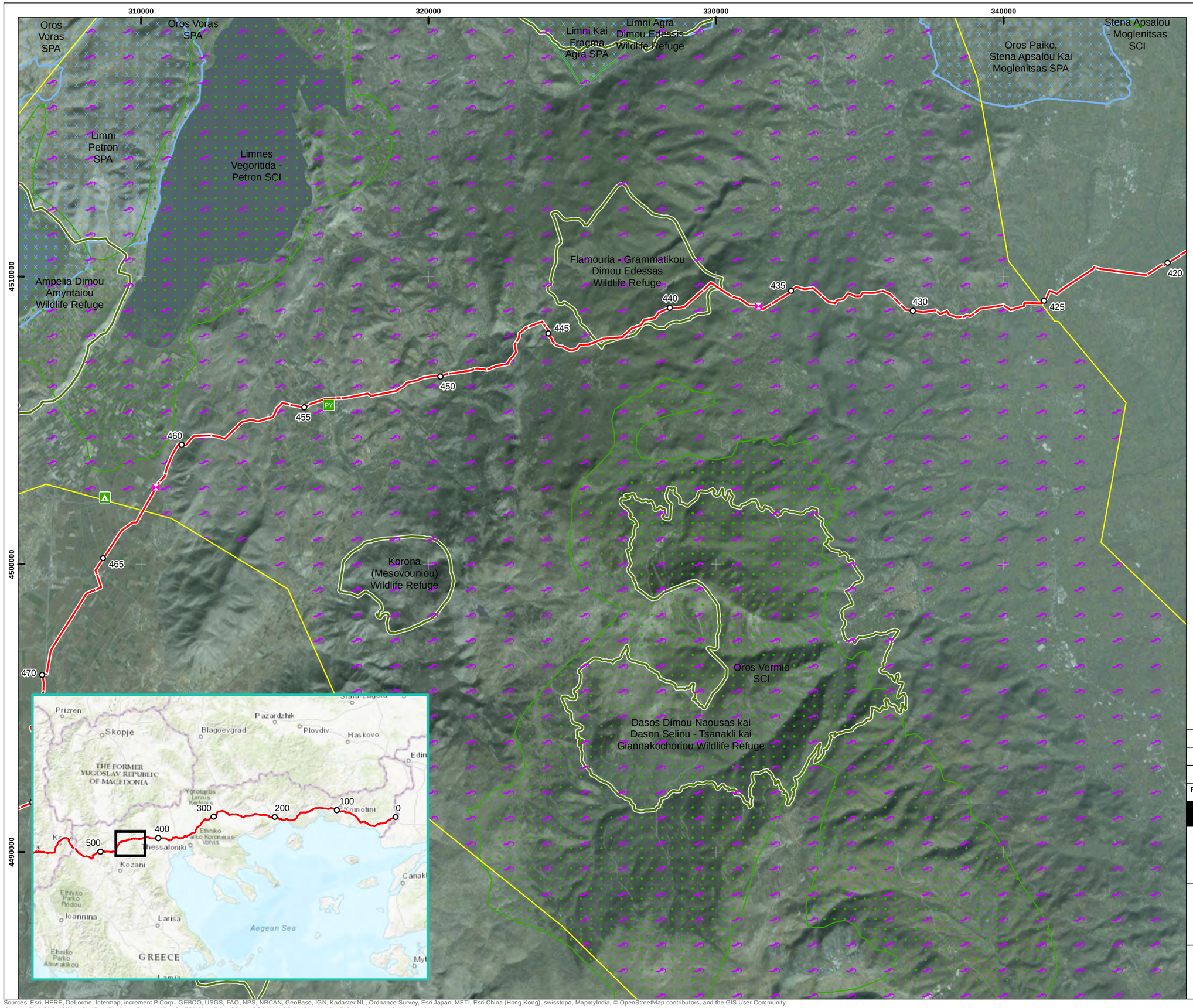
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Triturus macedonicus (Macedonian crested newt) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

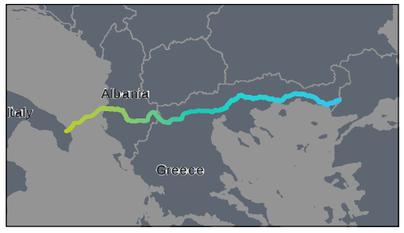
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 313 of 406 Sheet 6 of 8

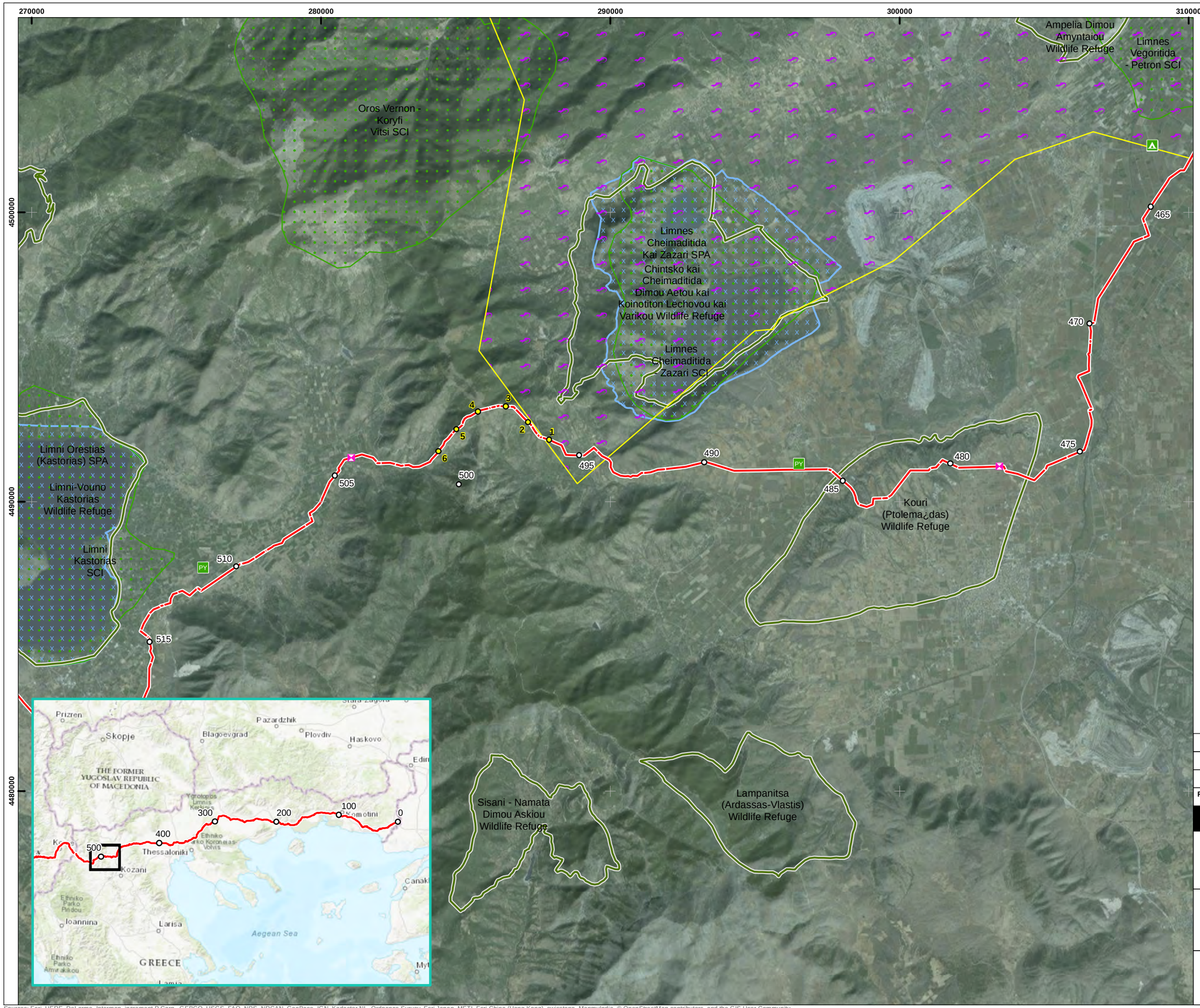
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Triturus macedonicus (Macedonian crested newt) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

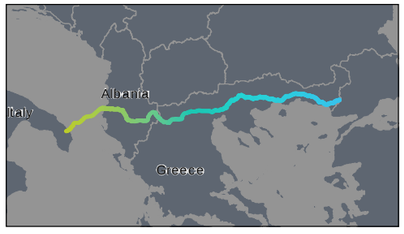
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 314 of 406 Sheet 7 of 8

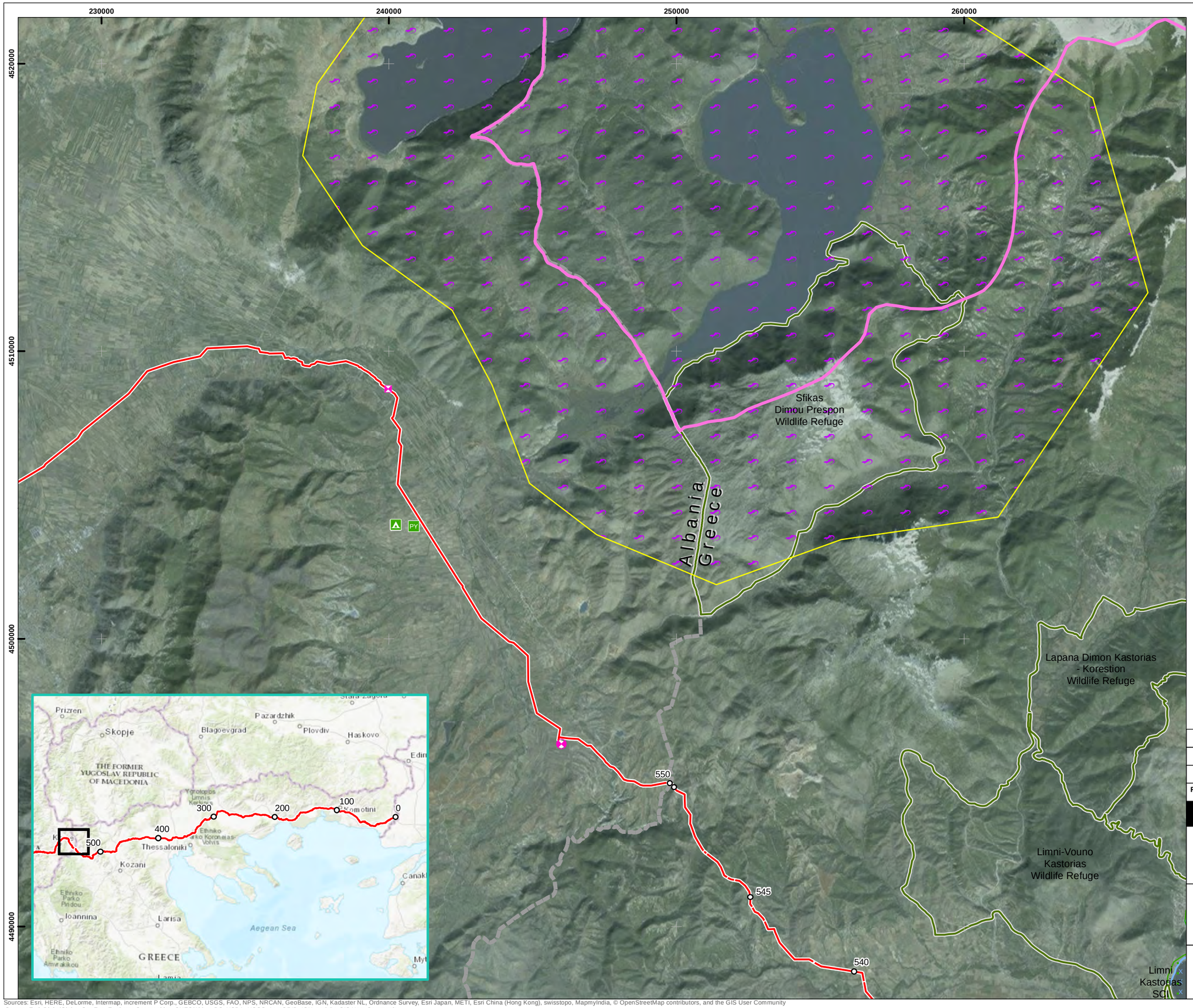
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Threatened species

Elaphe quatuorlineata (Four-lined snake) DMU

Triturus macedonicus (Macedonian crested newt) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

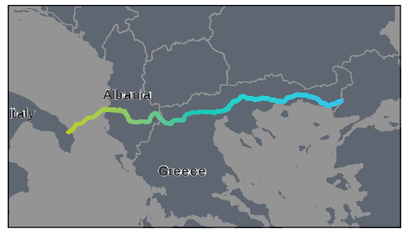
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/04/2017	Final Issue	TOD	SH	CY
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Amphibians and Reptiles - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 315 of 406 Sheet 8 of 8

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

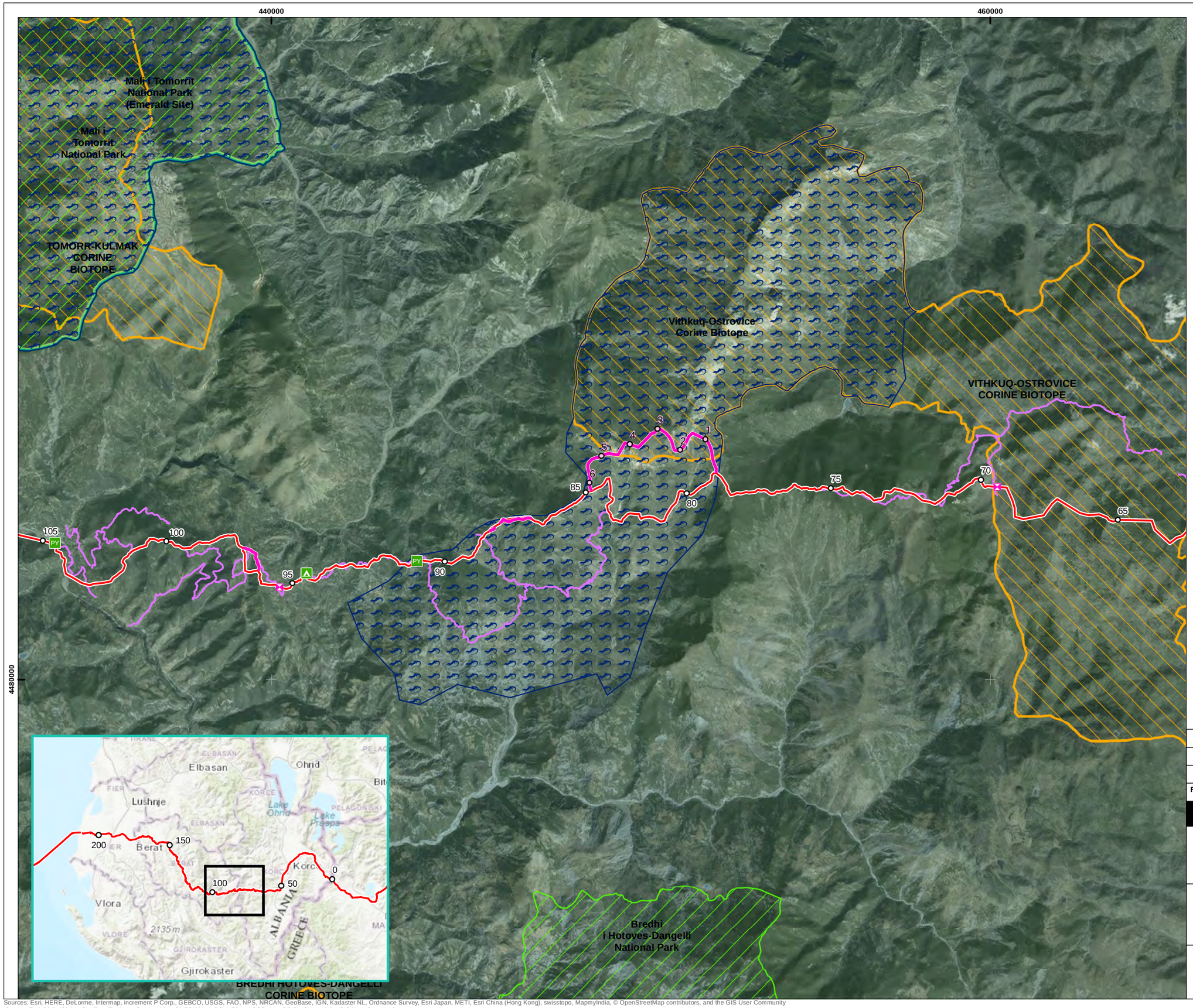
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-018[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 19 DMUs for amphibians and reptiles in Albania



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Elaphe quatuorlineata (Four-lined Snake) DMU

Pelophylax shqipericus (Albanian Pool frog) DMU

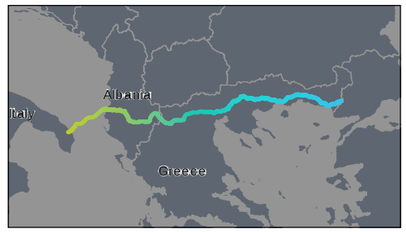
Designated/Protected Site

National Park

Emerald Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Amphibians and Reptiles - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 317 of 406 Sheet 1 of 3

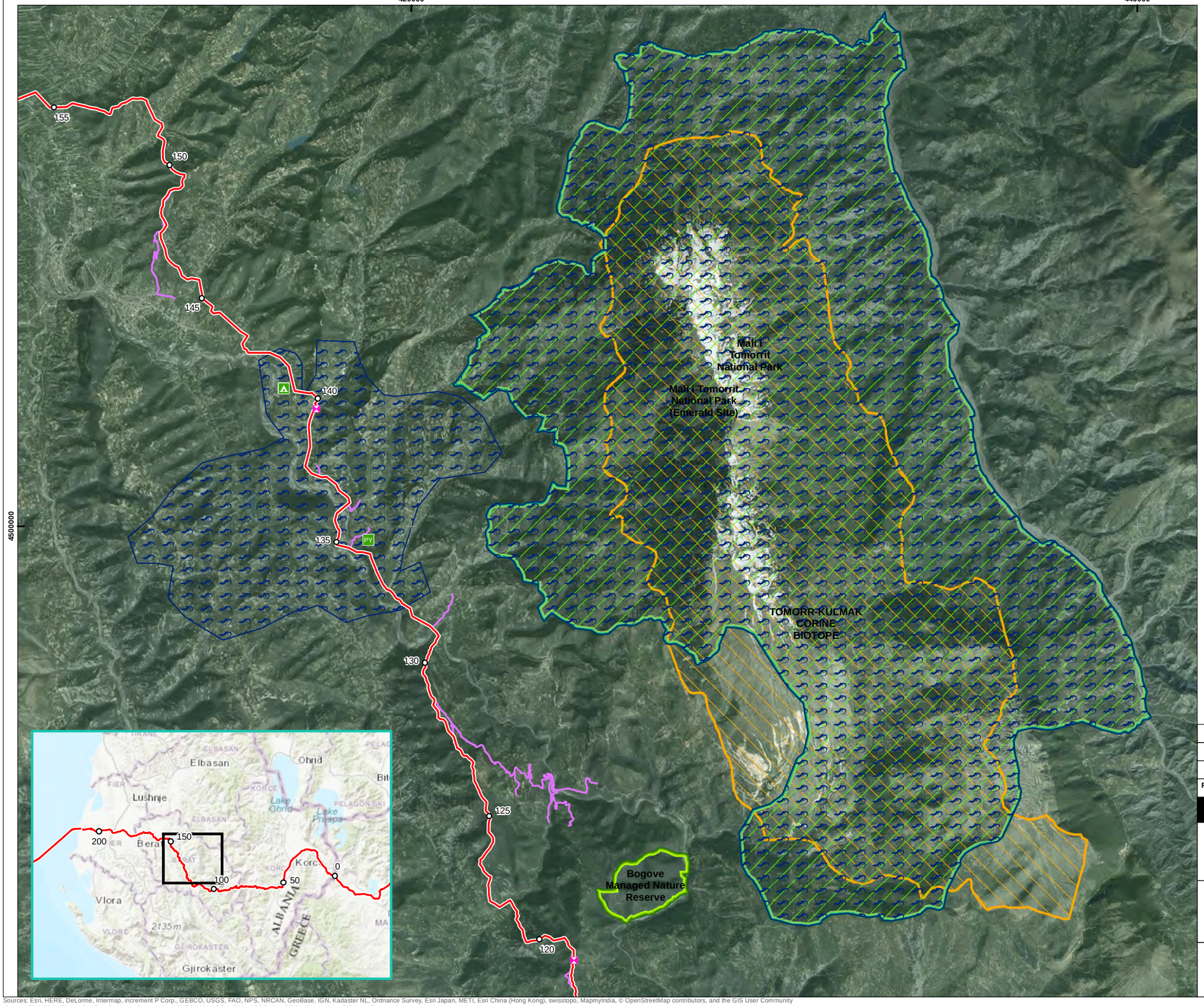
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-030[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Elaphe quatuorlineata (Four-lined Snake) DMU

Pelophylax shqipericus (Albanian Pool frog) DMU

Designated/Protected Site

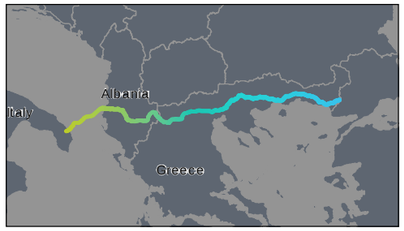
National Park

Emerald Site

Managed Nature Reserve

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 318 of 406 Sheet 2 of 3

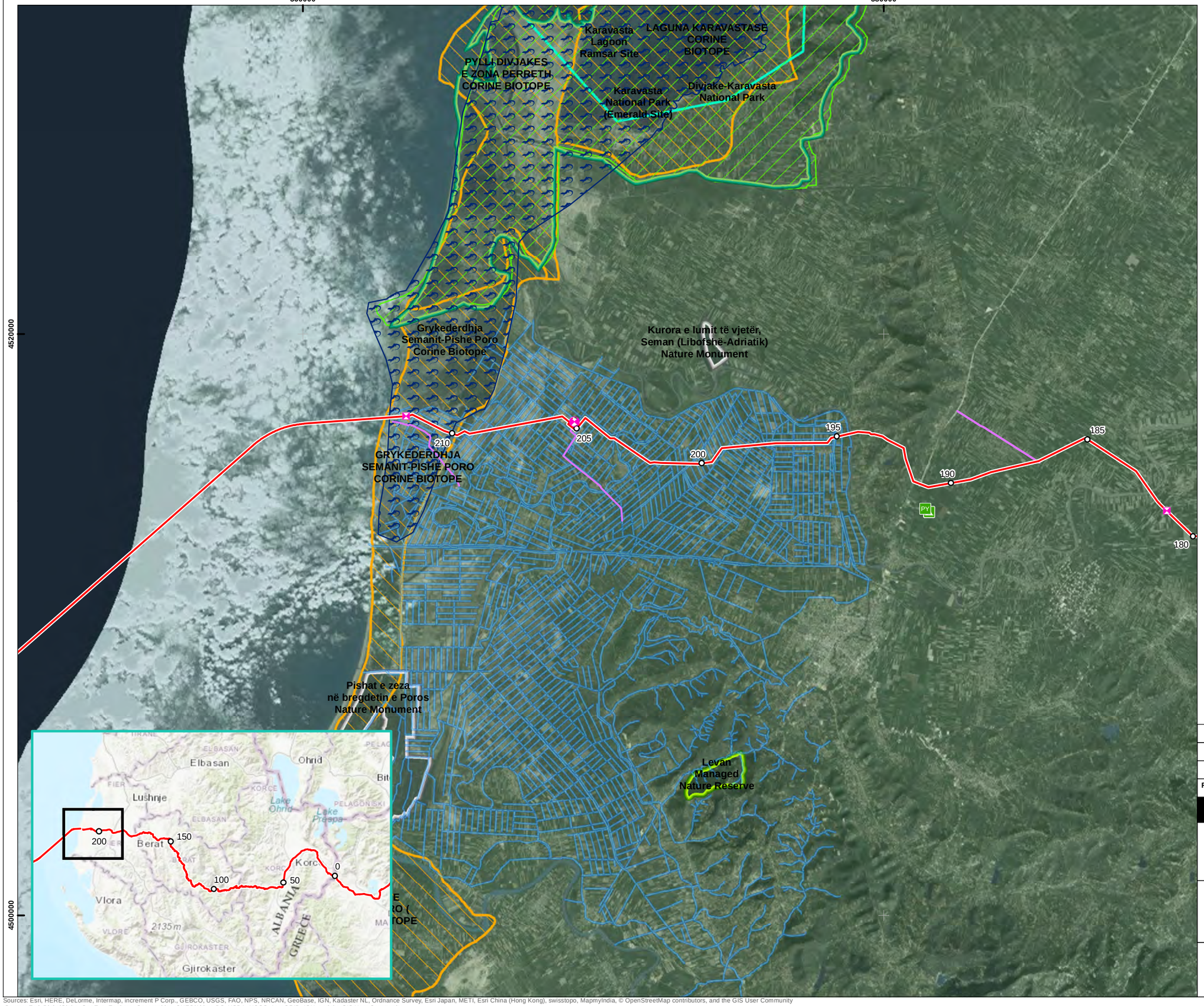
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-030[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Elaphe quatuorlineata (Four-lined Snake) DMU

Pelophylax shqipericus (Albanian Pool frog) DMU

Designated/Protected Site

National Park

Emerald Site

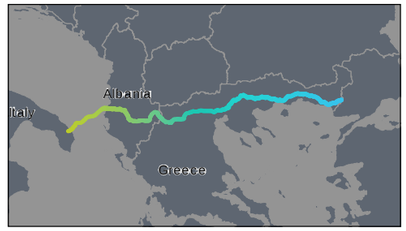
Managed Nature Reserve

Nature Monument

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Amphibians and Reptiles - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 319 of 406 Sheet 3 of 3

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

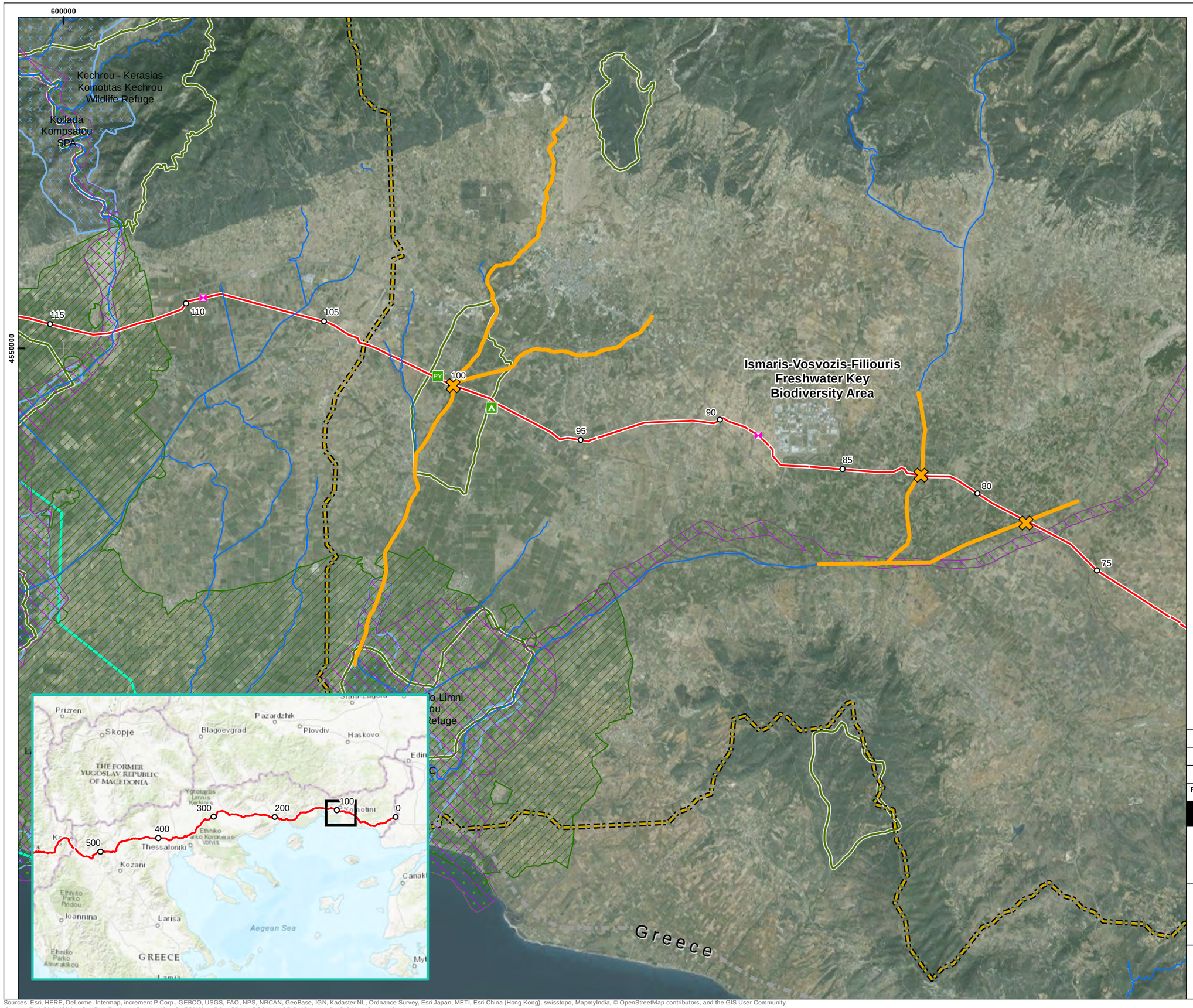
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-030[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 20 DMUs for freshwater invertebrates in Greece



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Unio crassus (Thick-shelled river mussel) DMU

Unio crassus (Thick-shelled river mussel) DMU Crossing

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

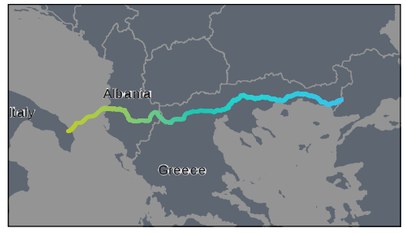
National Park

Wildlife Refuge

Freshwater Key Biodiversity Area

Waterway

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Invertebrates - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 321 of 406 Sheet 1 of 4

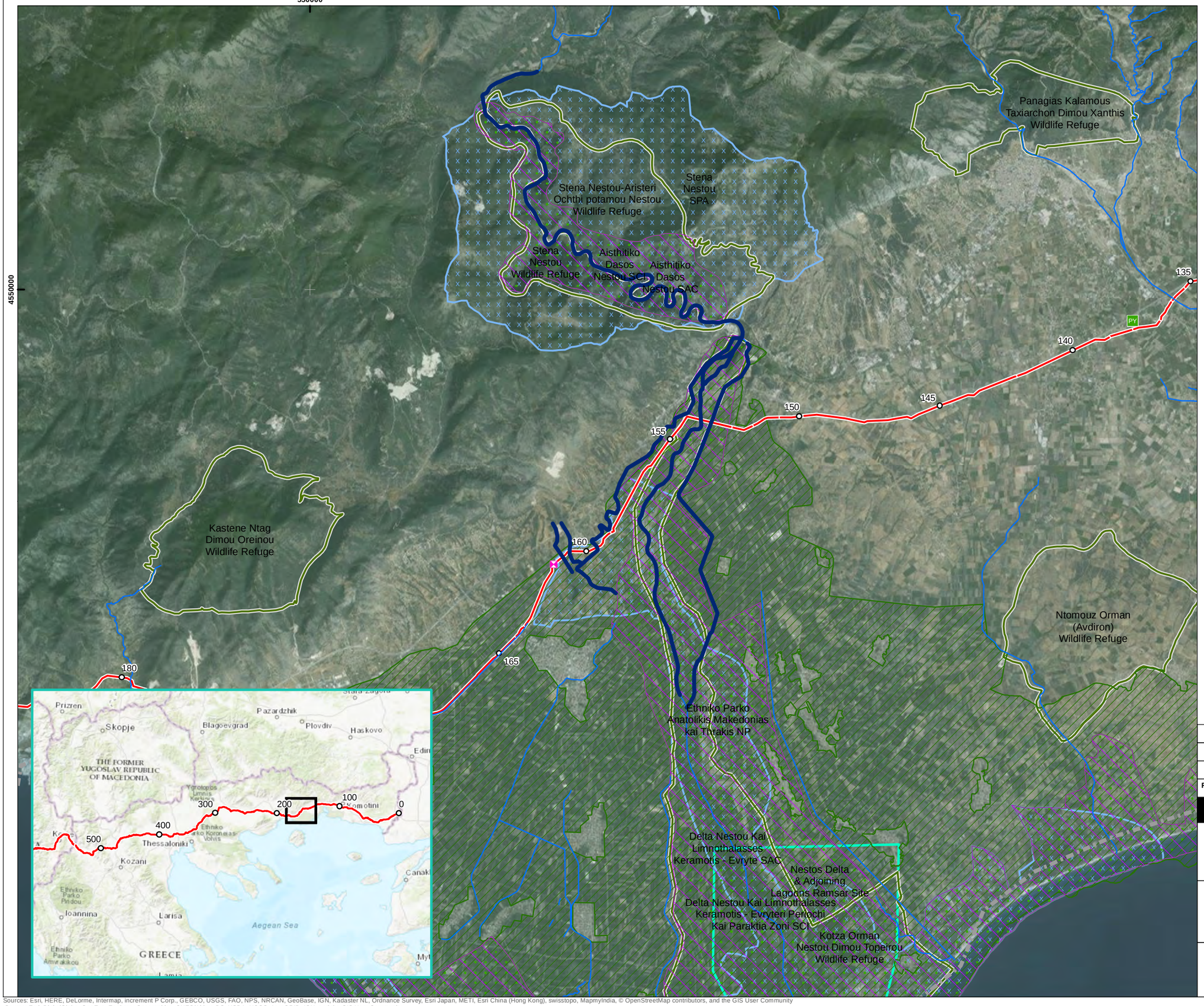
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-028[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Turcorientalia hohenackeri DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

Special Area of Conservation (Habitats Directive)

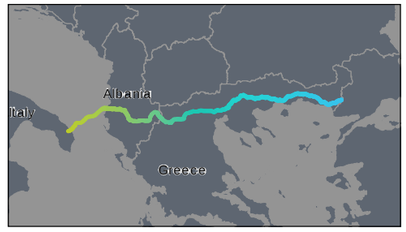
Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Waterway

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Invertebrates - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 322 of 406 Sheet 2 of 4

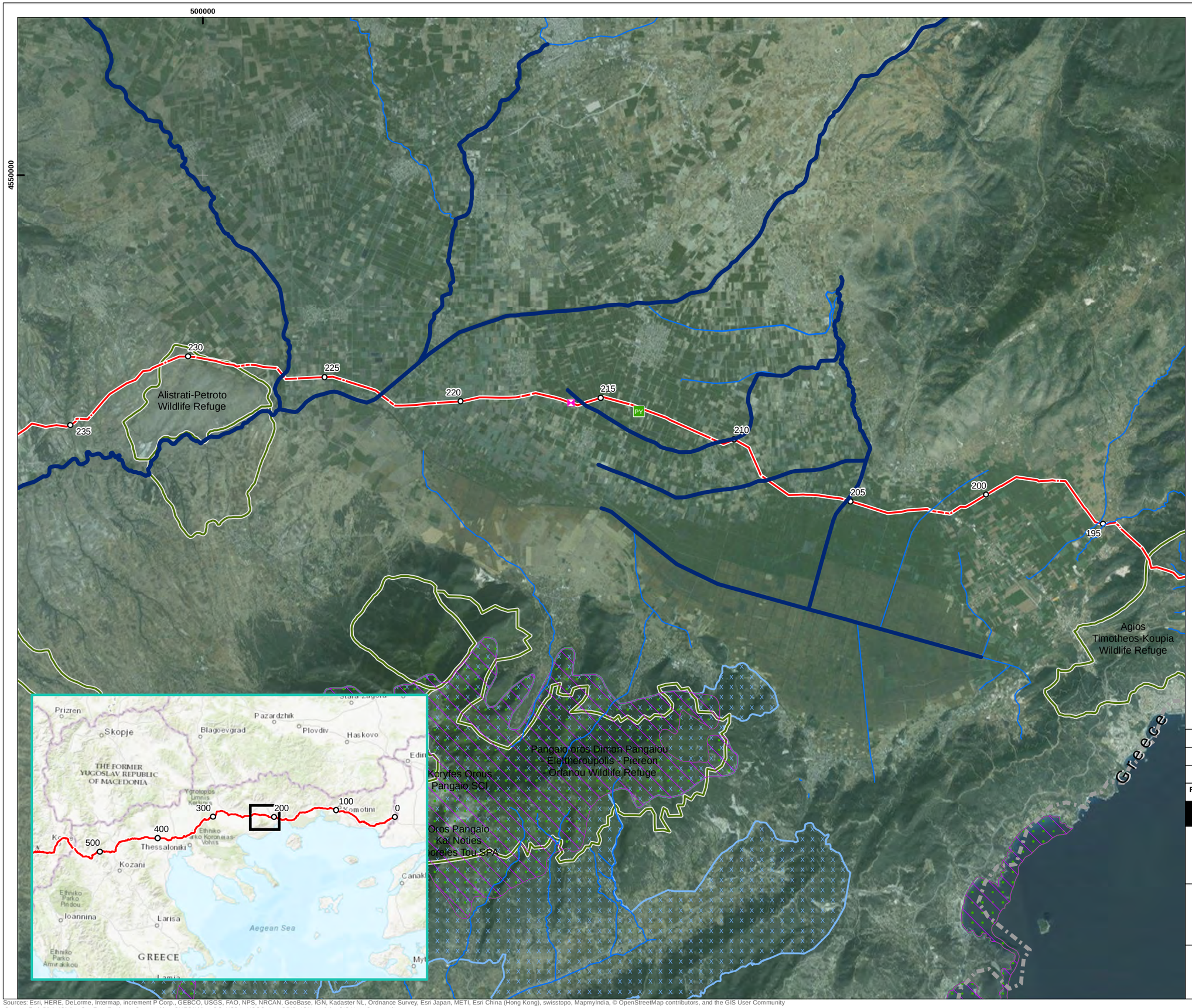
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-028[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

Turcorientalia hohenackeri DMU

Designated/Protected Site

Site of Community Importance (Habitats Directive)

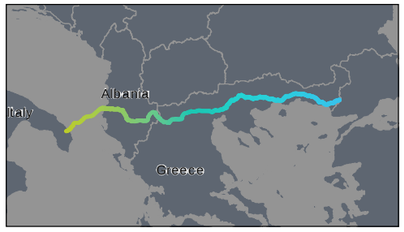
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

Wildlife Refuge

Waterway

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Invertebrates - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 323 of 406 Sheet 3 of 4

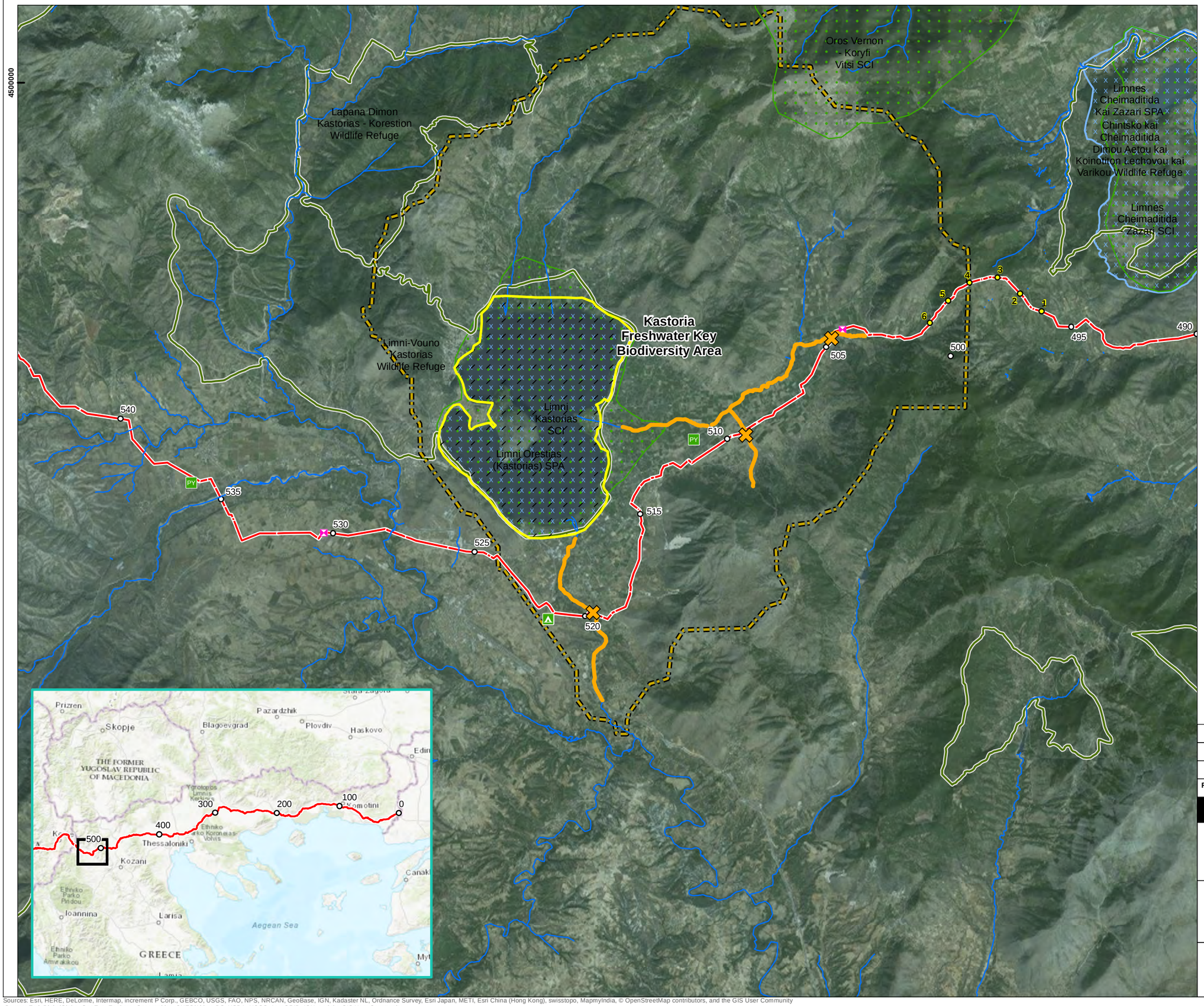
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-028[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Reroute Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Unio crassus (Thick-shelled river mussel) DMU

Unio crassus (Thick-shelled river mussel) DMU Crossing

Bithynia kastorias DMU

Designated/Protected Site

Site of Community Importance (Habitats Directive)

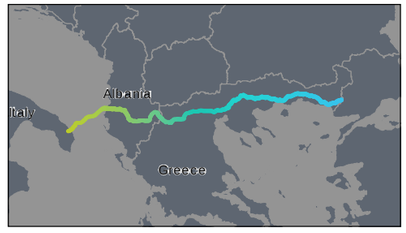
Special Protection Area (Birds Directive)

Wildlife Refuge

Freshwater Key Biodiversity Area

Waterway

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Invertebrates - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 324 of 406 Sheet 4 of 4

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

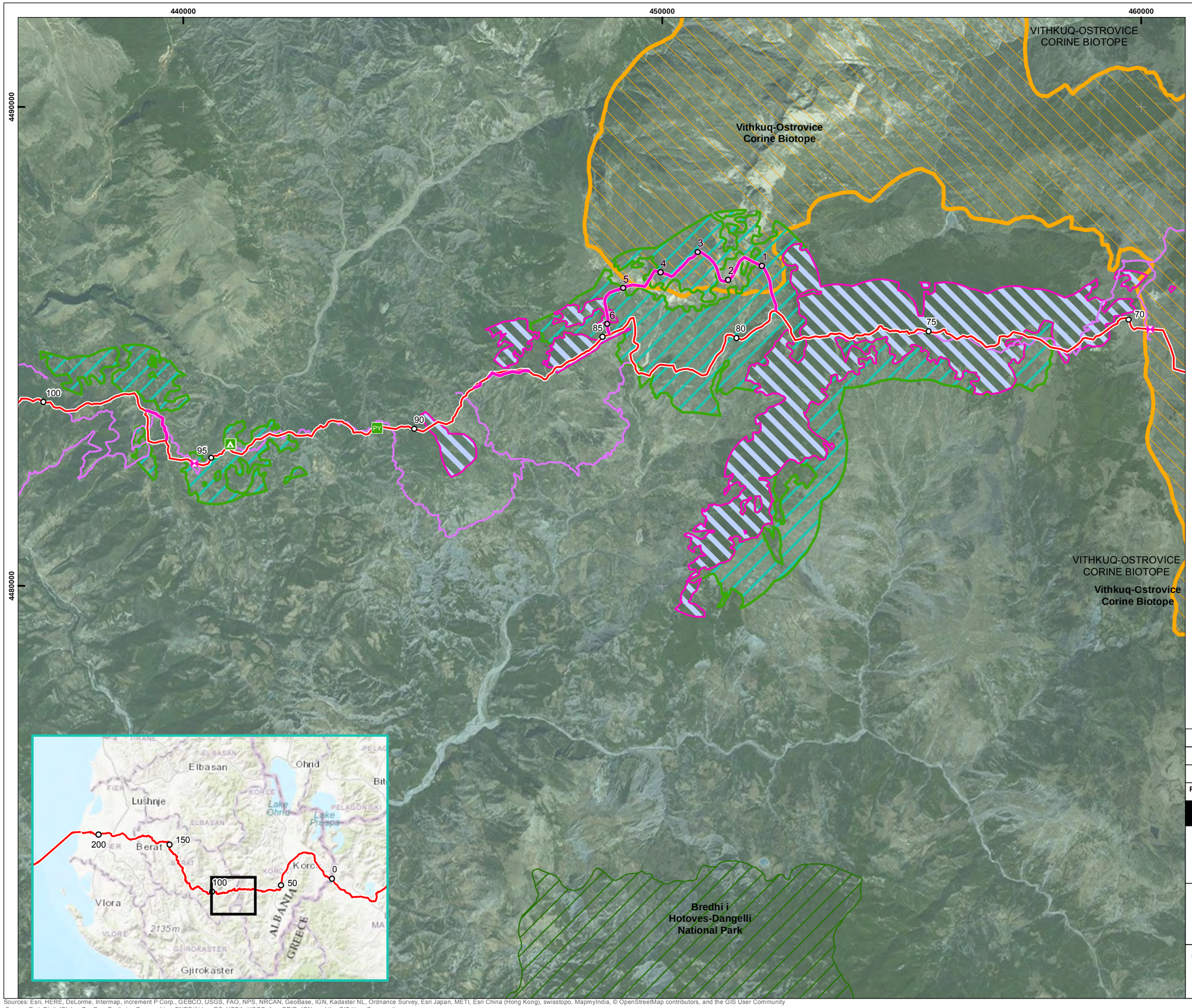
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-028[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 21 DMU for vascular plants in Albania



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Threatened species

Sideritis raeseri (Mountain tea)

Aconitum lamarkii (Yellow monk's-hood)

Atropa belladonna (Deadly nightshade)

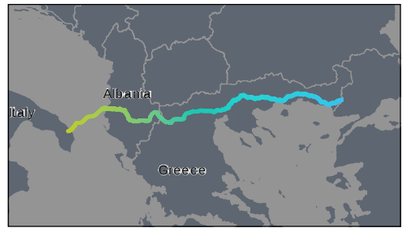
Lilium albanicum (Albanian lily)

Designated/Protected Site

National Park

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Vascular plants - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 326 of 406 Sheet 1 of 1

0 1 2 3 4
Kilometers
SCALE: 1:75,000 @ A3

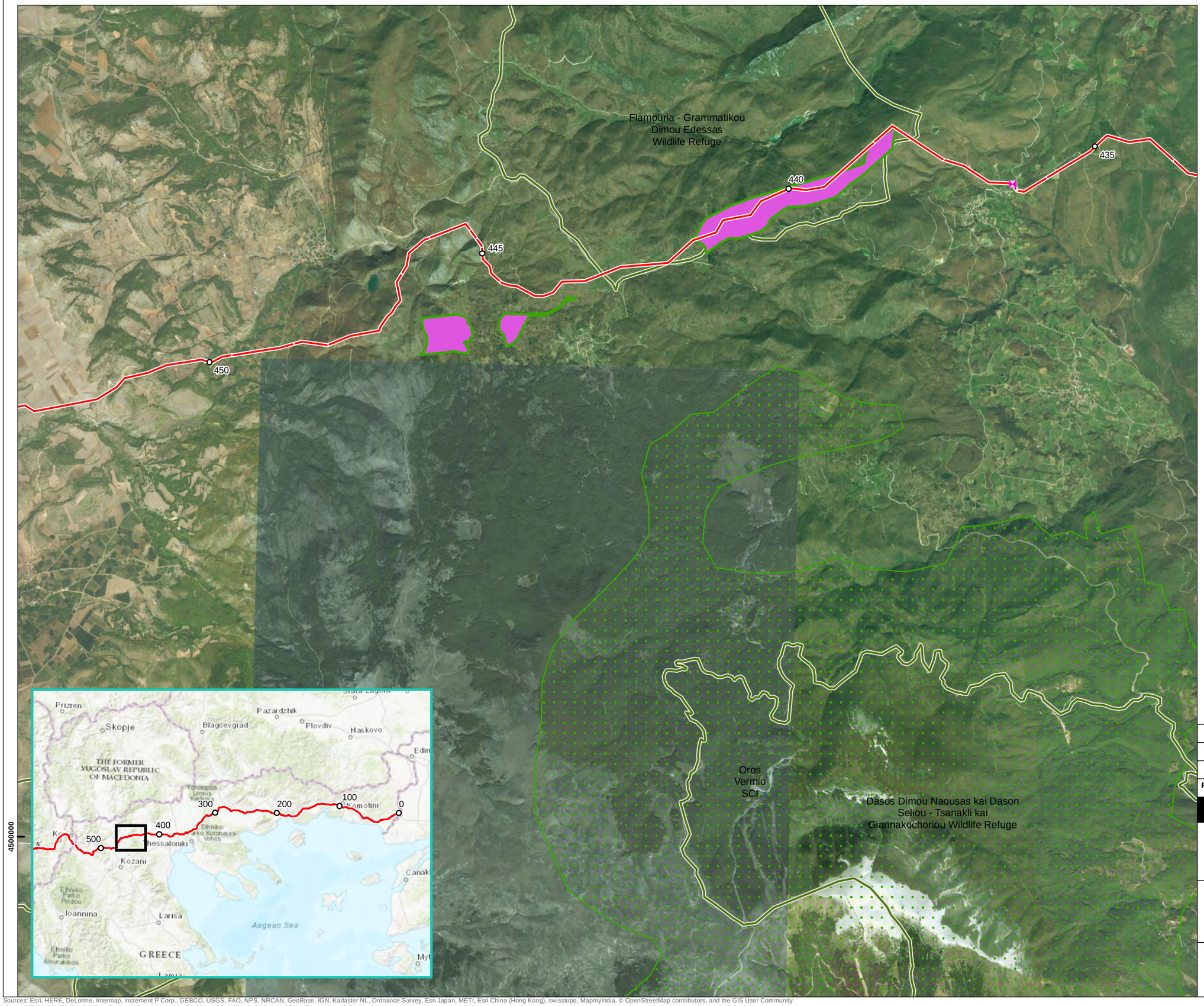
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-001[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 22 DMUs for vascular plants in Greece



TAP base case route centreline

Kilometre points (KP)

Block valve station

Threatened species

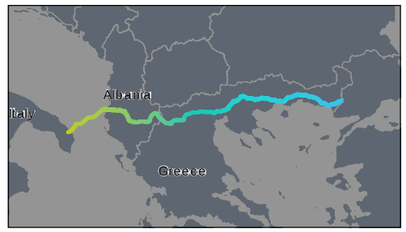
Atropa belladonna (Deadly nightshade)

Protected/Designated Site

Site of Community Importance (Habitats Directive)

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Vascular plants - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 328 of 406 Sheet 1 of 2

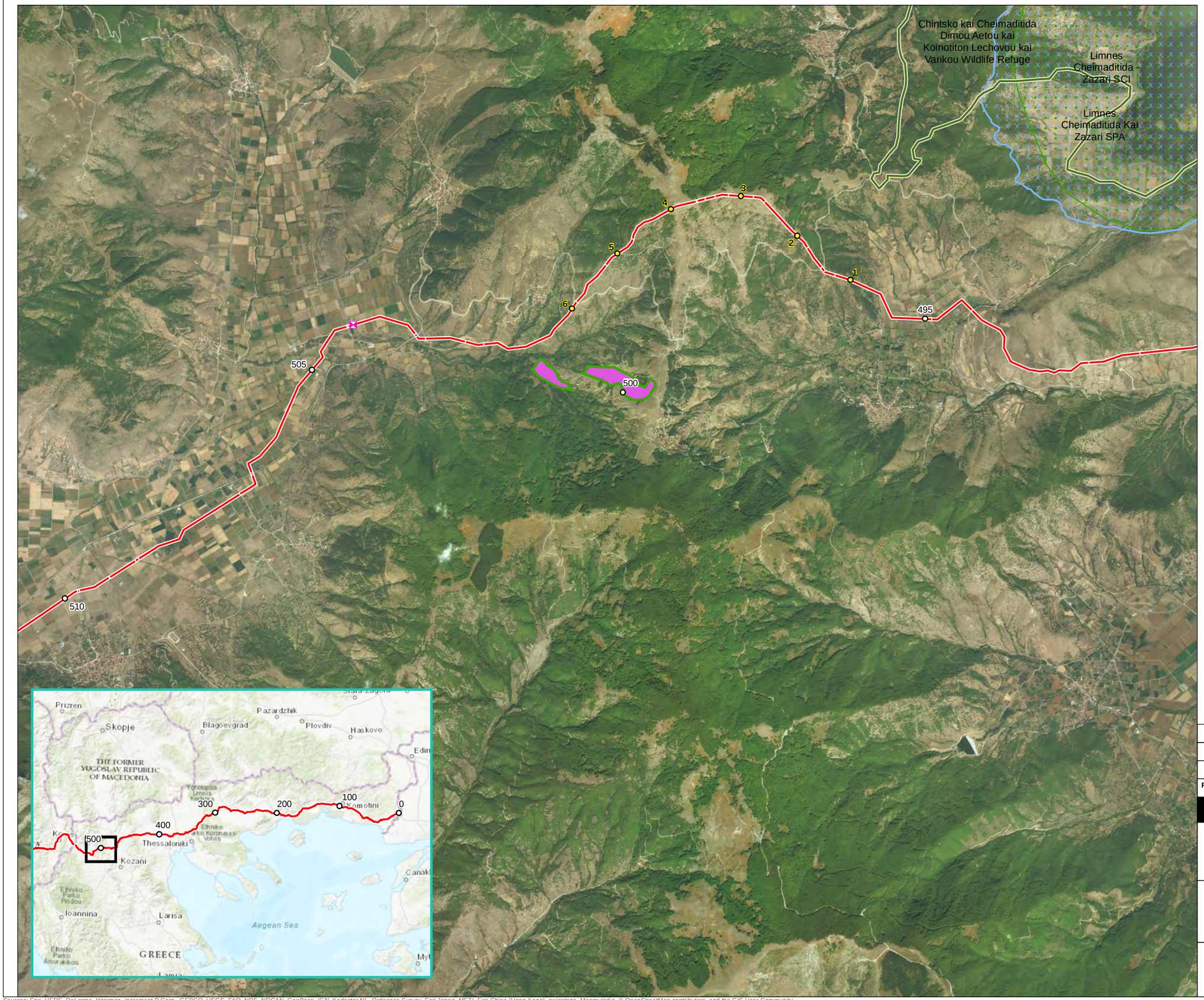
0 1 2
Kilometers
SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-000[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Threatened species

Atropa belladonna (Deadly nightshade)

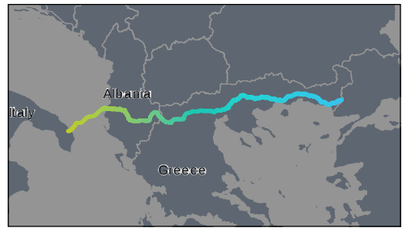
Protected/Designated Site

Site of Community Importance (Habitats Directive)

Special Protection Area (Birds Directive)

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Vascular plants - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 329 of 406 Sheet 2 of 2

0 1 2
Kilometers
SCALE: 1:50,000 @ A3

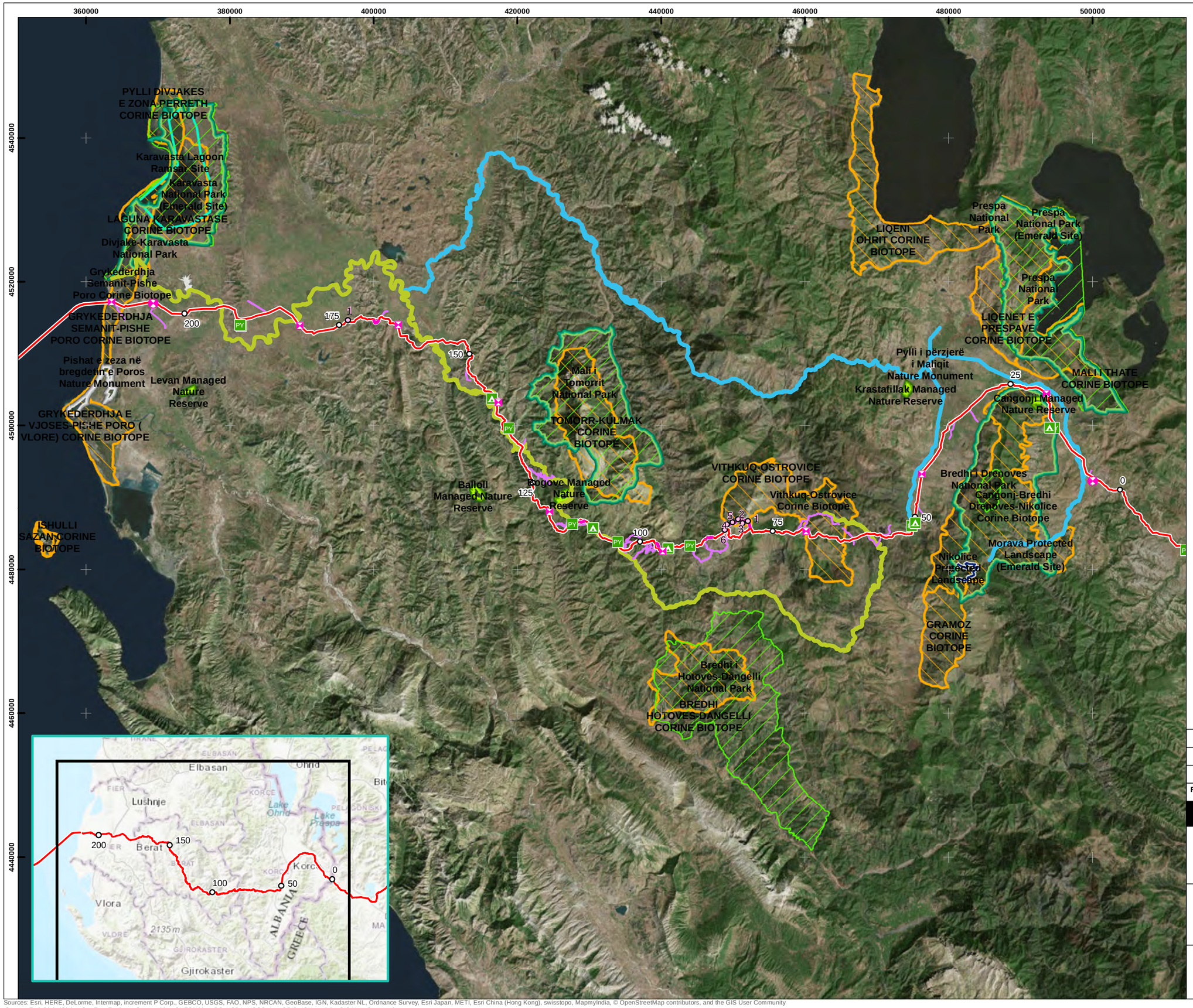
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-000[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 23 DMUs for endemic species in Albania



TAP base case route centreline

Re-route centreline

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Endemic species

Alburnoides devolli (Devoll riffle minnow) DMU

Alburnoides fangfangae (Osum riffle minnow) DMU

Pelophylax shqipericus (Albanian Pool frog) DMU

Designated/Protected Site

National Park

Protected Landscape

Emerald Site

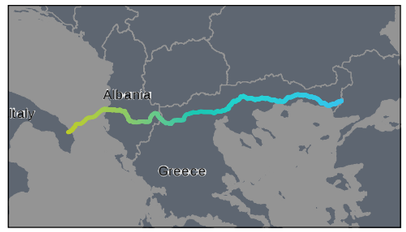
Managed Nature Reserve

Nature Monument

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 331 of 406 Sheet 1 of 3

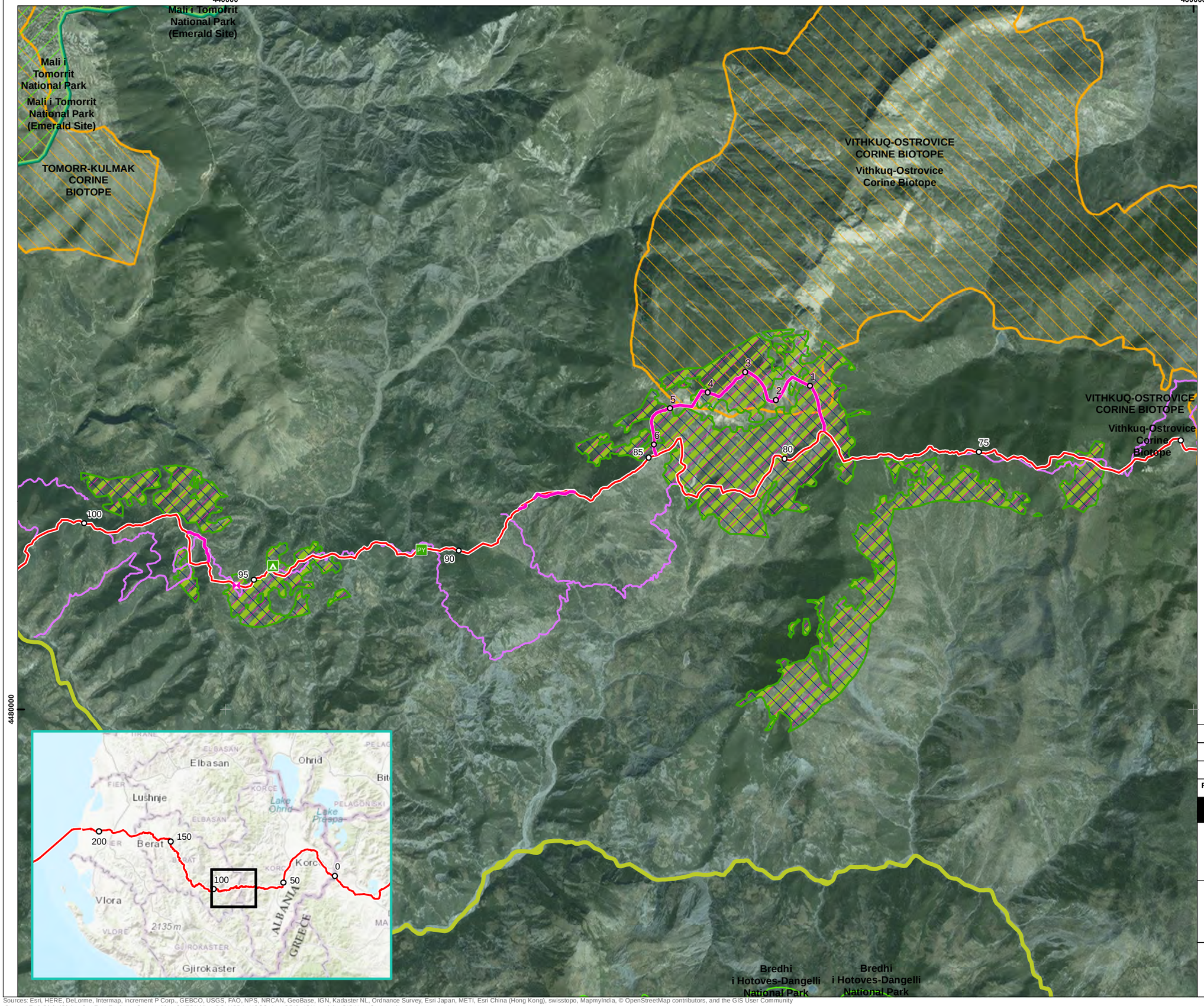
0 10 20
Kilometers
SCALE: 1:500,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-012[3].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Endemic species

Alburnoides devolli (Devoll riffle minnow) DMU

Alburnoides fangfangae (Osum riffle minnow) DMU

Endemic species

Sideritis raeseri (Mountain tea)

Lilium albanicum (Albanian lily)

Festucopsis serpentinii

Pelophylax shqipericus (Albanian Pool frog) DMU

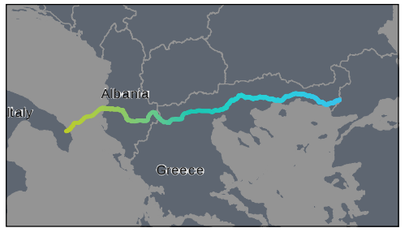
Designated/Protected Site

National Park

Emerald Site

Corine Biotope

Coordinate System: WGS 1984 UTM zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 332 of 406 Sheet 2 of 3

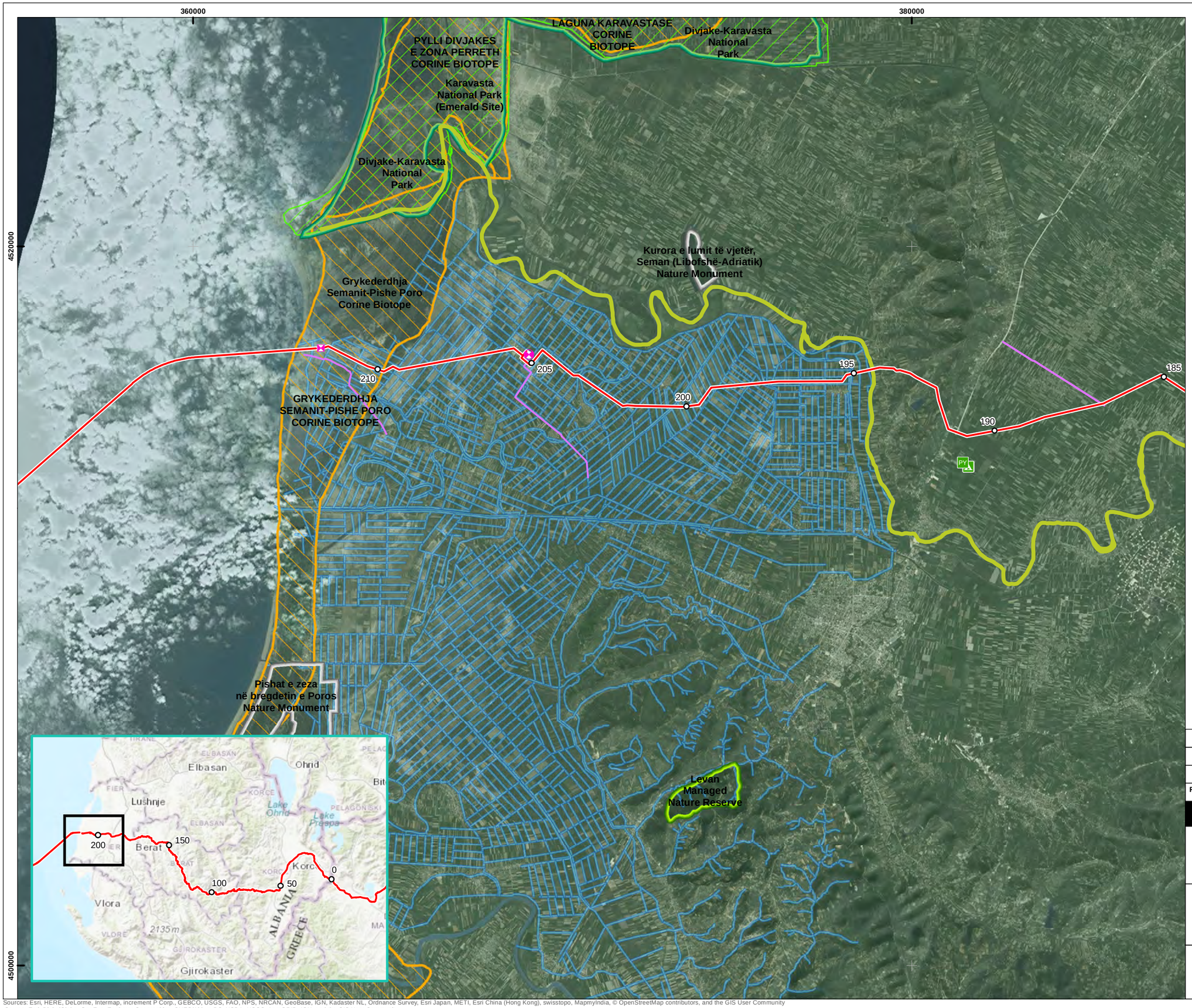
0 1.5 3
Kilometers
SCALE: 1:75,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-012[3].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Endemic species

Alburnoides devolli (Devoll riffle minnow) DMU

Alburnoides fangfangae (Osum riffle minnow) DMU

Pelophylax shqipericus (Albanian Pool frog) DMU

Designated/Protected Site

National Park

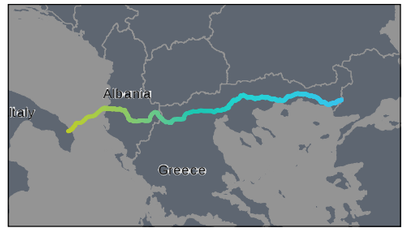
Emerald Site

Managed Nature Reserve

Nature Monument

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 333 of 406 Sheet 3 of 3

0 2.5 5
Kilometers
SCALE: 1:100,000 @ A3

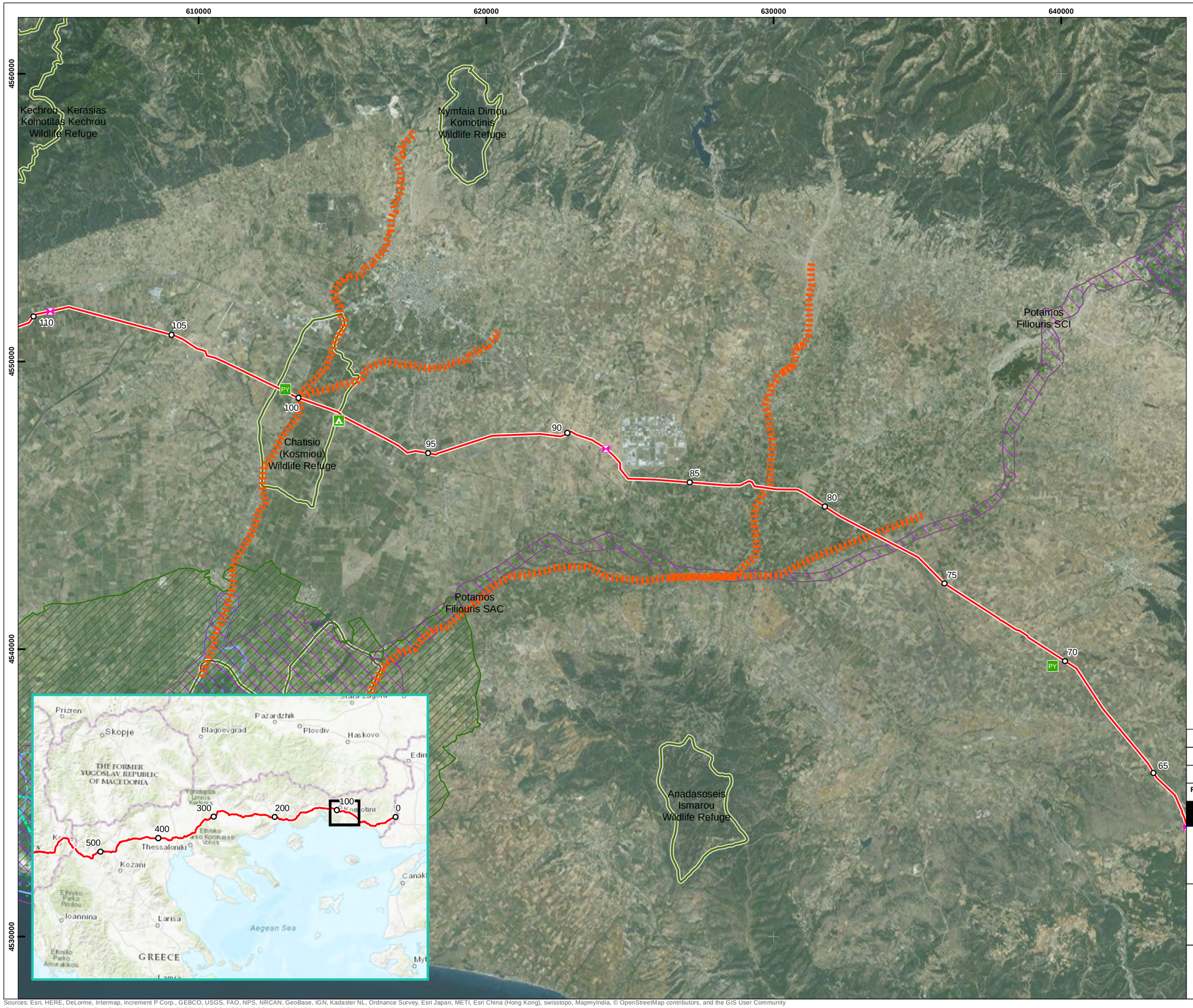
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-012[3].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 24 DMUs for endemic species in Greece



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Endemic Species

Alburnus vistonicus DMU

Dianthus tenuiflorus DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

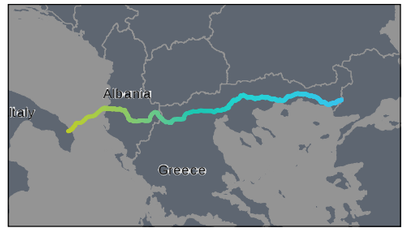
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 335 of 406 Sheet 1 of 6

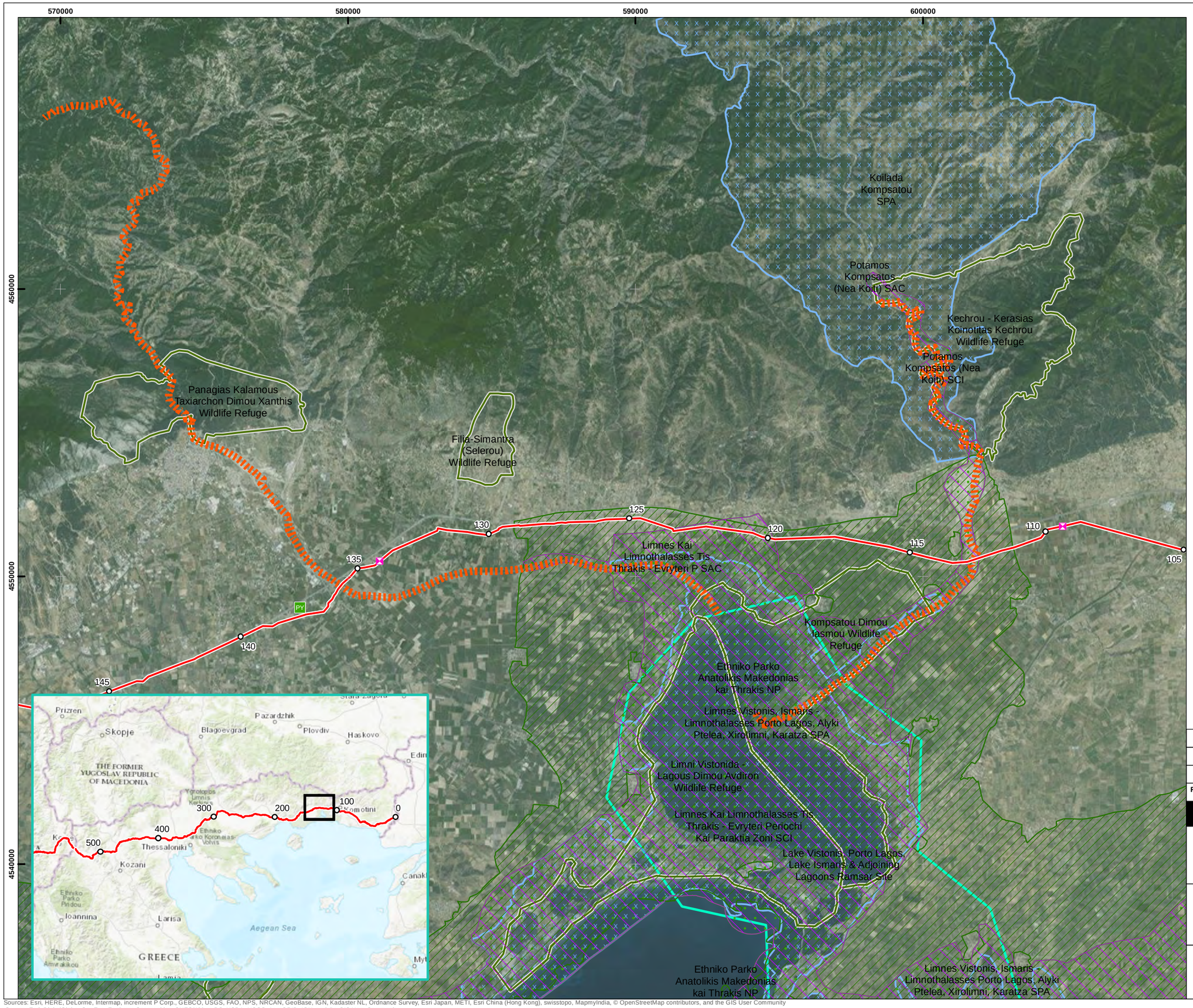
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Endemic Species

Alburnus vistonicus DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

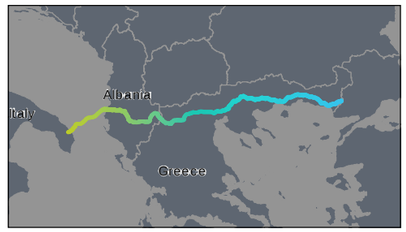
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 336 of 406 Sheet 2 of 6

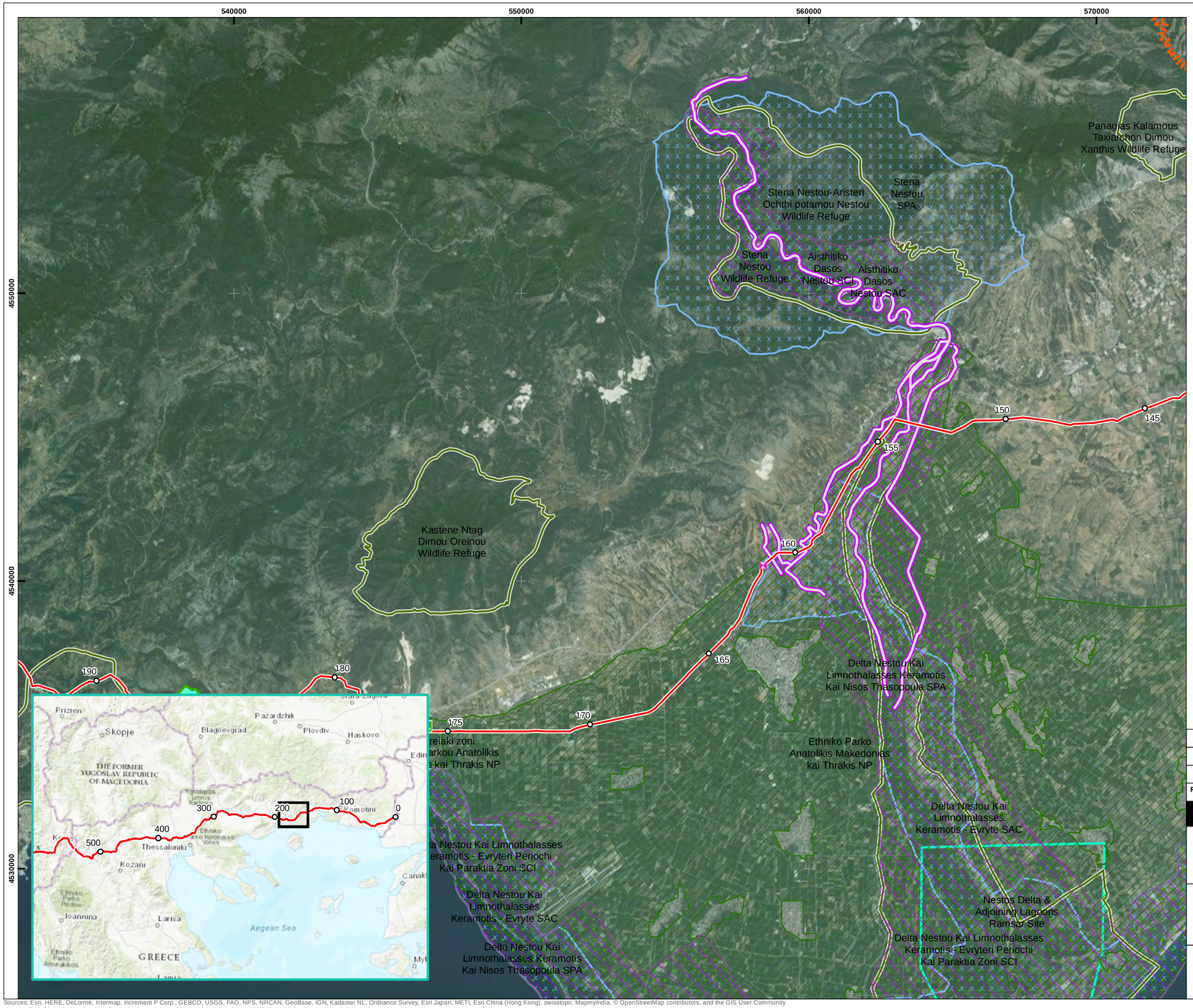
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Endemic Species

Alburnus vistonicus DMU

Turcorientalia hohenackeri DMU

Verbascum dingleri DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

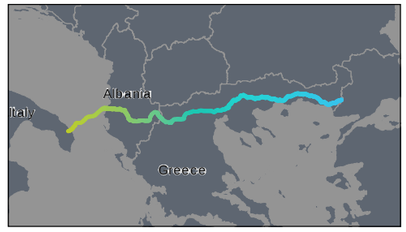
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 337 of 406 Sheet 3 of 6

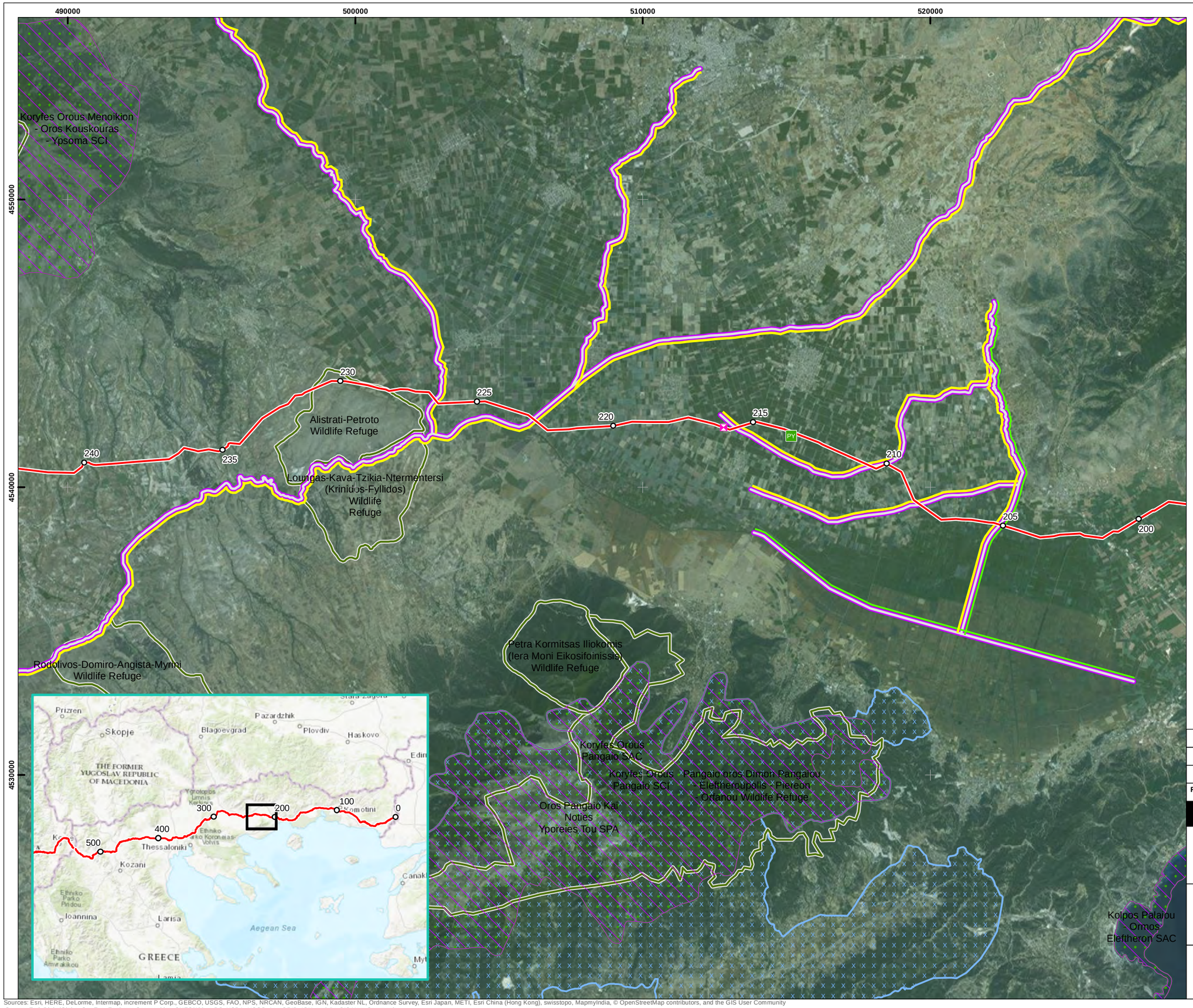
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Endemic Species

Cobitis punctilineata (Aggitis spined loach) DMU

Eudontomyzon hellenicus (Greek brook lamprey) DMU

Turcorientalia hohenackeri DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

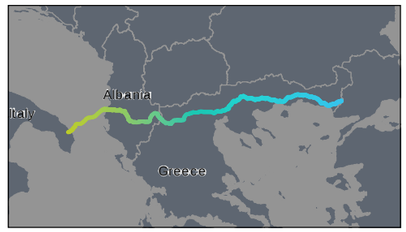
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 338 of 406 Sheet 4 of 6

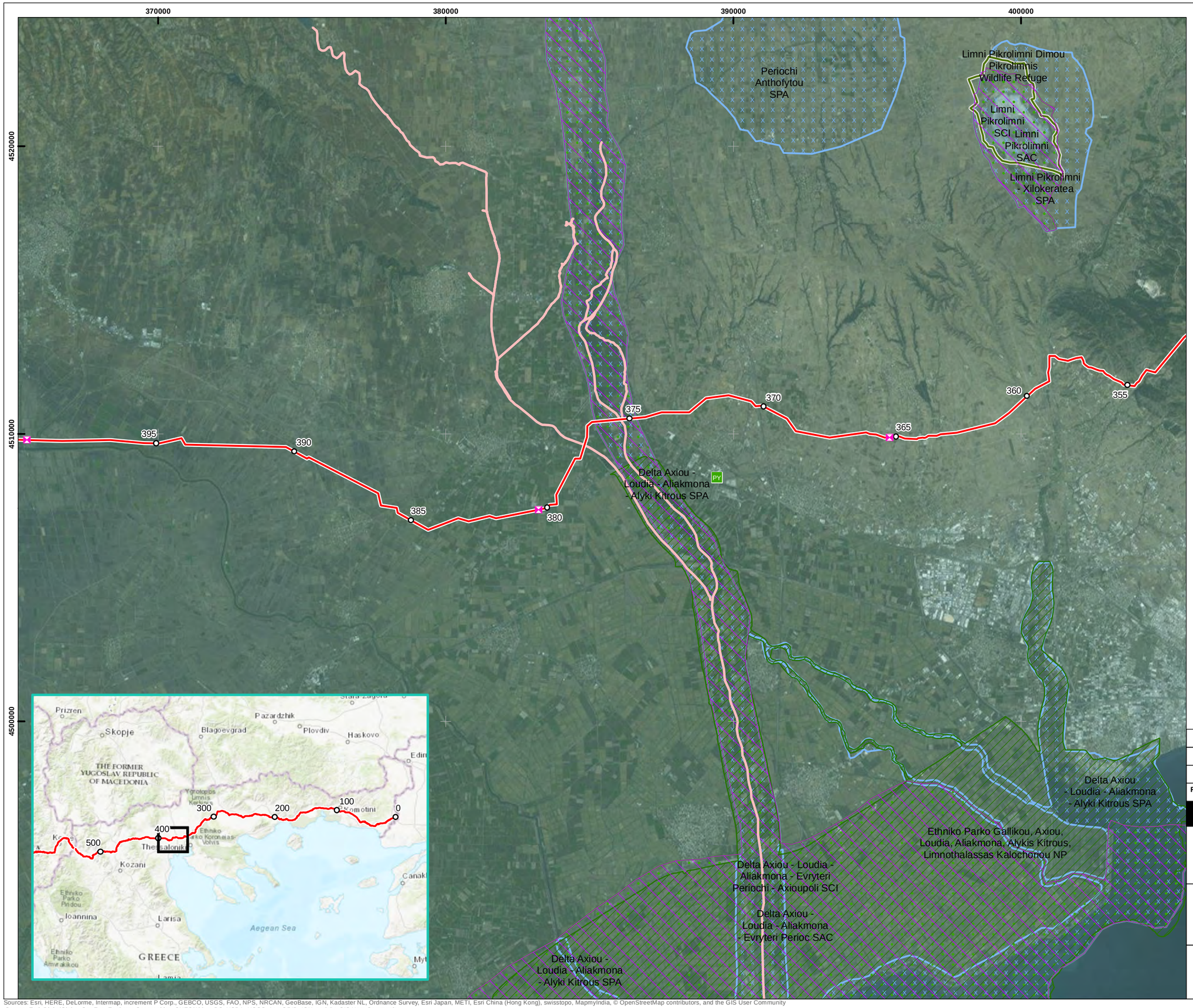
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Endemic Species

Salmo pelagonicus (Pelagos trout) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

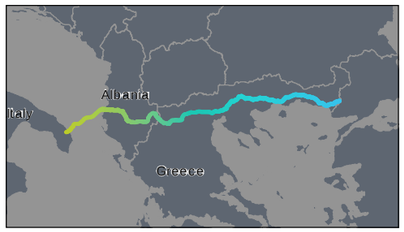
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 339 of 406 Sheet 5 of 6

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Endemic Species

Salmo pelagonicus (Pelagos trout) DMU

Dianthus formanekii DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

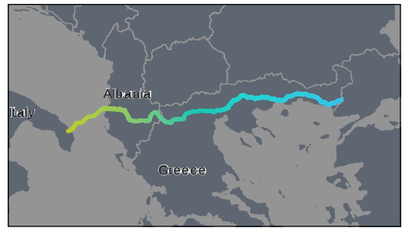
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 2: Endemic/Restricted range species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 340 of 406 Sheet 6 of 6

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

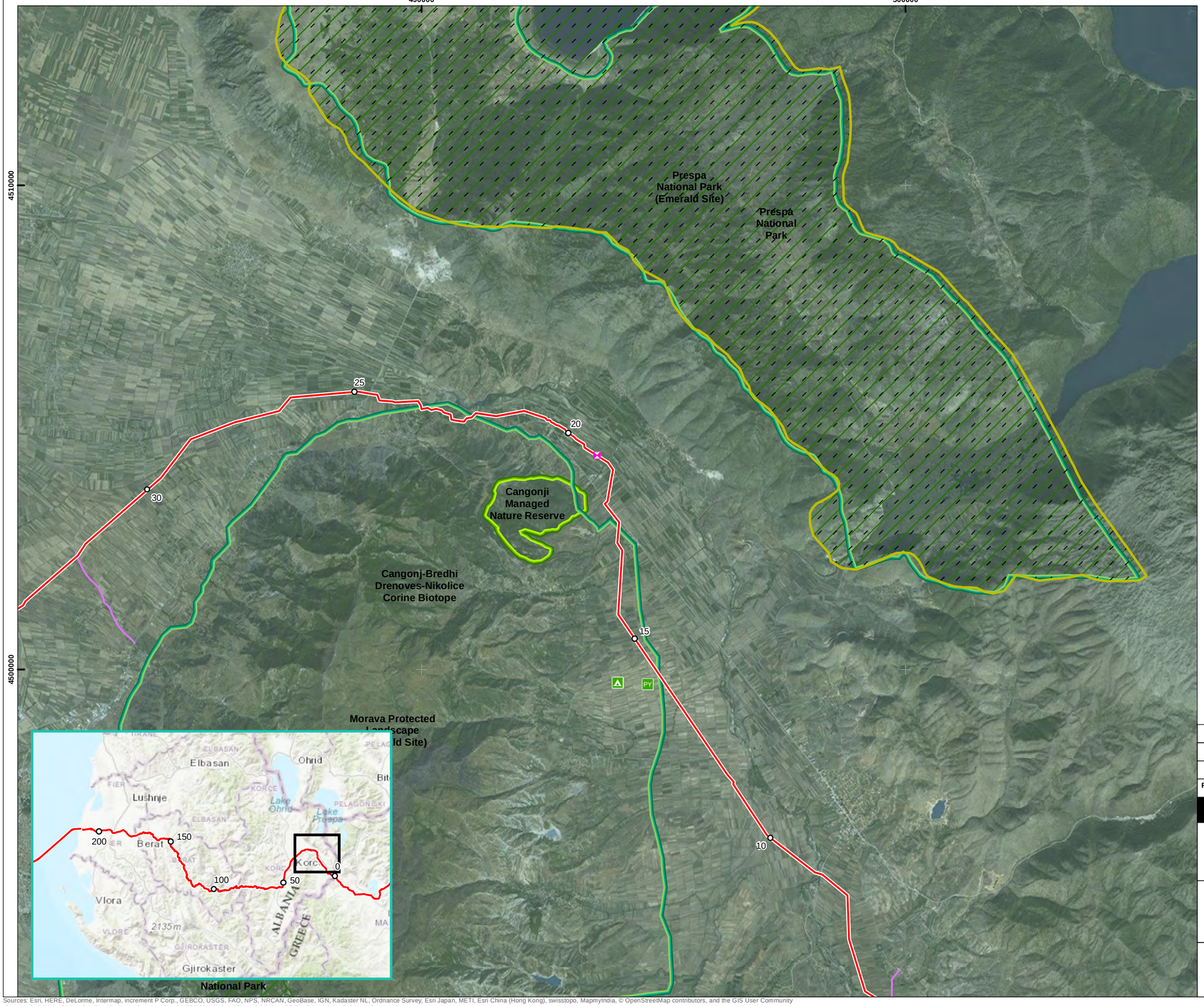
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-011[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 25 DMUs for congregatory bats in Albania



TAP base case route centreline
Re-route centreline
Kilometre points (KP)
Kilometre Points - Reroute (KP)
Block valve station
Camp site
Pipe yard
TAP access road

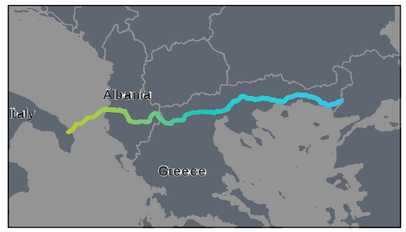
Migratory/Congregatory Species

Congregatory Bats DMU
Bat Roost

Designated/Protected Site

National Park
Emerald Site
Managed Nature Reserve
Nature Monument
Protected Landscape
Ramsar Site
Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK
Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 342 of 406 Sheet 1 of 4

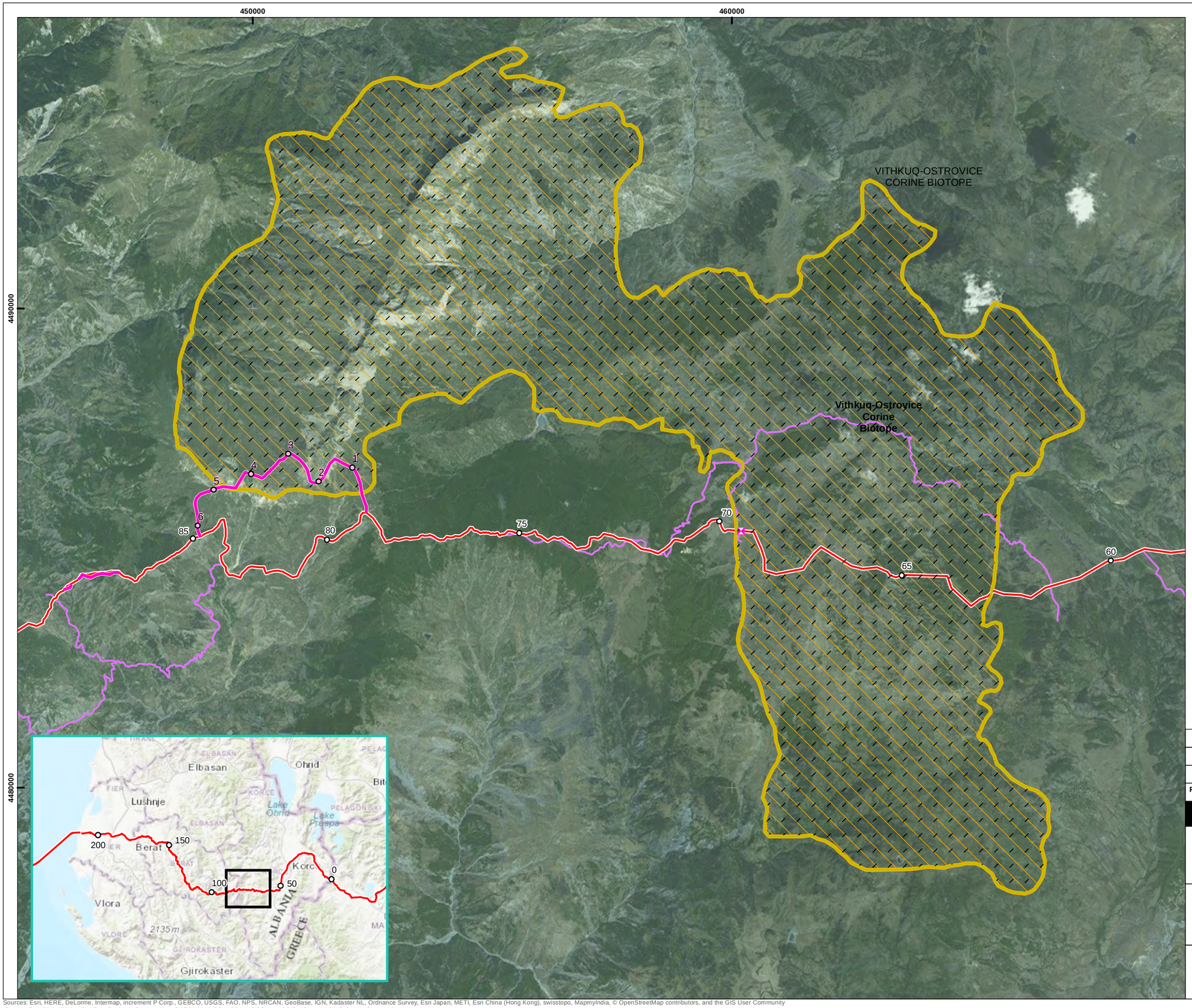
0 1 2
Kilometers
SCALE: 1:75,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-013[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

TAP access road

Migratory/Congregatory Species

Congregatory Bats DMU

Bat Roost

Designated/Protected Site

National Park

Emerald Site

Managed Nature Reserve

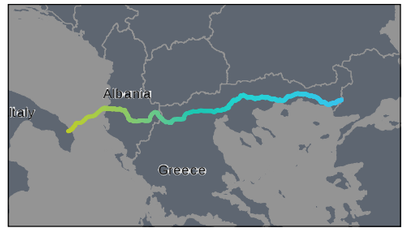
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 343 of 406 Sheet 2 of 4

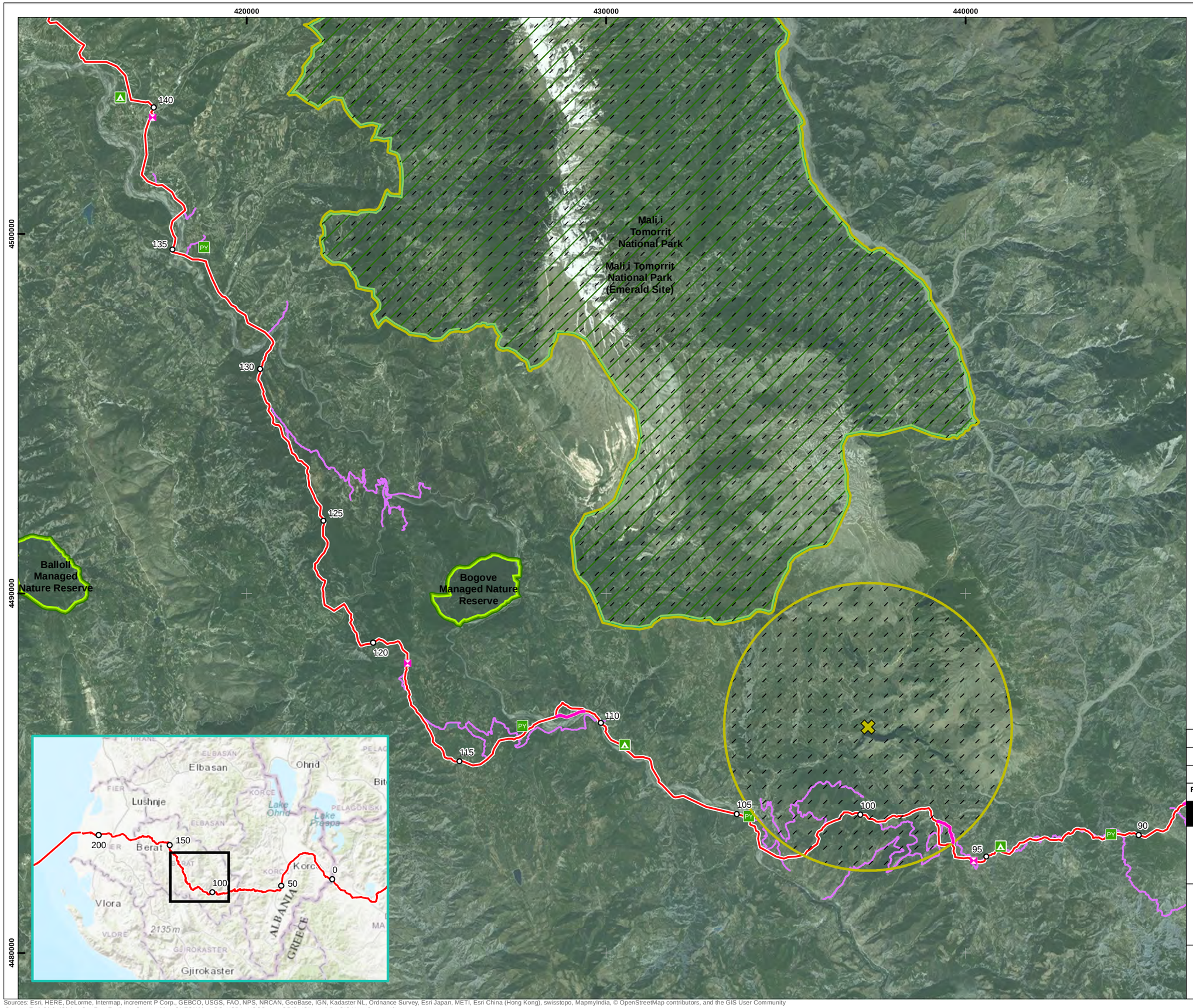
0 1 2
Kilometers
SCALE: 1:75,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-013[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline
Re-route centreline
Kilometre points (KP)
Kilometre Points - Reroute (KP)
Block valve station
Camp site
Pipe yard
TAP access road

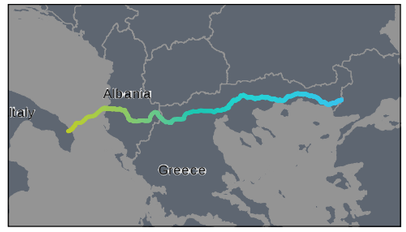
Migratory/Congregatory Species

Congregatory Bats DMU
Bat Roost

Designated/Protected Site

National Park
Emerald Site
Managed Nature Reserve
Nature Monument
Protected Landscape
Ramsar Site
Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK
Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 344 of 406 Sheet 3 of 4

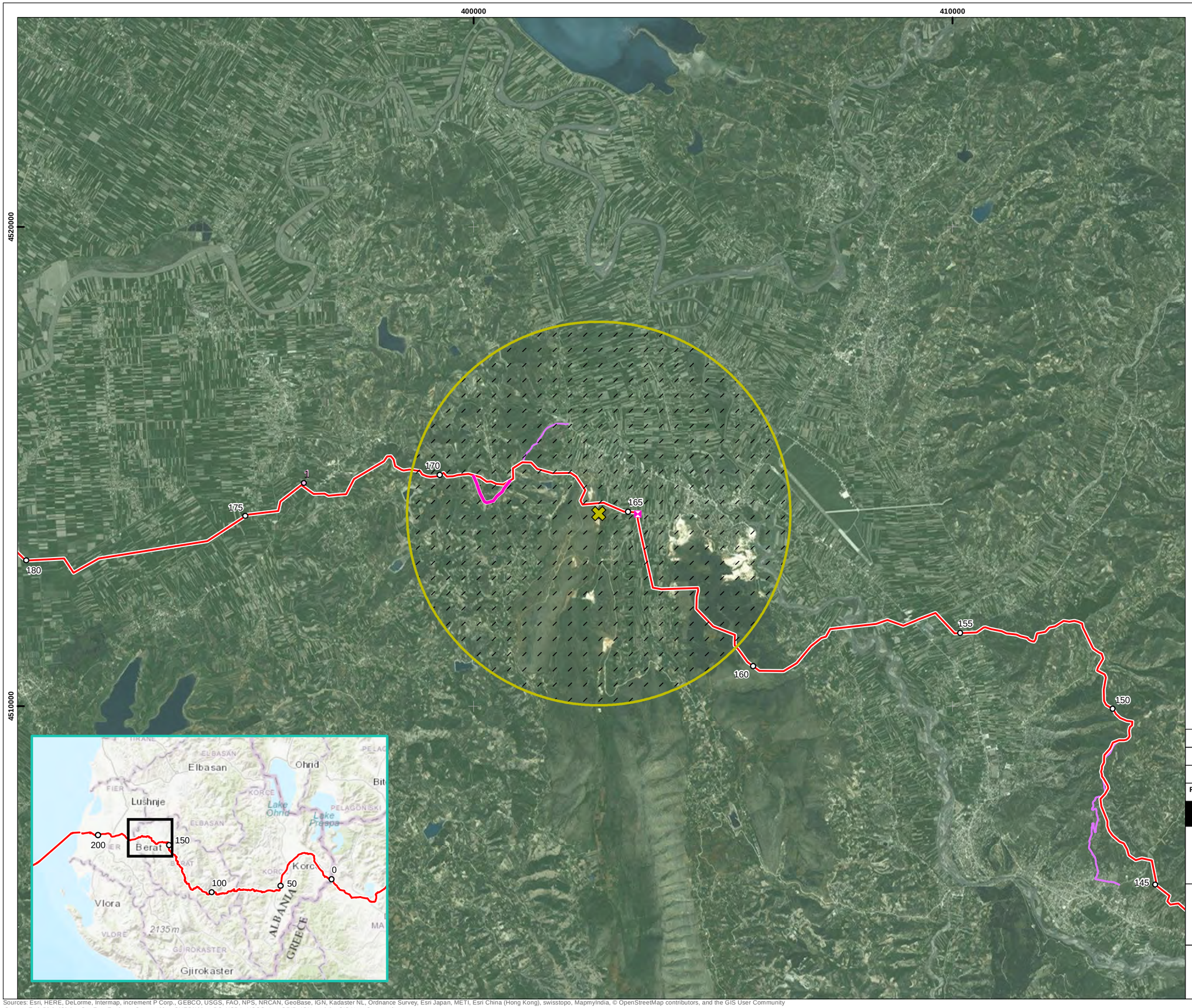
0 1 2
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-013[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

TAP access road

Migratory/Congregatory Species

Congregatory Bats DMU

Bat Roost

Designated/Protected Site

National Park

Emerald Site

Managed Nature Reserve

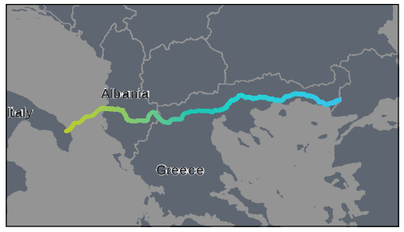
Nature Monument

Protected Landscape

Ramsar Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 345 of 406 Sheet 4 of 4

0 1 2
Kilometers
SCALE: 1:75,000 @ A3

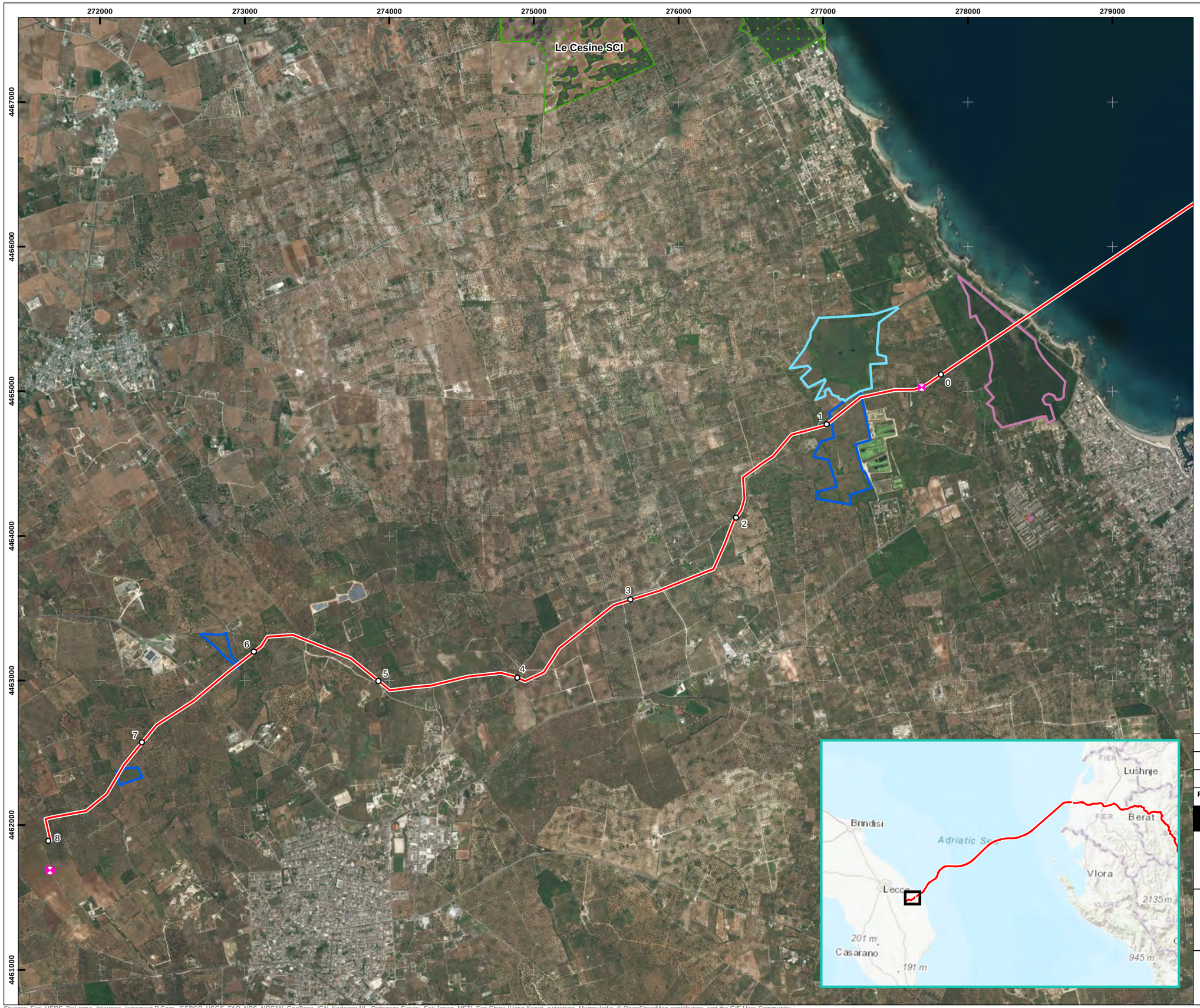
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-013[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 26 DMUs for Criterion 4 in Italy



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

TAP access road

EU Priority Habitat/Habitat

Mediterranean temporary ponds

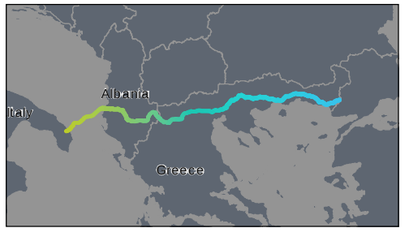
Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea

Wooded dunes with Maritime pine (*Pinus pinea*) and/or *Pinus pinaster*

Legally protected sites

Site of Community Importance (Habitats Directive)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Italy
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 347 of 406 Sheet 1 of 1

0 250 500 750 1,000
Metres
SCALE: 1:25,000 @ A3

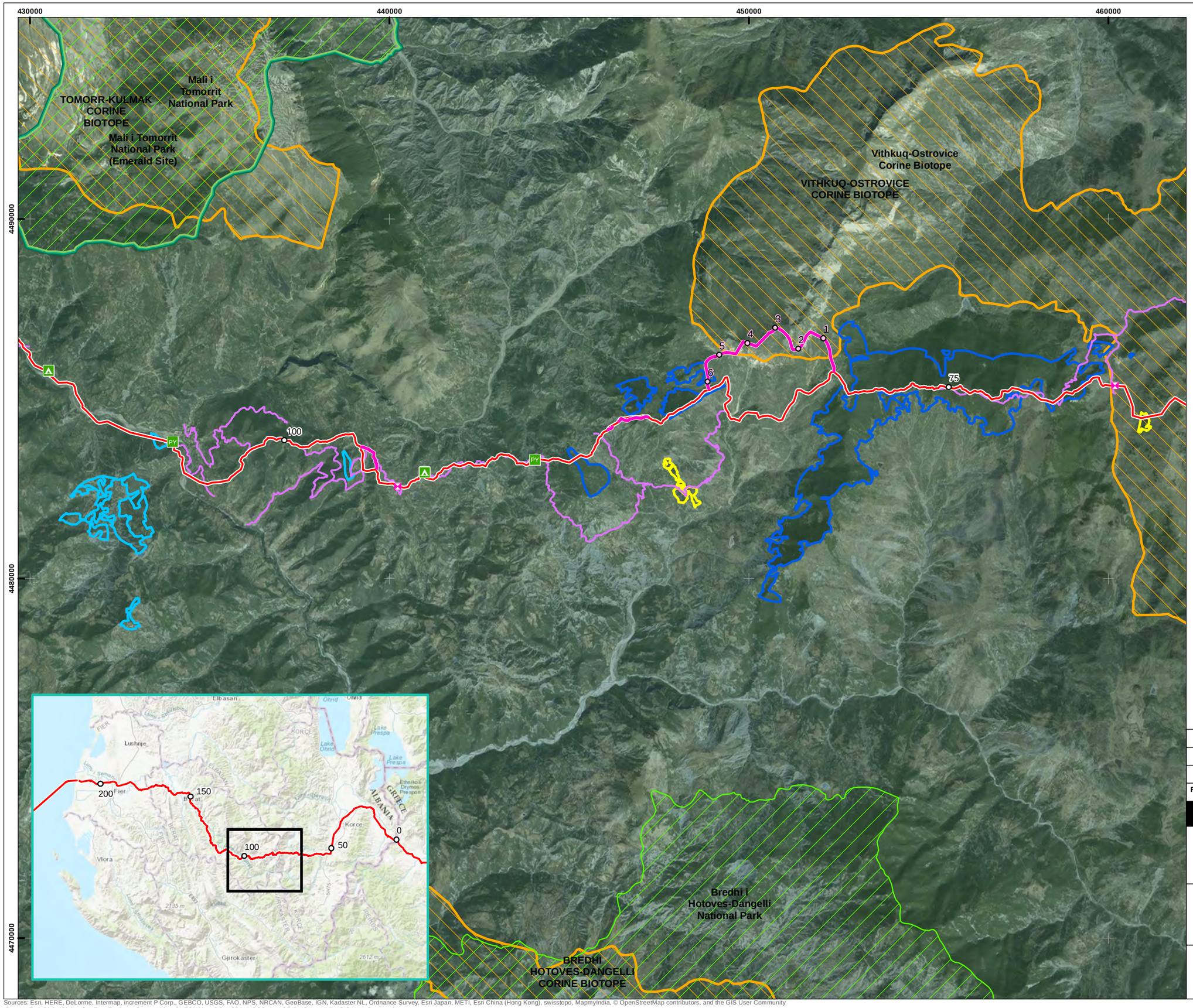
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-004[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 27 DMUs for Criterion 4 in Albania



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Camp site

Pipe yard

TAP access road

Ecosystem type

(Sub-)Mediterranean pine forests with endemic black pine

Luzulo-Fagetum beech forests

Mediterranean pine forests with endemic Mesogean pines

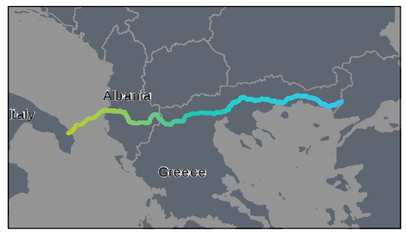
Designated/Protected Site

National Park

Emerald Site

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 349 of 406 Sheet 1 of 3

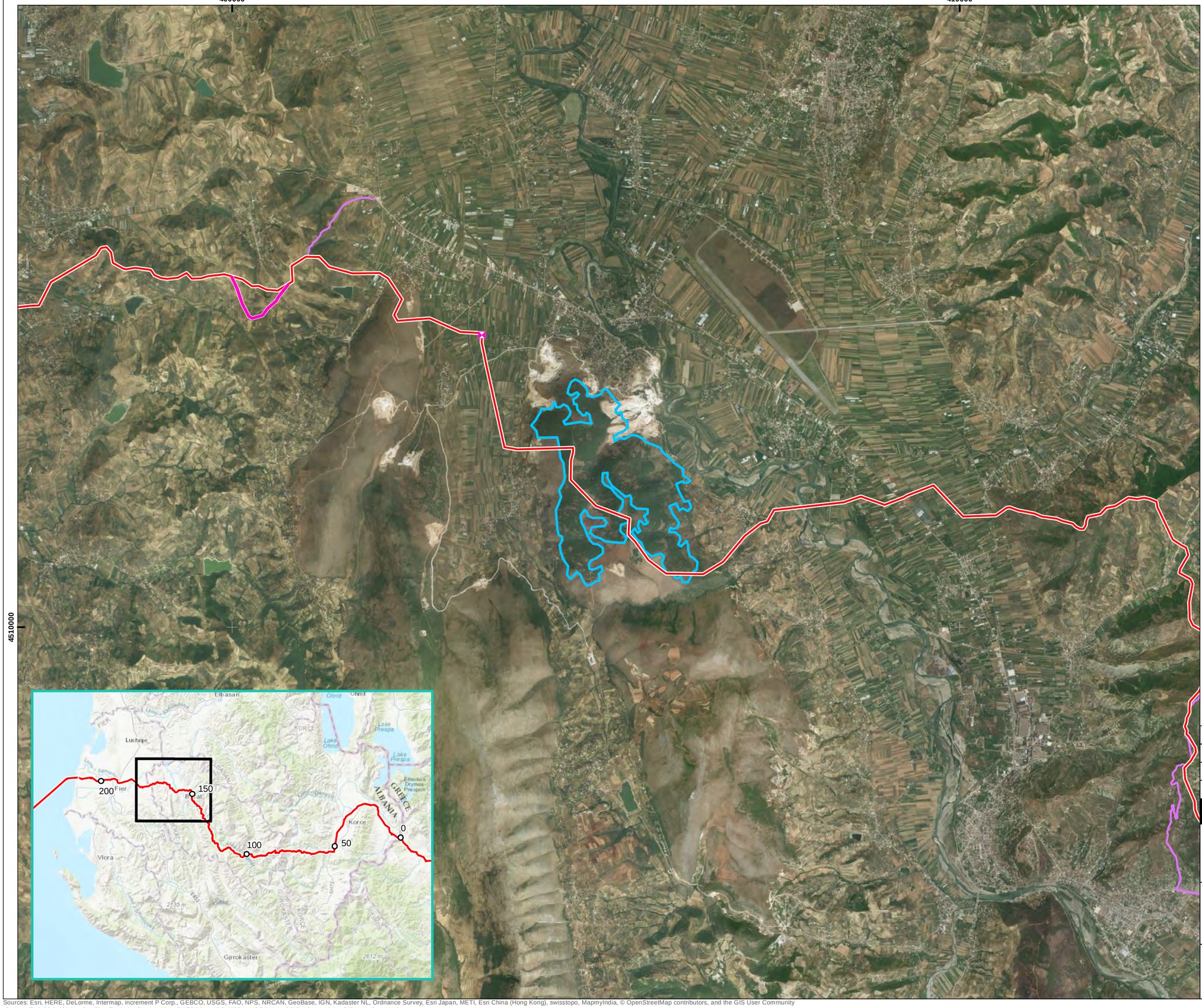
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-003[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre Points - Reroute (KP)

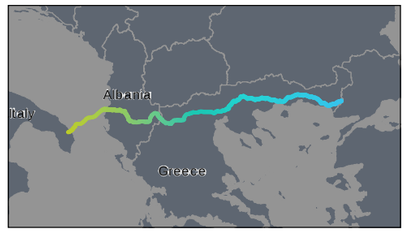
Block valve station

TAP access road

Ecosystem type

Mediterranean pine forests with endemic Mesogean pines

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 350 of 406 Sheet 2 of 3

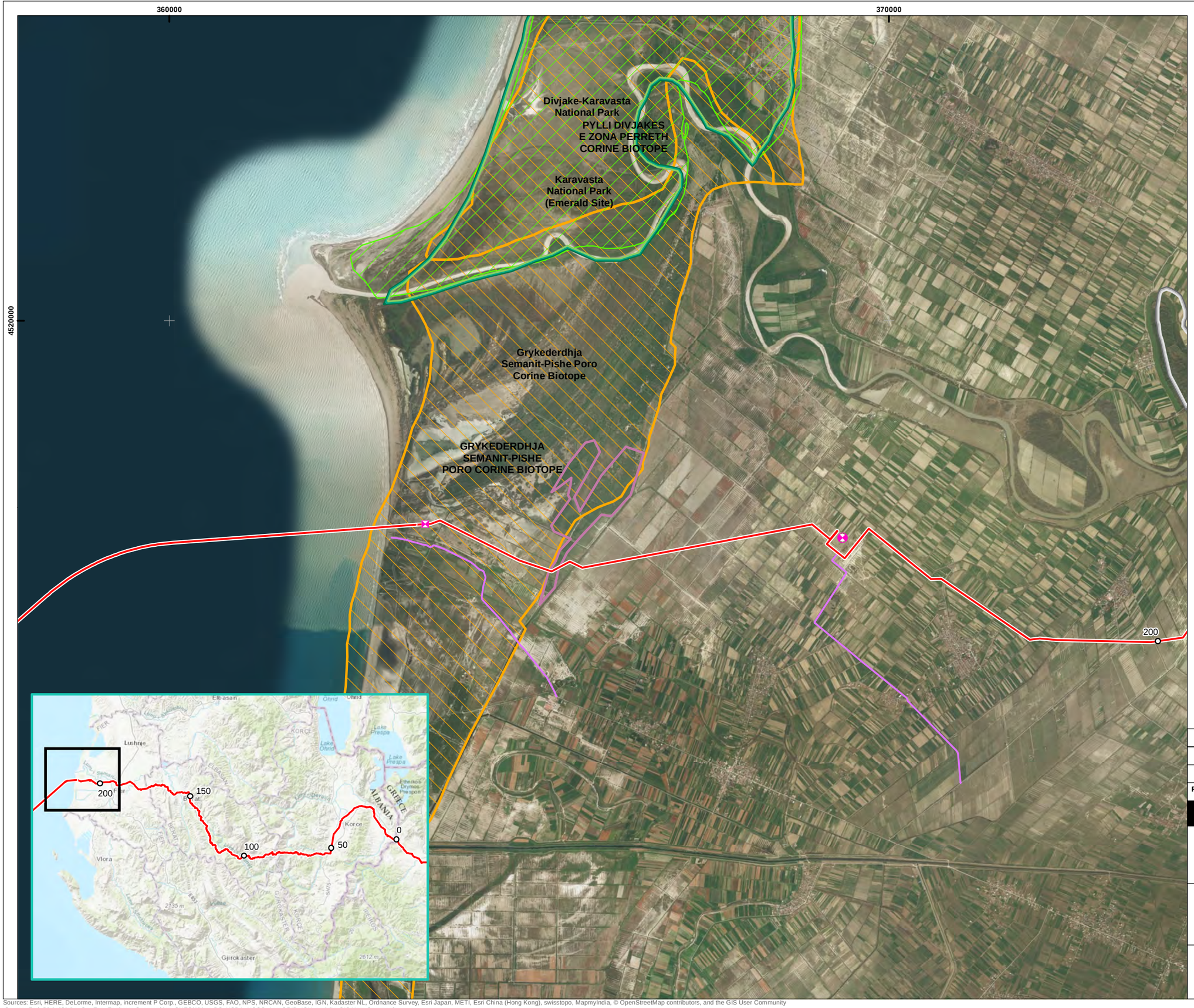
0 1 2
Kilometers
SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-003[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Compressor station

Block valve station

TAP access road

Ecosystem type

Wooded dunes with Maritime pine (*Pinus pinea*) and/or *Pinus pinaster*

Designated/Protected Site

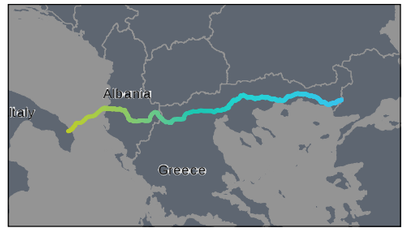
National Park

Emerald Site

Nature Monument

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	12/12/2016	Final issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 351 of 406 Sheet 3 of 3

0 1 2
Kilometers
SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-003[2].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 28 DMUs for Criterion 4 in Greece

650000
660000
670000
4540000
4530000

Dasos Dadias - Soufli SPA
Vouna Evrou SCI
Ethniko Parko Dasous Dadias - Lefkimmis - Soufliou NP
Vouna Evrou SAC
Nipsas - Drymou Dimou Traianoupolis Wildlife Refuge
Notio Dasiko Symplegma Evrou SPA
Kirki Dimou Alexandroupolis Wildlife Refuge
Pylaias - Kavissou - Ferron Dimou Ferron Wildlife Refuge
Ethniko ygrotopiko parko delta Evrou - Perifereiaki zoni NP
Delta Evrou Kai Dytikos Vrachionas SCI
Delta Evrou SPA
Ethniko Ygrotopiko Parko Delta Evrou NP
Delta Evrou Dimon Traianoupolis Ferron Wildlife Refuge
Evros Delta Ramsar Site

55
50
45
40
35
30
25
PY

Prizren
Skopje
Pazardzhik
Blagoevgrad
Plovdiv
Haskovo
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
Thessaloniki
Kozani
Ioannina
Larisa
Aegean Sea
GREECE
0
100
200
300
400
500

TAP base case route centreline
Kilometre points (KP)
Block valve station
Camp site
Pipe yard

EU Priority Habitat/Habitat

Mediterranean pine forests with endemic Mesogean pines

Designated/Protected Site

Ramsar Site
Site of Community Importance (Habitats Directive)
Special Area of Conservation (Habitats Directive)
Special Protection Area (Birds Directive)
National Park
Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter

Albania
Italy
Greece

Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK
Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 353 of 406 Sheet 1 of 4

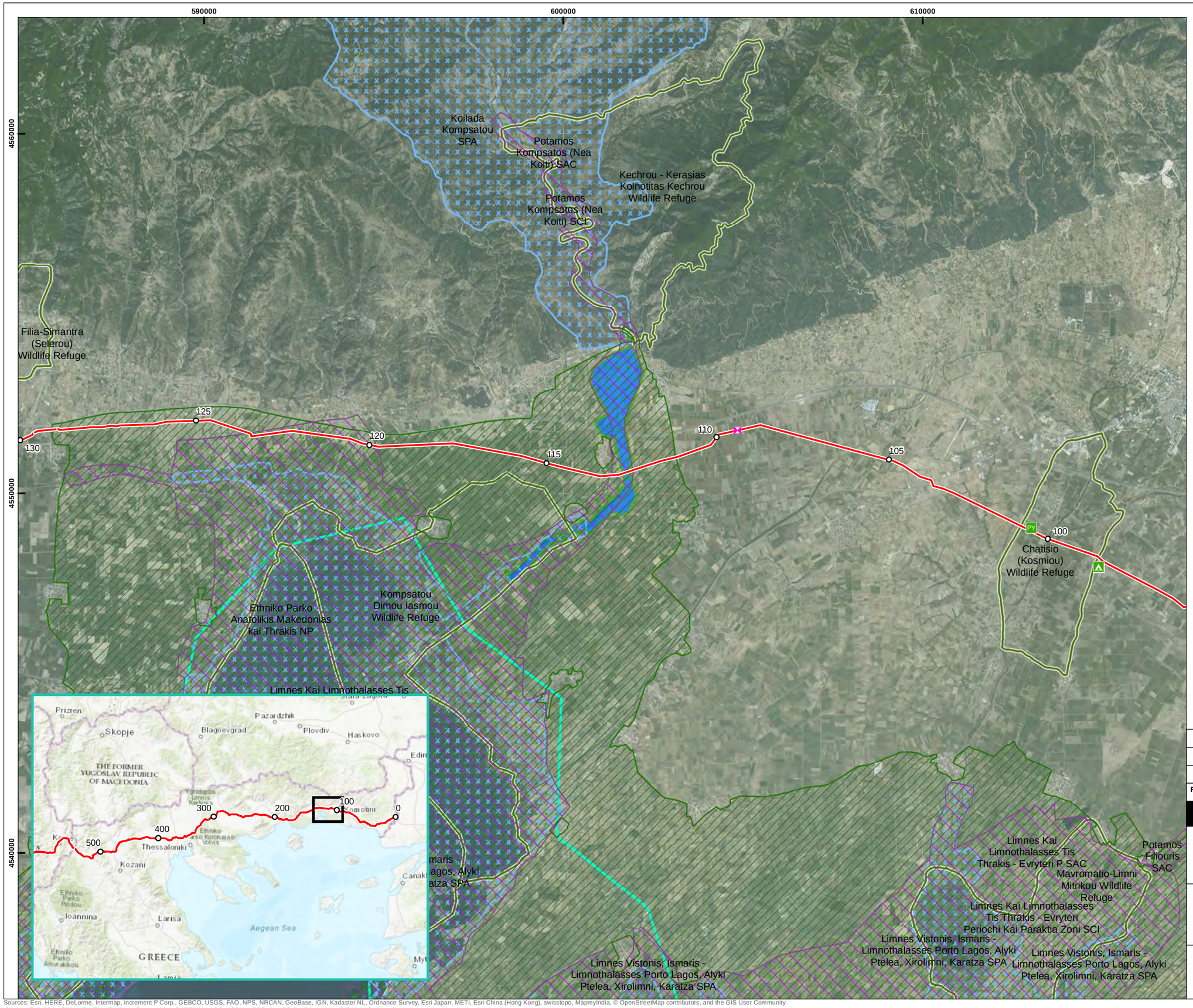
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-002[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

EU Priority Habitat/Habitat

Mediterranean temporary ponds

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

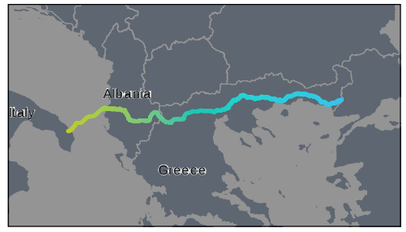
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 354 of 406 Sheet 2 of 4

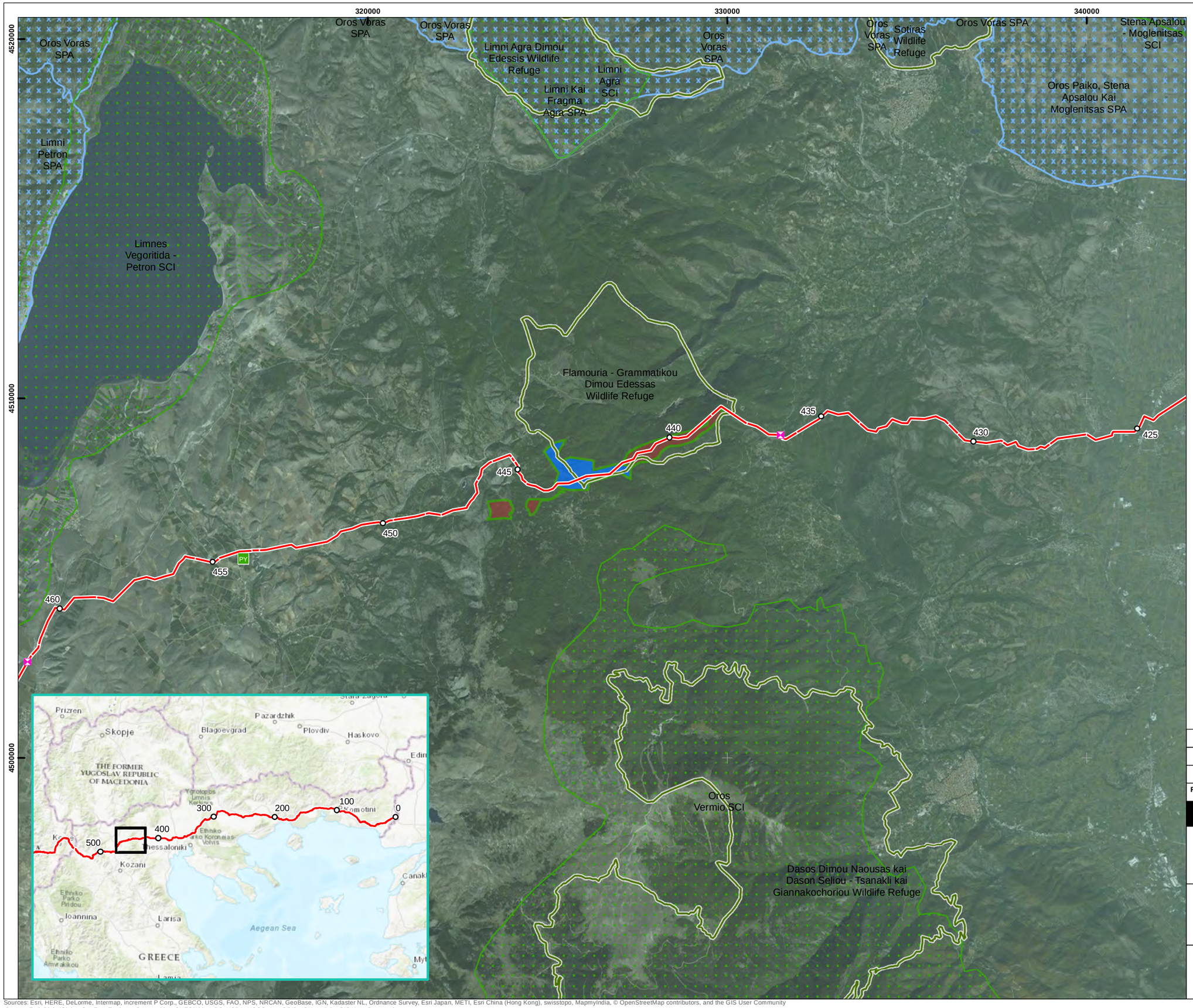
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-002[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

EU Priority Habitat/Habitat

Asperulo-Fagetum beech forests

Mediterranean temporary ponds

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

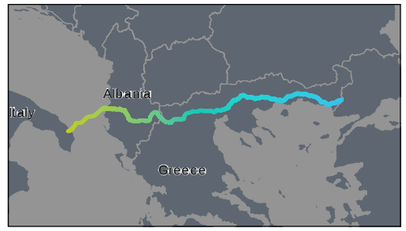
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 355 of 406 Sheet 3 of 4

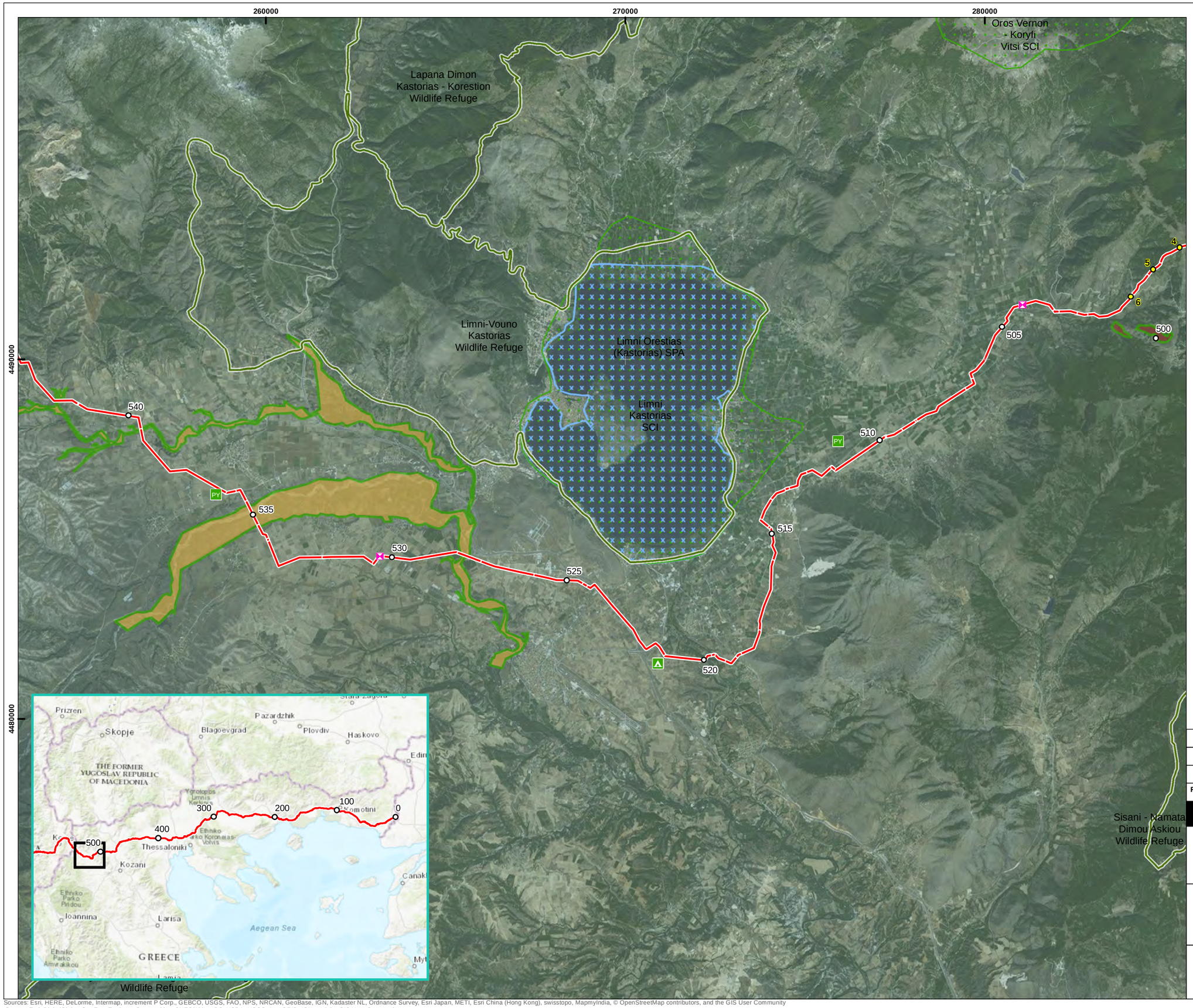
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-002[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Kilometre points - Reroute (KP)

Block valve station

Camp site

Pipe yard

EU Priority Habitat/Habitat

Alluvial forests with Alnus glutinosa and Fraxinus excelsior (alno-padion, alnion incanae, salicion albae)

Asperulo-Fagetum beech forests

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

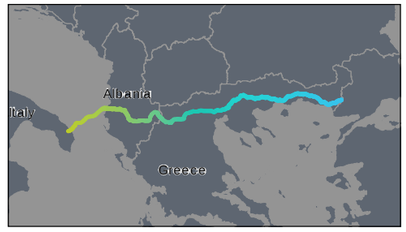
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	05/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 4: Highly threatened or unique ecosystems
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 356 of 406 Sheet 4 of 4

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

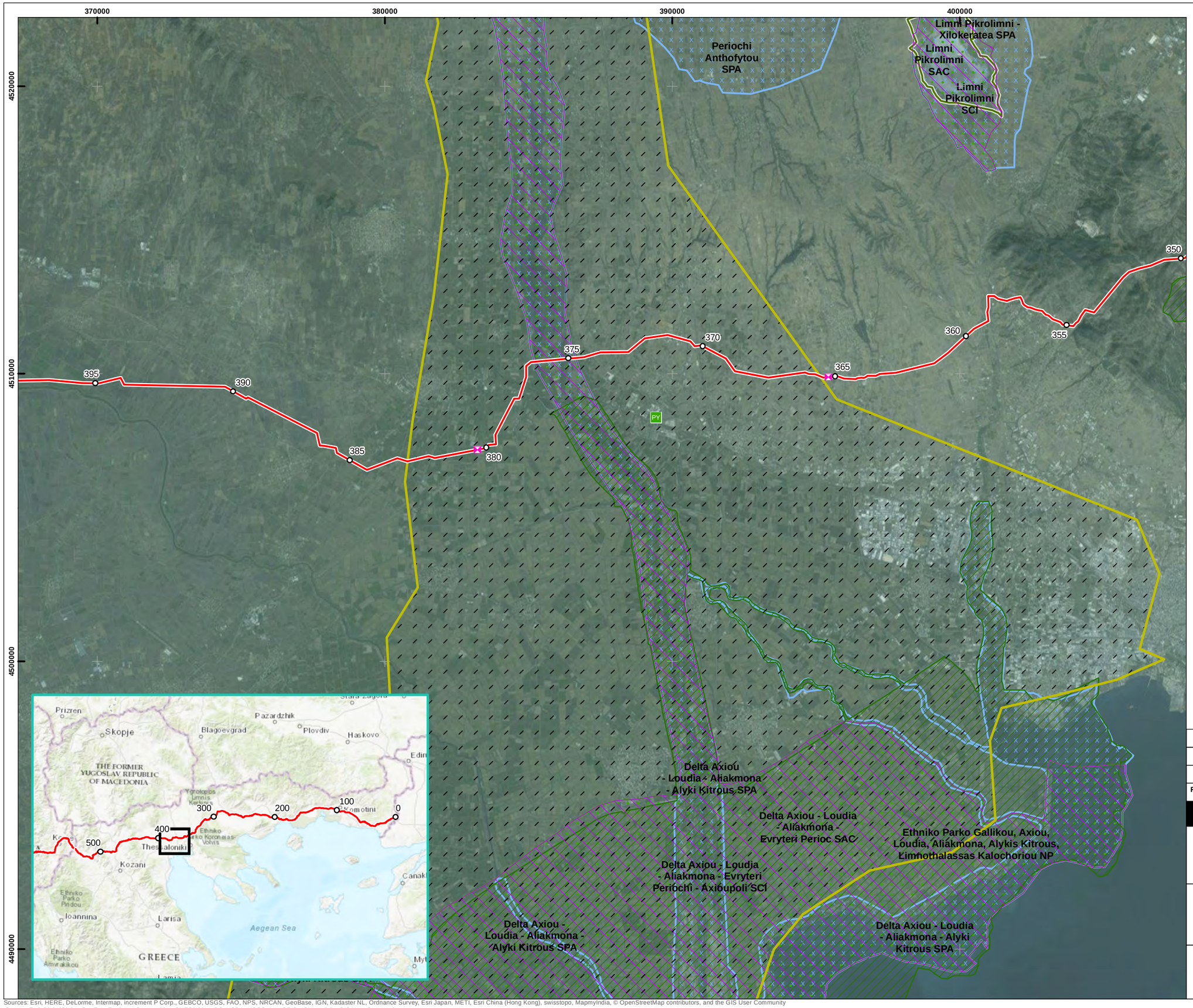
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-002[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 29 DMUs for Criterion 5 in Greece



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Evolutionary Process

Macedonian and Western Crested Newt Interaction Zone

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

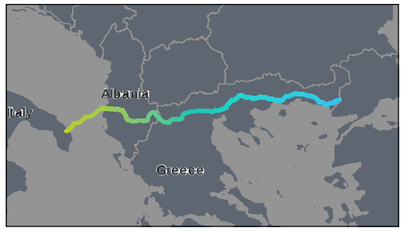
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 5: Evolutionary Processes
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 358 of 406 Sheet 1 of 1

0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

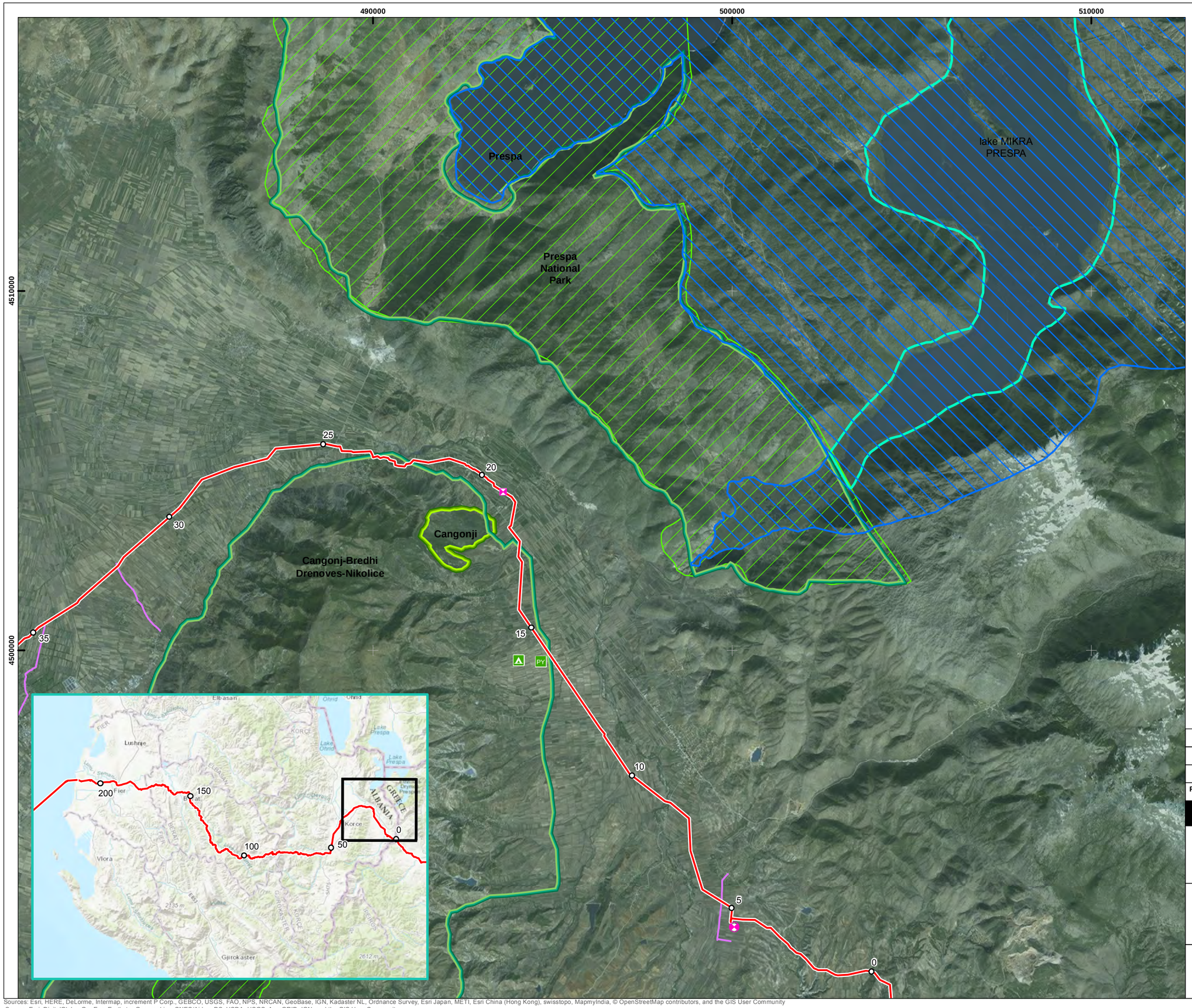
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-034[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 30 DMUs for Criterion 5 in Albania



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

TAP access road

Evolutionary Process

Prespa Lakes

Designated/Protected Site

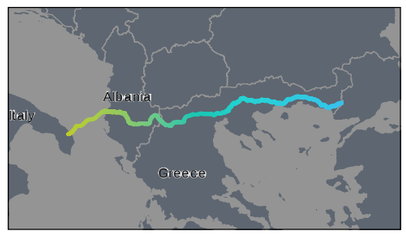
National Park

Emerald Site

Managed Nature Reserve

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 5 – Key evolutionary processes
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
360 of 406 Sheet 1 of 2

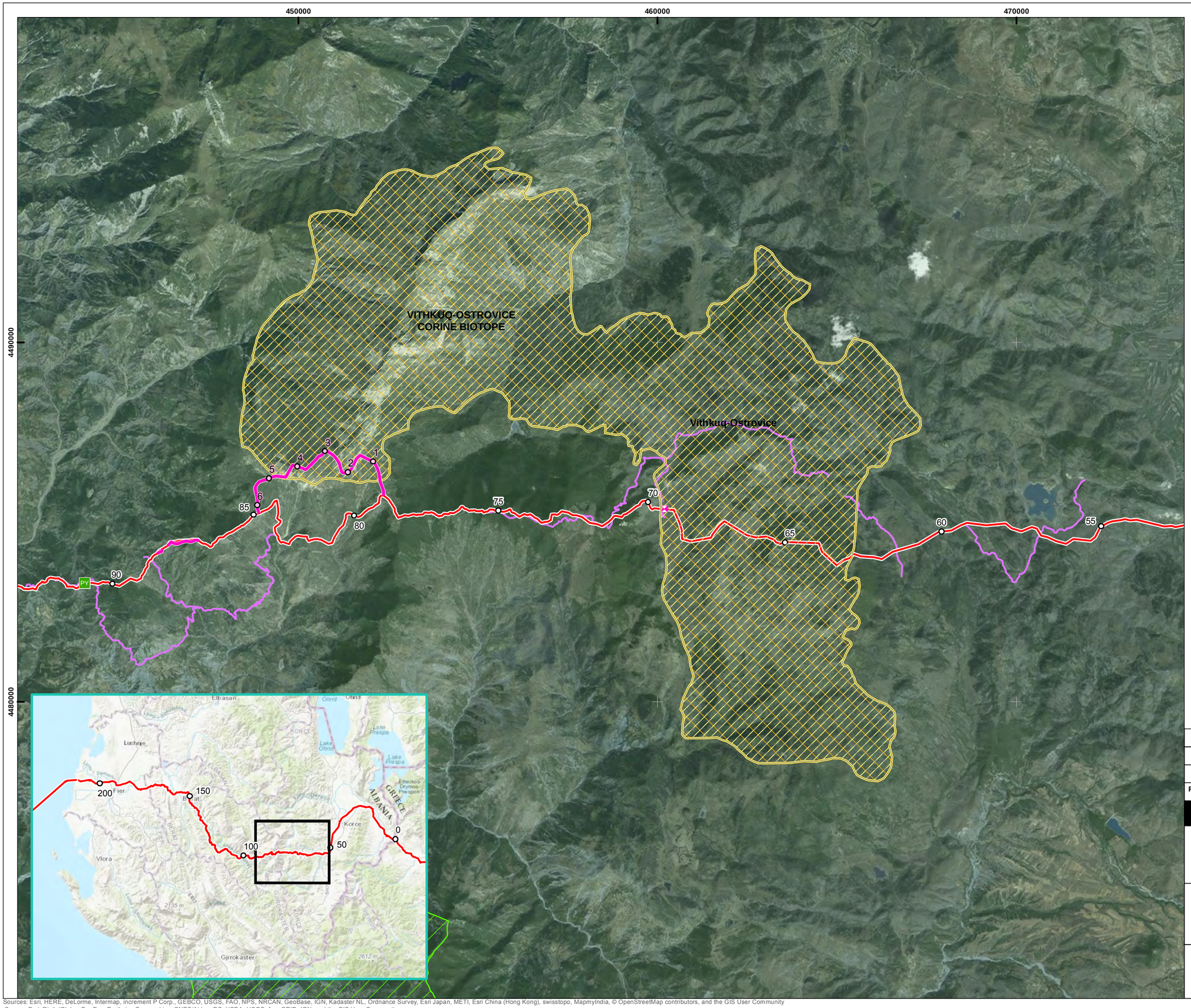
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-035[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Re-route centreline

Kilometre points (KP)

Kilometre Points - Reroute (KP)

Block valve station

Pipe yard

TAP access road

Evolutionary Process

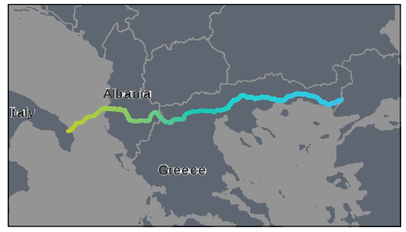
Vithkuq-Ostrovice Serpentine outcrop

Designated/Protected Site

National Park

Corine Biotope

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
1	12/12/2016	Final Issue	TOD	NOD	CY
B	02/11/2016	Second draft	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 5 – Key evolutionary processes
Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
361 of 406 Sheet 2 of 2

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

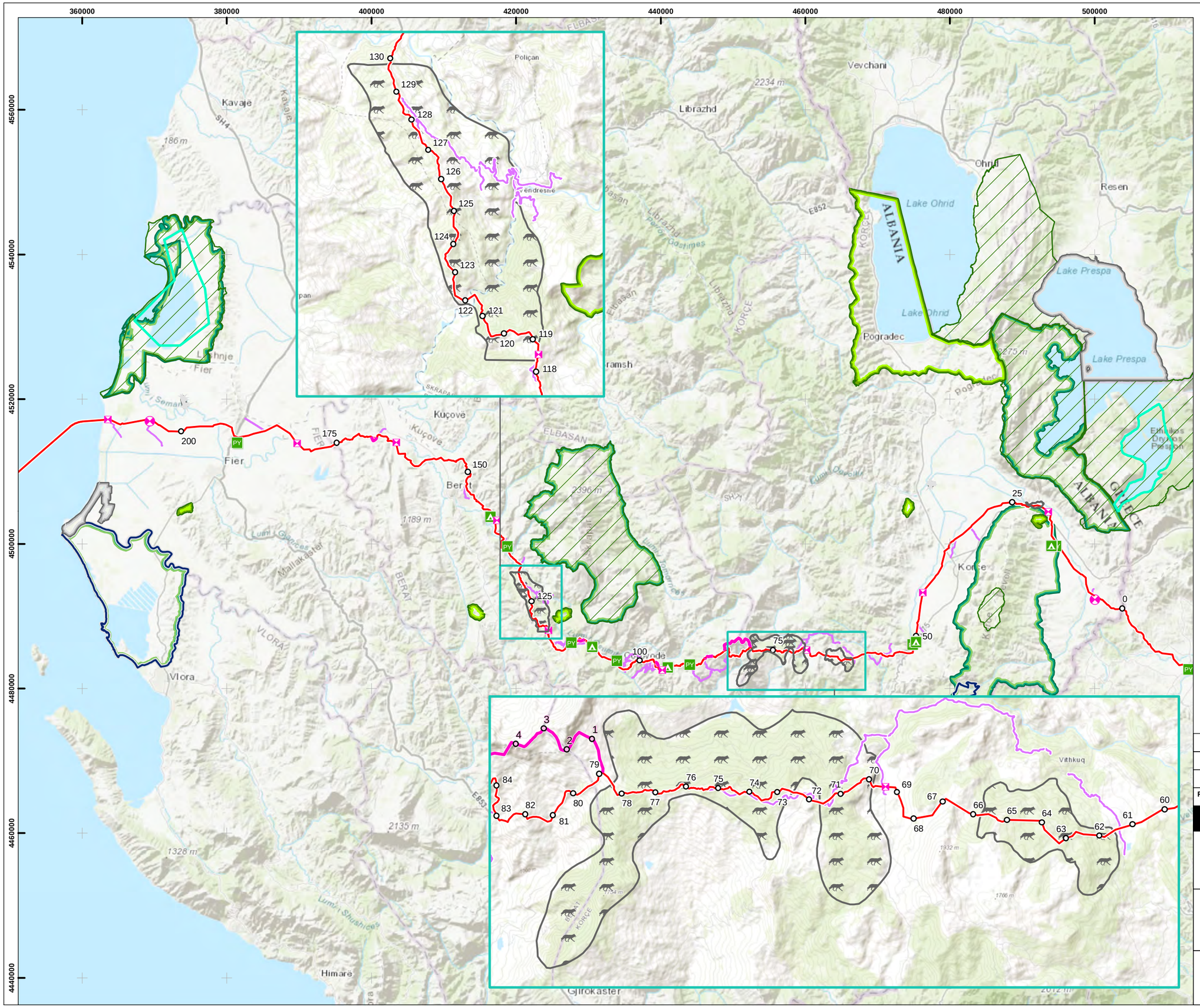
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-035[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 31 DMUs for grey wolf in Albania



TAP base case route centreline
Re-route centreline
Kilometre points (KP)
Compressor station
Block valve station
Camp site
Pipe yard
TAP access road

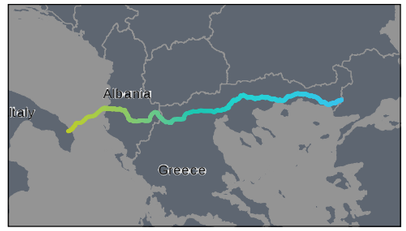
Threatened species

Canis Lupus (Grey Wolf) DMU

Protected site

National Park
Protected Landscape
Natural Monument
Managed Nature Reserve
Ramsar Site
Emerald Site

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	15/12/2016	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Albania
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 363 of 406 Sheet 1 of 1

0 5 10 15 20
Kilometers
SCALE: 1:500,000 @ A3

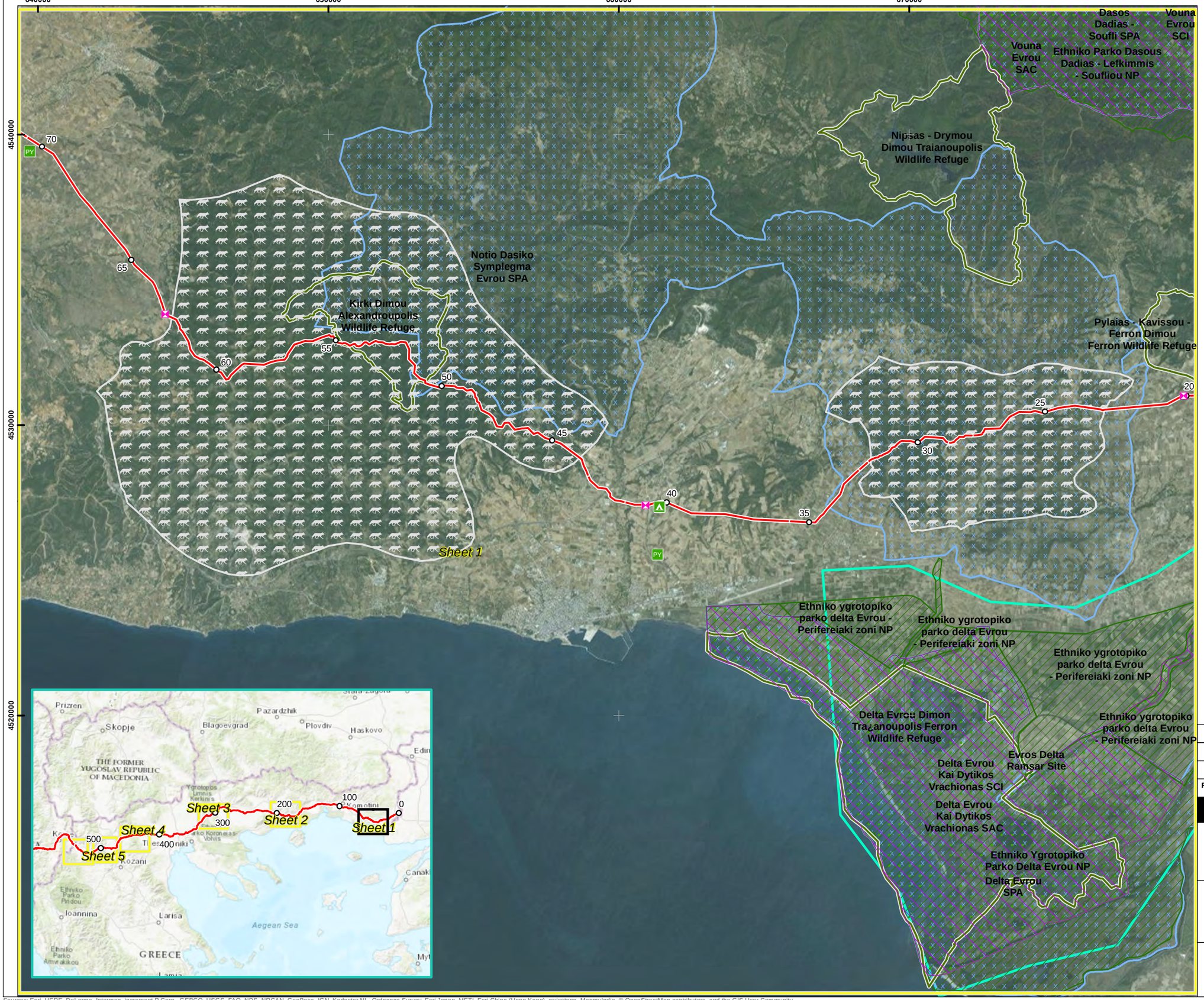
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-025[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 32 DMUs for grey wolf in Greece



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

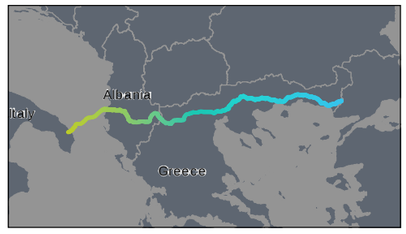
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 365 of 406 Sheet 1 of 6

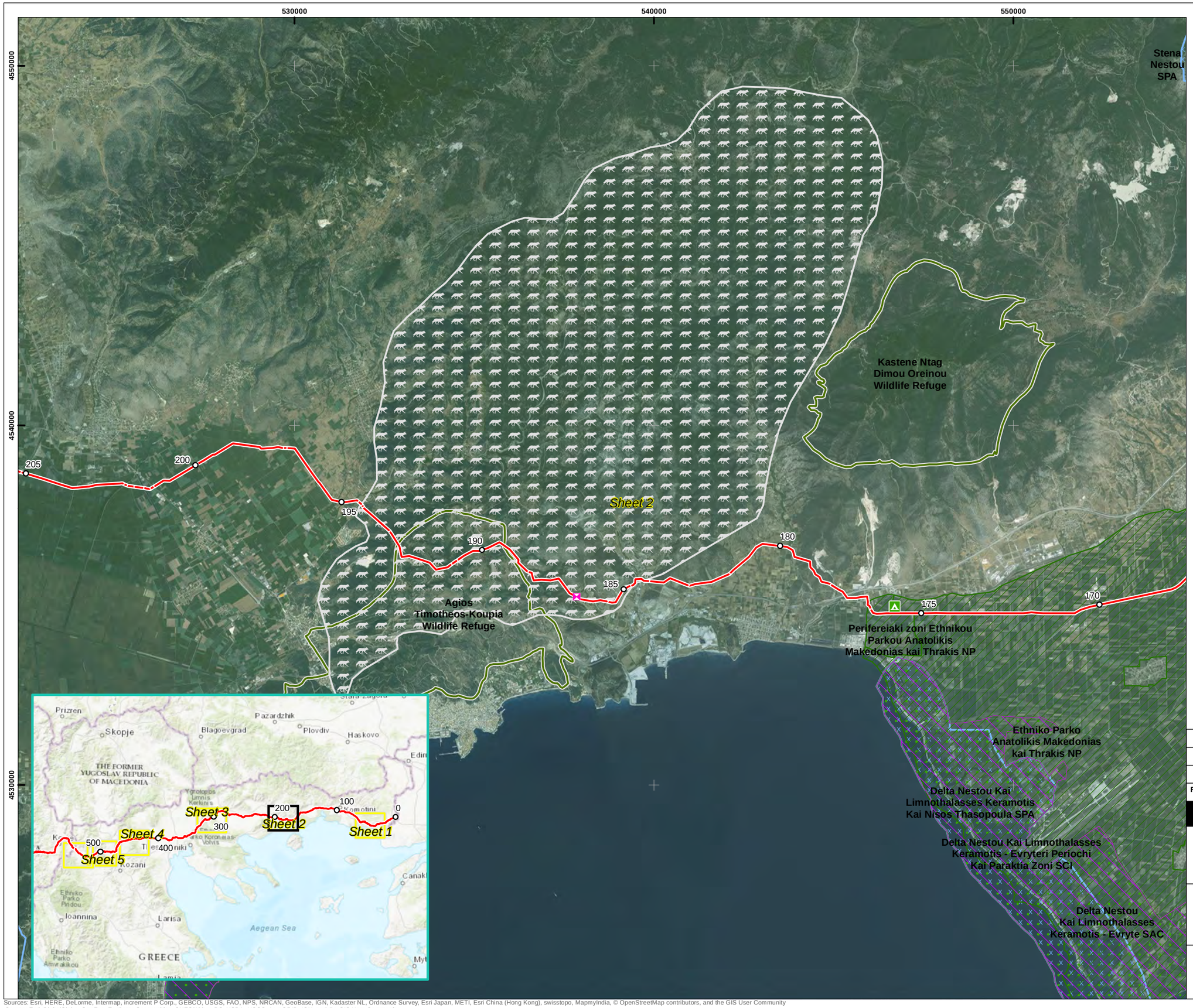
0 1 2 3 4 5
Kilometers
SCALE: 1:125,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

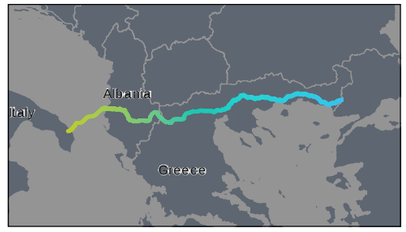
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 366 of 406 Sheet 2 of 6

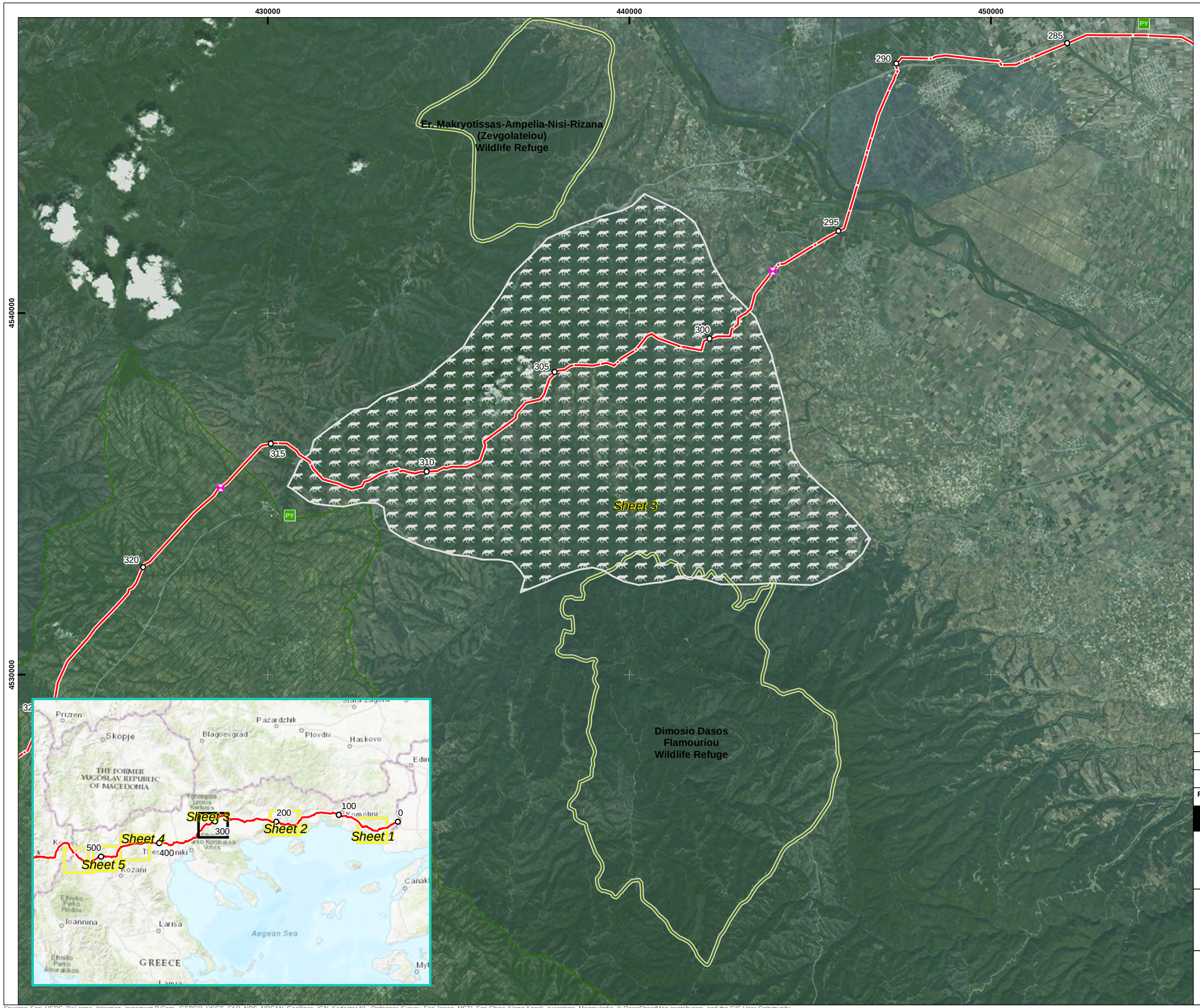
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

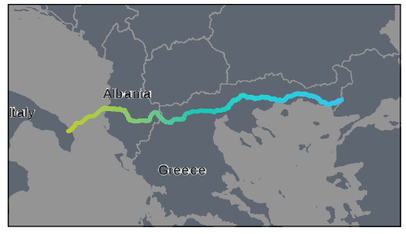
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 367 of 406 Sheet 3 of 6

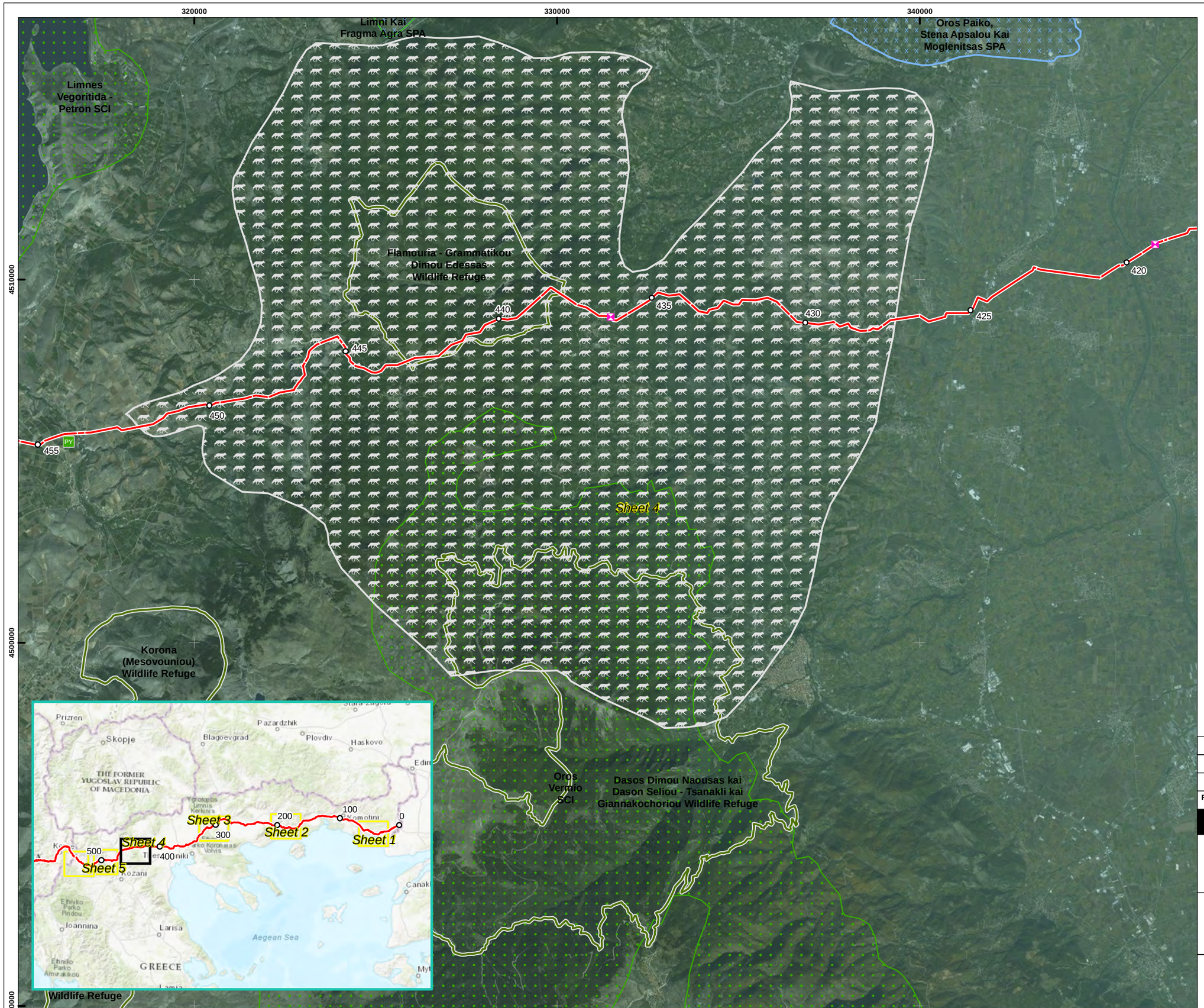
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Pipe yard

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

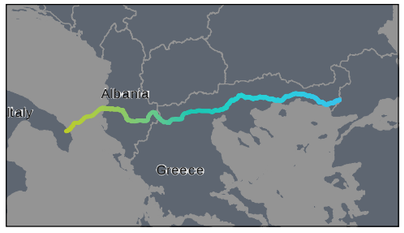
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 368 of 406 Sheet 4 of 6

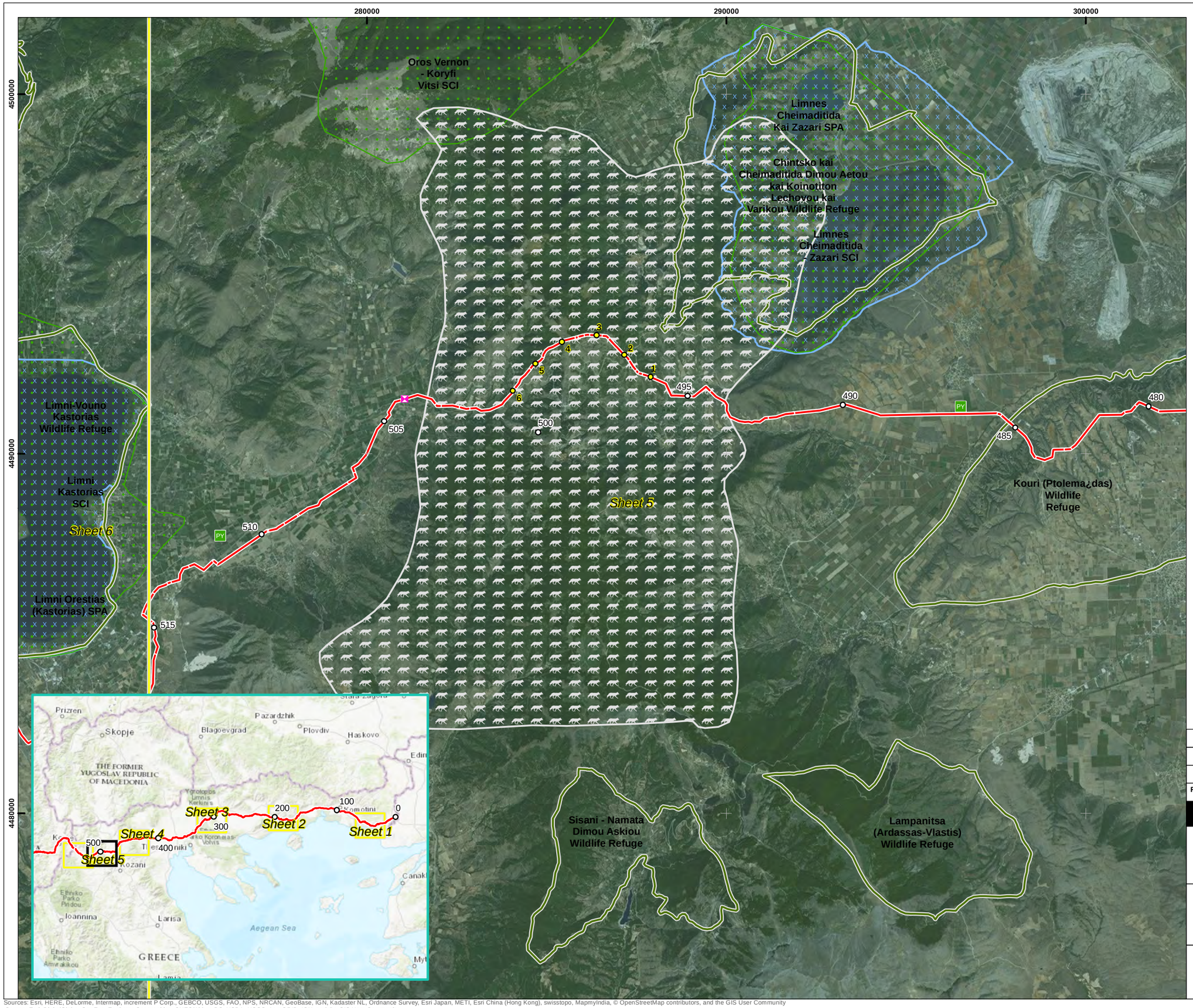
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\IP80661 TAP critical habitats assessment\02 GIS\IP80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Reroute Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

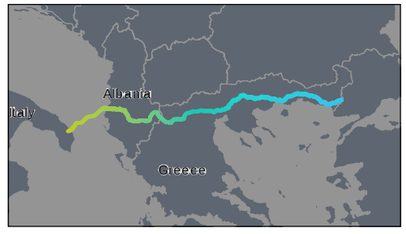
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 369 of 406 Sheet 5 of 6

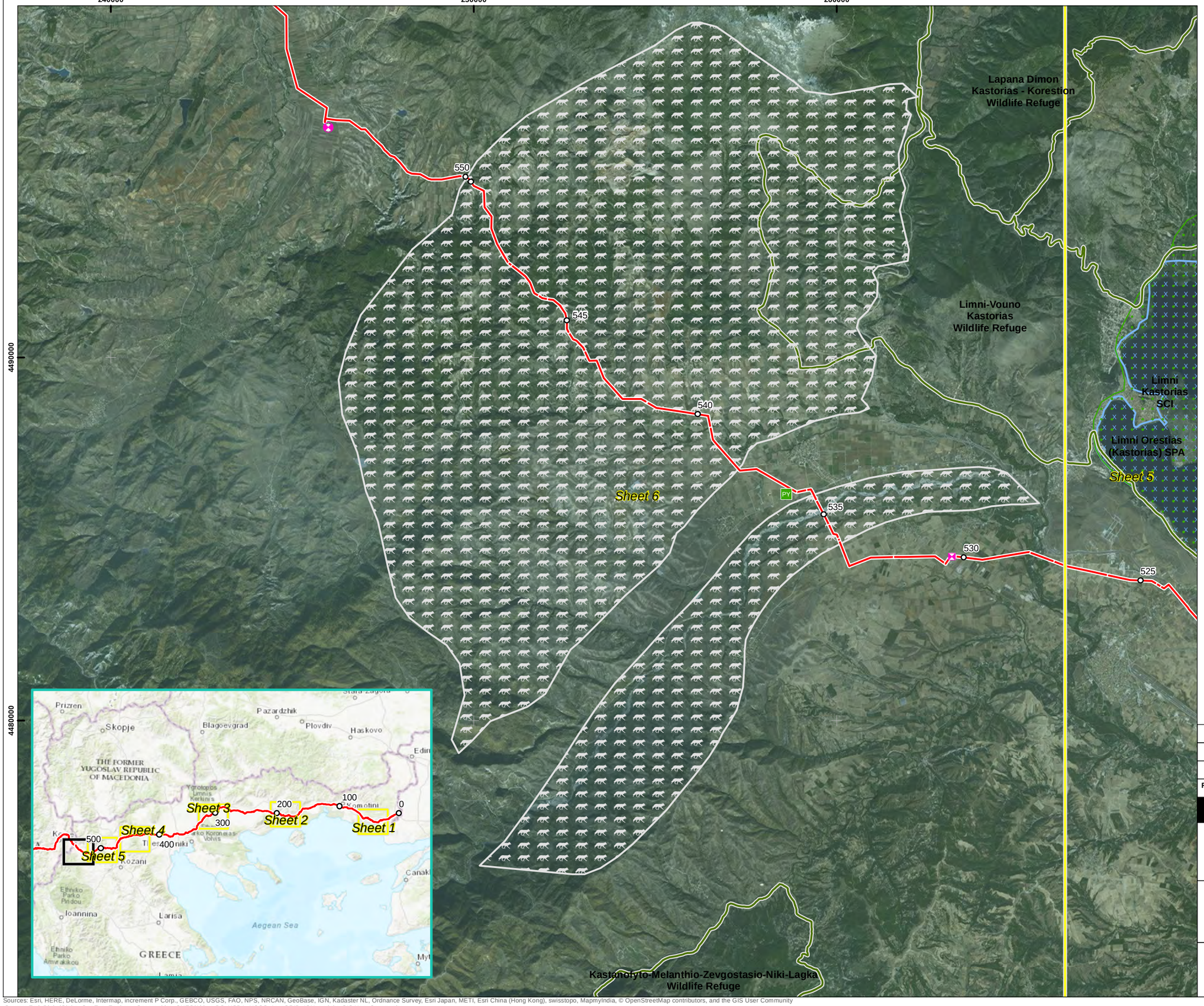
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Pipe yard

Threatened species

Canis Lupus (Grey Wolf) DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

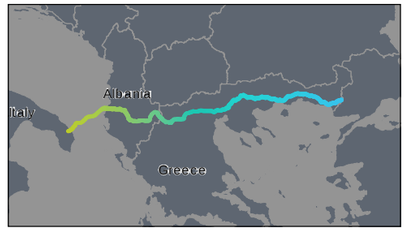
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	13/02/2017	Final Issue	TOD	NOD	CY
A	01/08/2016	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:

Criterion 1: Threatened species
Wolves - Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 370 of 406 Sheet 6 of 6

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

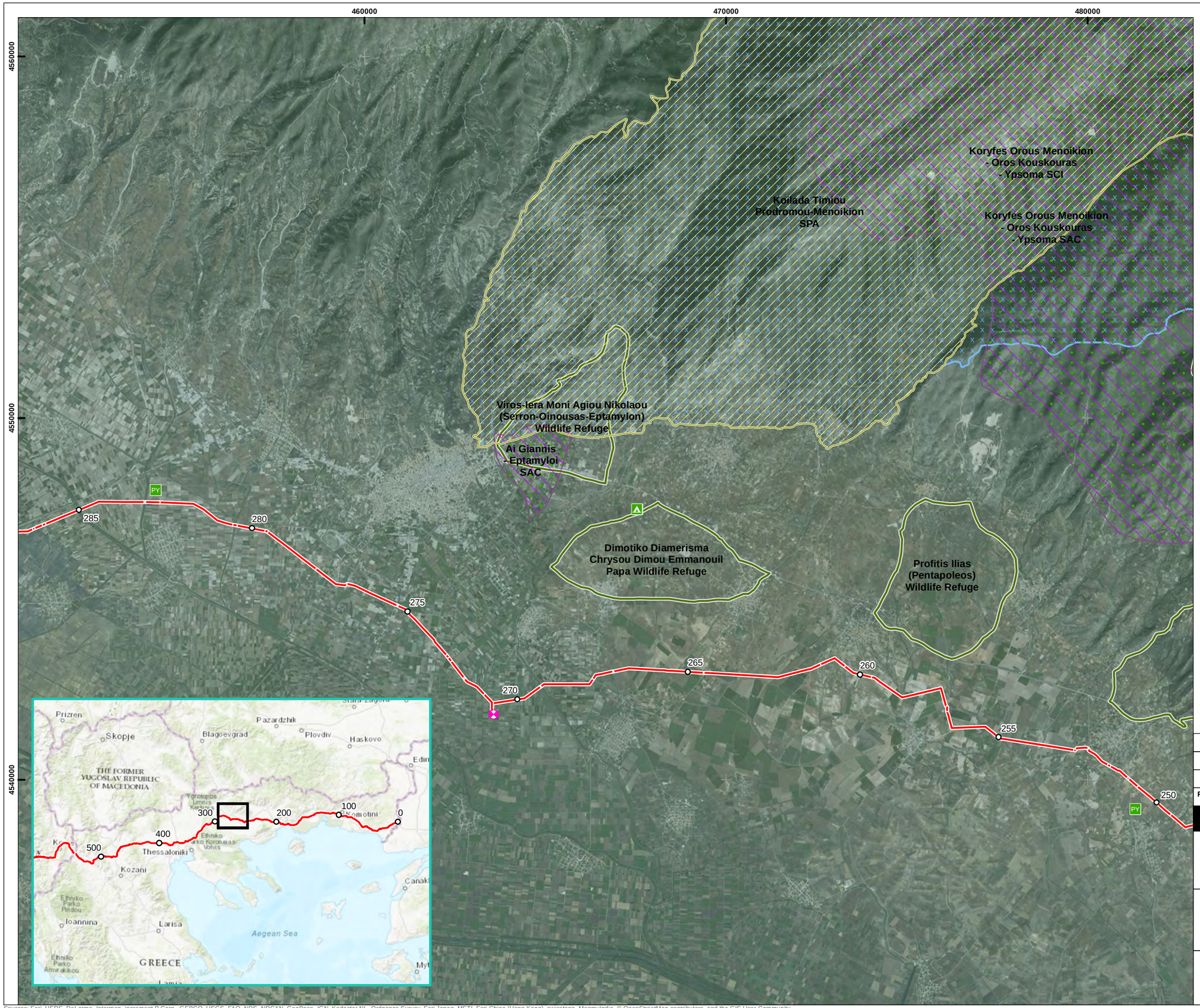
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-031[1].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 33 DMUs for Criterion 3 in Greece



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Migratory/Congregatory Species

Congregatory Bats DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

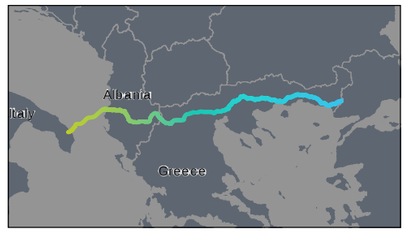
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	28/11/2017	Final Issue	TOD	NOD	CY
A	12/04/2017	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 372 of 406 Sheet 1 of 5

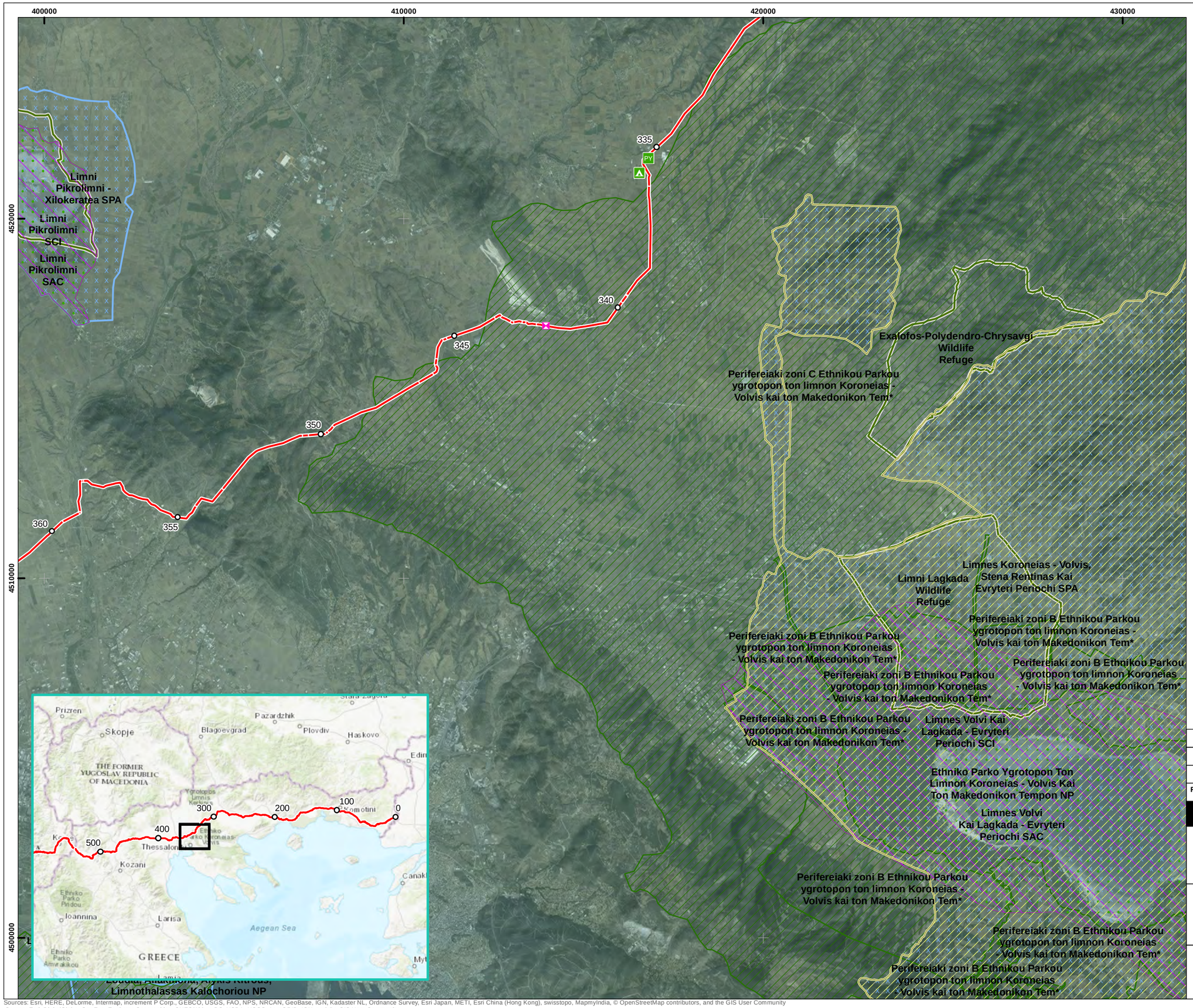
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-042[0].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Migratory/Congregatory Species

Congregatory Bats DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

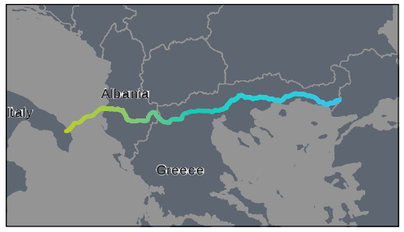
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	28/11/2017	Final Issue	TOD	NOD	CY
A	12/04/2017	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 373 of 406 Sheet 2 of 5

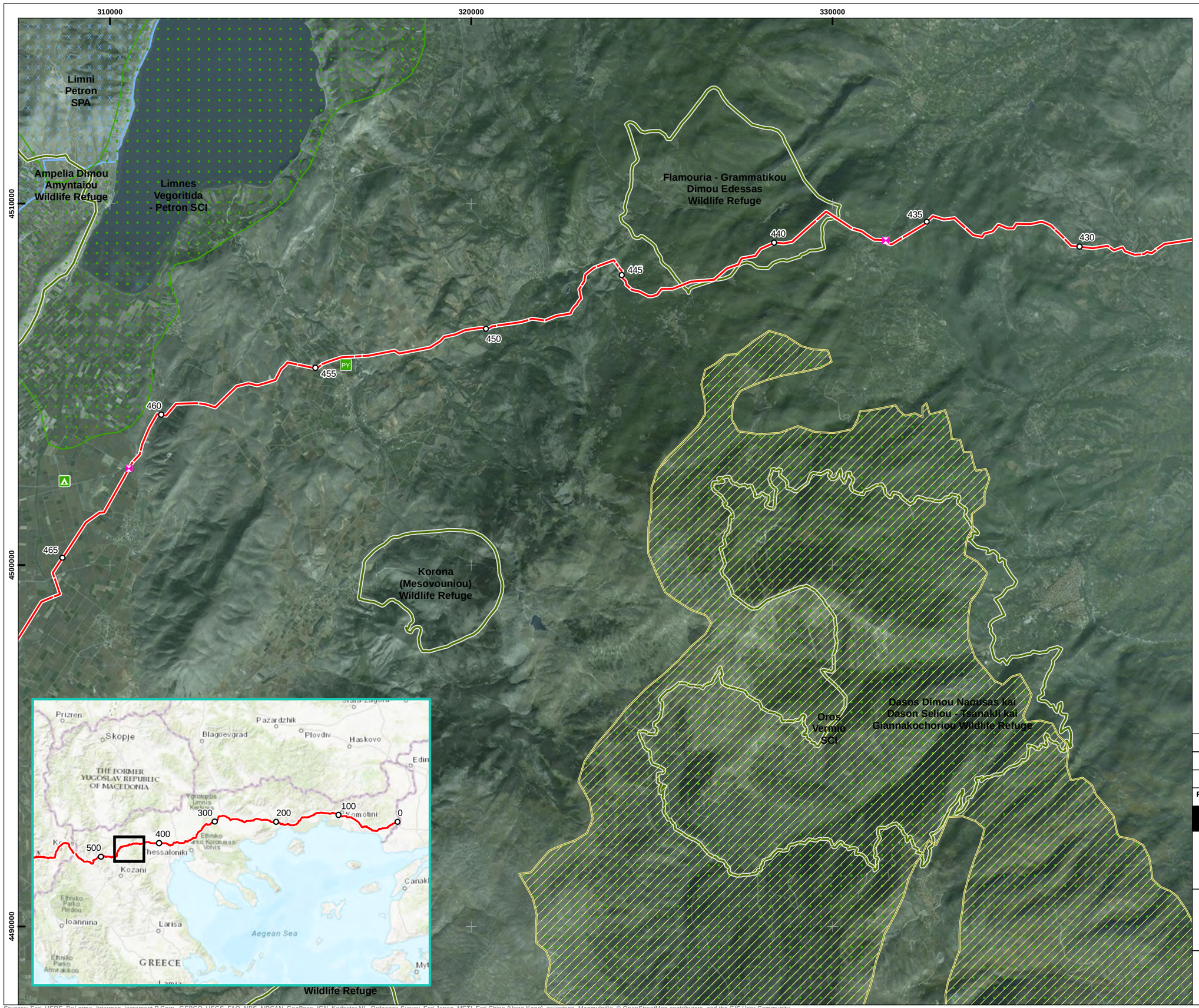
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-042[0].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Migratory/Congregatory Species

Congregatory Bats DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

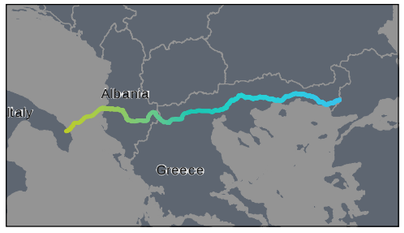
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	28/11/2017	Final Issue	TOD	NOD	CY
A	12/04/2017	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 374 of 406 Sheet 3 of 5

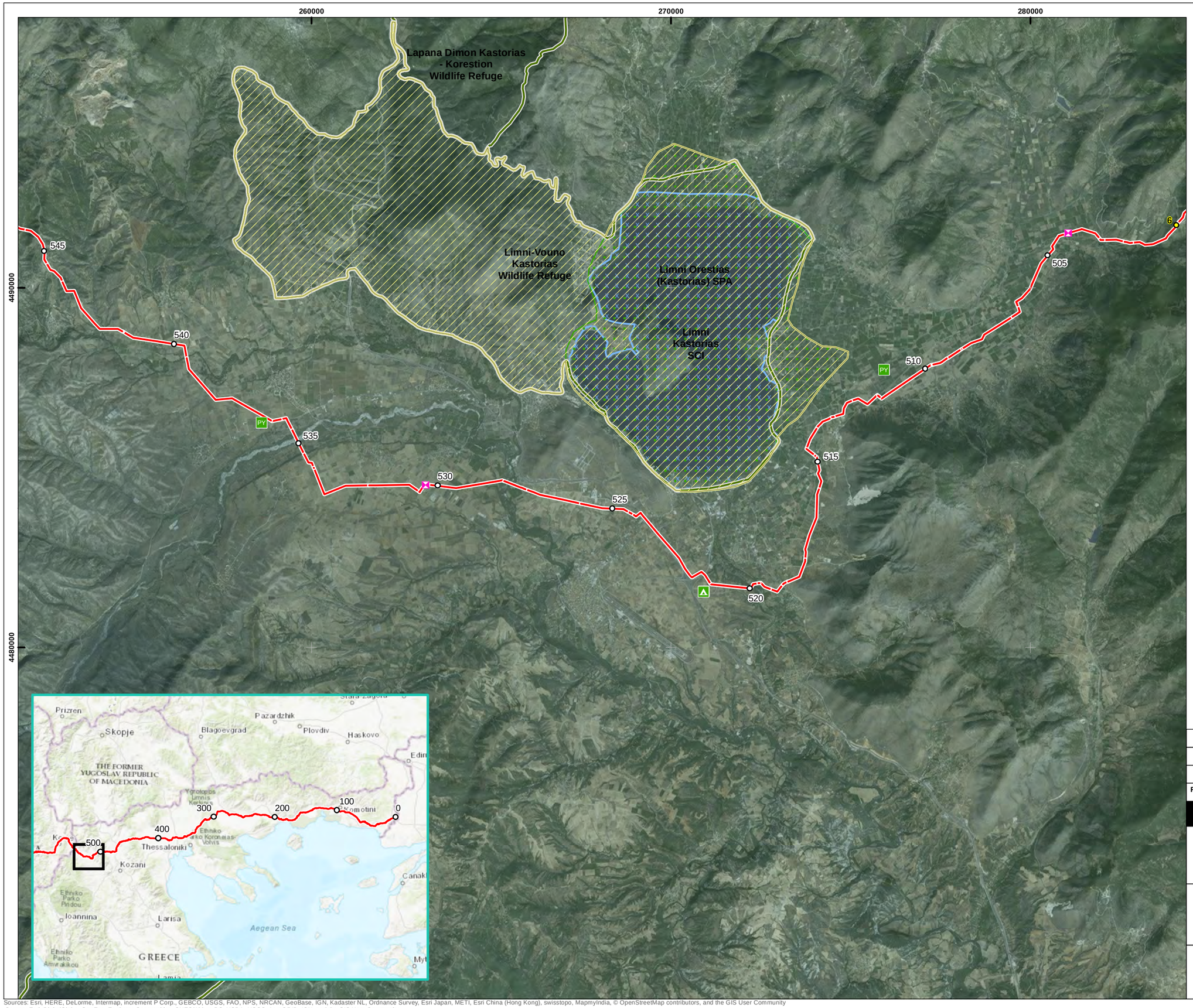
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-042[0].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Reroute Kilometre points (KP)

Block valve station

Camp site

Pipe yard

Migratory/Congregatory Species

Congregatory Bats DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

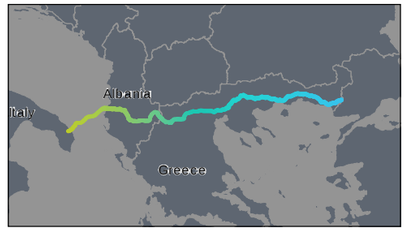
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	28/11/2017	Final Issue	TOD	NOD	CY
A	12/04/2017	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 375 of 406 Sheet 4 of 5

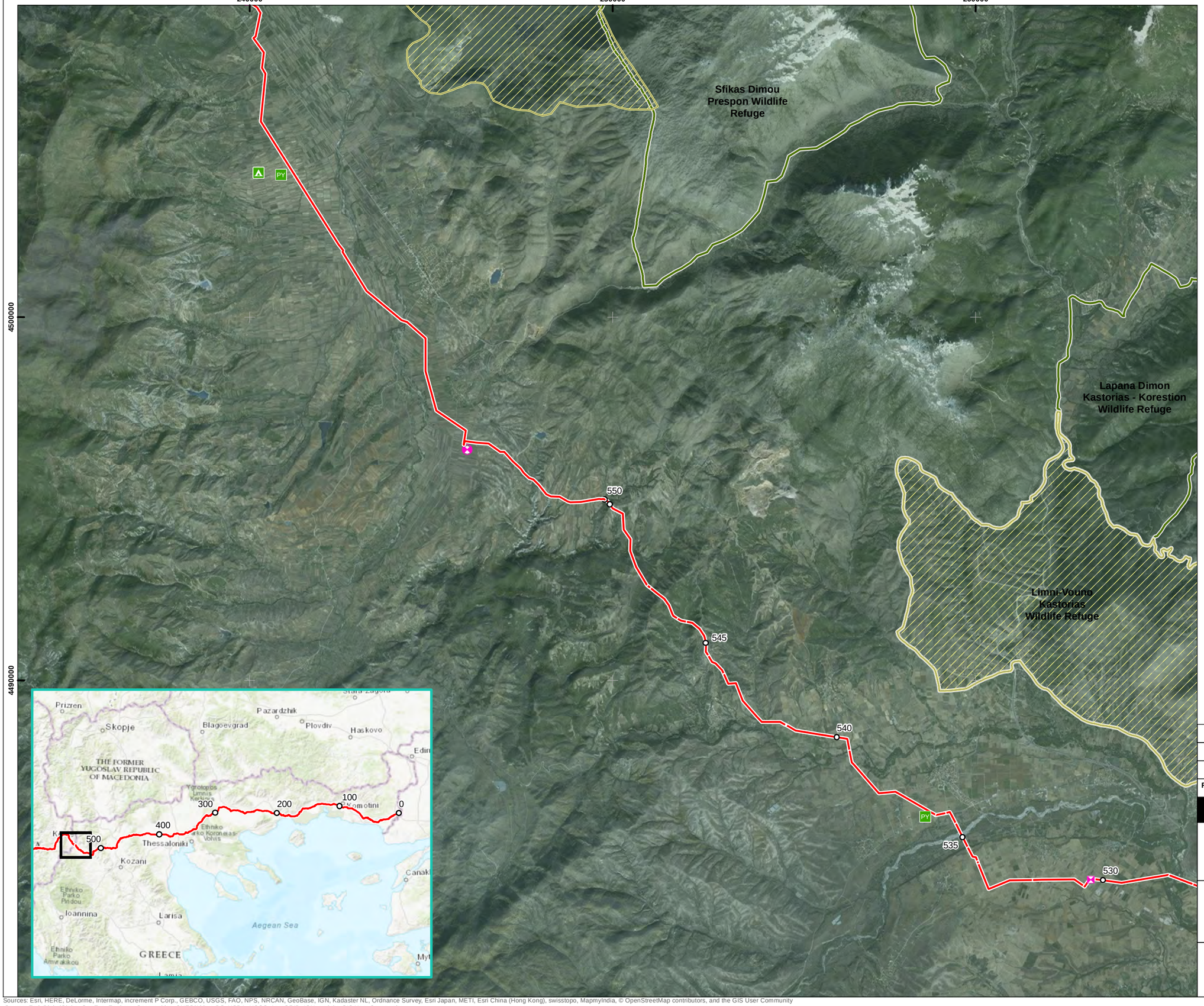
0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-042[0].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



TAP base case route centreline

Kilometre points (KP)

Compressor station

Block valve station

Camp site

Pipe yard

Migratory/Congregatory Species

Congregatory Bats DMU

Designated/Protected Site

Ramsar Site

Site of Community Importance (Habitats Directive)

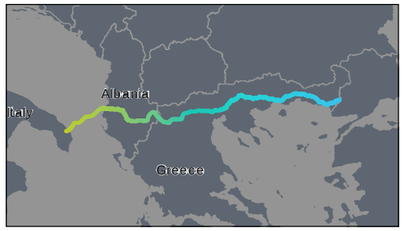
Special Area of Conservation (Habitats Directive)

Special Protection Area (Birds Directive)

National Park

Wildlife Refuge

Coordinate System: Greek Grid
Projection: Transverse Mercator
Datum: GGRS 1987
Units: Meter



Rev	Date	Description	Drn	Chk	App
0	28/11/2017	Final Issue	TOD	NOD	CY
A	12/04/2017	First draft	TOD	NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Criterion 3: Migratory/Congregatory Species
Greece
CAL00-C5577-640-Y-TRB-0001_Appendix 6
Page 376 of 406 Sheet 5 of 5

0 1 2 3 4 5
Kilometers
SCALE: 1:100,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-042[0].mxd

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX 7
DEEPWATER HABITAT REVIEW

Background

To identify the data gaps and uncertainties associated with potential presence of critical habitat triggering species and habitats in deep waters, particularly those within the South Adriatic and Ionian Strait *Ecology or Biologically Significant Marine Area* (EBSA) RSK undertook a review of all available information on deep water (≥200m) environments relevant to the TAP offshore alignment.

This comprised of:

- Literature review
- TAP-commissioned geophysical survey data
- TAP-commissioned environmental survey data

This is a summary of this review process. A detailed standalone Technical Note is being produced separately to update the Gap Analysis, identify further data review and surveying requirements, and inform the SEA and EcMP.

Tables 1 and **2** below summarise the need for further investigation and consideration of benthic habitat features and species of interest from the literature and geophysical reviews. The review covers approximately KP 12 (Albanian nearshore, approximately 60m water depth, border of EBSA) to KP 80 (approximately 1km landward of Italian shelf break, approximately 100-150 m water depth).

Summary of literature review

- Experts acknowledge that deepwater habitat in the (southern) Adriatic is poorly known, and therefore a lack of records of sensitive habitats does not necessarily reflect a lack of these habitats. Habitats of significant interest have recently been discovered unexpectedly (e.g. 'chimney forest' of 10km^2 on Montenegro margin)
- Some major deep sea features of biodiversity interest in the Mediterranean are not found on/near the TAP route (e.g. canyons, seamounts)
- Many (but not all) sensitive organisms/habitats found in the deep Adriatic are associated with hard substrate (and/or steep topography), highlighting this as a key area for consideration along the TAP route
- An almost continuous belt of patchy cold water coral (CWC) sites has been proposed for the south-western Adriatic. Due to hydrological processes, CWC assemblages may be more diverse and abundant on the Italian side cf. patchier occurrences of often single colonies on the eastern side
- Sensitive (and possibly Critical Habitat) organisms/habitat may occur in entirely soft-sediment habitat (e.g. Critically Endangered regionally-endemic bamboo coral (*Isidella elongata*)

Summary of geophysical data review

- Reports and alignments sheets from TAP-commissioned surveys in deep water (≥200m) and/or the South Adriatic and Ionian Strait EBSA (collectively the study area) were reviewed specifically with Mediterranean deepwater habitat/species in mind (as informed by the literature review).
- The dataset had good coverage and consisted of surveys of the Albanian slope (DeepOcean 2009), the entire study area in 2012/13 (DOF Subsea), and of Italian waters in 2016 (Fugro 2017).
- Features of man-made origin were excluded. Features deemed as being of potential biological interest (PBI) (e.g. sediment mound, debris, boulder etc) were considered further and mapped.
- There was high confidence in the true location of most targets as they originated as co-ordinates. However, there was some uncertainty regarding the true location of a small number of features reported in KPs only ('location uncertain').

Summary of environmental data review

<u>This review considered imagery collected within the following:</u>

- Water depths ≥200m (corresponding to the bathyal zone; WWF/IUCN 2004), and (where different)
- The South Adriatic and Ionian Strait Ecology or Biologically Significant Marine Area (EBSA)
- Available video footage for the TAP route in deep water (≥200m) and/or the South Adriatic and Ionian Strait (EBSA)(collectively the study area) was reviewed specifically with focus on Mediterranean deepwater habitat/species (as informed by the literature review)
- A reasonably good dataset deepwater/EBSA sites exists, comprising stations approximately every 5km (in addition to other e.g. Target investigation footage).
- A total of around 6.5 hours of footage was reviewed.

Figures linking to Table 2, with associated survey video imagery, are also presented for KP10-20; KP 20-30; KP 30-40; KP 40-45, KP 45-50; KP 50-60 and KP 70-80.

<u>Reports and alignment sheets from TAP-commissioned surveys were reviewed</u>:

- **DOF Subsea (2013)** Detailed Route Survey ST12590 (OPL00-DOF-150-G-TRP-0002)
- **DeepOcean (2009)** TAP Route Investigation Survey - 2009 Offshore Survey (OPL00-STA-601-Y-TRY-0001)
- **TAP alignment sheets** OPL00-SPF-150-G-DGA-0001-21
- **Fugro (2017)** Final Geophysical Report. TAP Pre-construction Survey-Installation of Monitoring Station, Environmental and Geophysical Survey. Adriatic Sea. Fugro Document 750/16-J387
- **Charts associated with Fugro (2017)**
- **RSK (2017)** Review of geophysical data. Report to TAP.

Table 1. Assessment of known features and habitats in deep water (>200m) of the Mediterranean (inc. Adriatic), and their potential to occur along or in proximity to the TAP alignment based on a Literature Review.

Feature	Context/ requirement	Biodiversity value	Reference	Examples in Mediterranean	Potentially on TAP alignment?	Rationale
Broad features						
Canyons	Canyon	Higher productivity & biomass; endemicity	WWF/IUCN (2004)	Bari Canyon	No	Engineering avoids canyons.
Seamount	Steep-sided submerged mountains (>100 m above surrounding seafloor)	Unique communities, high productivity	WWF/IUCN (2004) Würtz & Rovere (2015)	Dauno (Adriatic)	No	The only known seamount in the Adriatic (Dauno) is >100 km away.
Brine pool	Deep sea (>3000m)	Unique communities	WWF/IUCN (2004)	Eastern Med	No	TAP route not in >3000m
Hydrothermal vents	Active plate margin	Unique communities	WWF/IUCN (2004)	None	No	This habitat not reported in the Mediterranean.
Cold seeps	Upward seepage of cold methane-enriched fluid	Unique chemosynthesis-based communities (bacterial mats, bivalves, tubeworms)	WWF/IUCN (2004)	Napoli Dome (It) Crete, Turkey, Egypt, Gaza	Yes	Associated with mud volcanoes and pock marks, both of which are known to be present around the TAP route
Specific habitats						
Cold Water Coral (CWC) & associated communities	200m+. Typically on escarpments, seamounts & overhangs. Can occur as fossil & live/relict	Biodiversity hotspot. Dominated by *Lophelia pertusa* & *Madrepora oculata*	WWF/IUCN (2004) Freiwald *et al*.,(2009) Angeletti *et al*,. (2014)	Adriatic: Off Monopoli; Otranto Strait, Bari Canyon, Montenegro shelf	Yes	Grows on hard substrate >200m (e.g. outcropping area KP ~65-68). Recorded from region (off Monopoli, Otranto Strait and Montenegro)

			D'Onghia *et al*., (2016)	Santa Maria di Leuca (Southern Italy: Ionian Sea)		
Sponge grounds	380- 500m (Bari Canyon) 120-180m (Amendolara Bank) Hard substrate	*Pachastrella monilifera* mixed with living colonies of coral (M. oculata). Create complex 3D habitats, attract mobile invertebrates & fish	Bo *et al*., 2012	Southern Italy: Bari Canyon (Adriatic) Amendolara Bank (Ionian)	Yes	Areas of hard substrate occur on/near TAP route, and are within depth range of this habitat
Chimneys (Columnar carbonates)	Slope incision, steep angle. Protruding through sediment. 'Forest' covers area of 10km^2. 5-7 per m^2. Structures 60x 20cm. In 430-490m	Provide substrate to benthos inc CWC & sponges	Angeletti *et al*., 2015	Montenegro margin (rare globally; first ever in Mediterranean)	Yes	Small size of structures - may not be adequately identified by geophysical survey (e.g. 'small boulder'?). Depth range is found on TAP route.
Pock marks	Muddy sediment, hydrocarbon release	Unique bacterial communities, higher bacterial & benthic diversity/biomass	Giovannelli *et al*., 2016	Central Adriatic	Yes	Pock mark areas are present on the TAP route
Seapens (e.g. *Kophobelemnon Stelliferum* & *Funiculina quadrangularis*)	Muddy bottoms	Form forest-like habitats on soft bottoms. Aggregates biodiversity & species of commercial	Otero *et al.,* 2017	Adriatic	Yes	Extensive muddy bottoms on TAP route

		interest				
Black coral (Antipatharia)	Flat/gently sloping rocky hardgrounds & moderate current	Form forest-like habitats. Aggregates biodiversity & species of commercial interest	Otero *et al*., 2017	Adriatic	Yes	Areas of hard substrate occur on/near TAP route
Bamboo coral *Isidella elongata*	200- 1,200 m depth, with vast meadows especially deeper than 500 m depth	Critically Endangered. Regional endemic to Med. Formed extended forests on soft bottoms.	Otero *et al*., 2017	Adriatic	Yes	Extensive muddy bottoms on TAP route, inc >500m depths

Table 2. Features in deep water (≥200m) and/or the South Adriatic and Ionian Strait Ecology or Biologically Significant Marine Area (EBSA) identified from TAP geophysical and route investigation surveys that were considered for their potential as Critical Habitat triggers.

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
KP 10-20										
Possible boulder	1.8x0.1x1.8	Alb	~10	152.4 SE	58.5	No	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Target Unidentified (TAUN) 39	Co-ordinates in Table 4.3 of report (good)	Yes. No imagery available. Item unknown and habitat potential cannot be excluded. Within likely area of impact.
Possible boulder	3.0x0.2x3.0	Alb	~13	36m E	74.1	Yes		Target Unidentified (TAUN) 37		
Boulder or sediment mound associated with trawl scar	1.5x0.1x1.5	Alb	~13.75	220m NW	75	Yes		Target Unidentified (TAUN) 35	Co-ordinates in Table 4.4 of report (good)	
Boulder or sediment mound associated with trawl scar	2.8x0.2x1.5	Alb	~13.75	135.9m NW	75	Yes		Target Unidentified (TAUN) 36		
Possible debris	1.4x0.2x1.0	Alb	~15	60.45 SE	77.9	Yes		Target Unidentified (TAUN) 34		
KP20-30										
Numerous	-	Alb	20.2-	-	~70-	Yes	DOF Subsea (2013)	Numerous	No co-	Possibly.

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
small pockmarks & mud mounds			24.00		125		Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002 (page 22)	small pockmarks & mud mounds	ordinates; relative to a KP mark on 'SP06/SP07' route. Base route was also reportedly changed post-survey, resulting in mis-match between KPs surveyed/base route (p 84 of report) (low)	Accurate location needs to be resolved.
Small area of numerous boulders	-	Alb	21.540	48m N	~90	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002 (page 32)	Small area of numerous boulders (page 32)		
Possible debris	3.4x0.1x2.7	Alb	~20	42.3m NW	88	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Target Unidentified (TAUN) 33	Co-ordinates in Table 4.4 of report (good)	Yes. No imagery available. Item unknown and habitat potential cannot be excluded. Within likely area of impact
KP30-40										
Possible debris	1.3x0.0x0.3	Alb	~31	191.4 SE	~275	Yes	DeepOcean (2009) TAP Route	T09TAP001	Co-ordinates on Table 8.1	Yes.

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
Possible debris	0.9x0.0x0.2	Alb	~33	20.0m E	~335	Yes	Investigation Survey - 2009 Offshore Survey OPL00-STA-601-Y-TRY-0001	T09TAP002	of report (good)	No imagery available. Item unknown and habitat potential cannot be excluded. Within likely area of impact
Possible debris	1.2x0.0x0.1	Alb	~39.5	151m S	~600	Yes		T09TAP003		
KP 40-50										
Wreck with possible cold water coral *Madrepora oculata*	-	Alb	49.5	206m S	788	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Target 6	Co-ordinates on ROV video screen (good)	Yes. Cold water coral is part of EBSA citation. Within likely area of impact.
Wreck debris with possible cold water coral *Madrepora oculata*	-	Alb	49.5	73m S	799	Yes				
Hummocky seabed	-	Alb	41-42	Approx 472+ S	~650-712	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-	Hummocky seabed	Co-ordinates given under images on page 123 and 124 of report	Yes. Not entirely clear what these structures are,

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
							TRP-0002		(good) Co-ordinates on ROV video screen (good)	and whether they are of biological interest.
Possible debris	0.8x0.0x0.5	Alb	~40	258m N	~600	Yes	DeepOcean (2009) TAP Route Investigation Survey - 2009 Offshore Survey OPL00-STA-601-Y-TRY-0001	T09TAP004	Co-ordinates in Table 8.6 of report (good)	Yes. No imagery available. Item unknown and habitat potential cannot be excluded. Within likely area of impact.
Possible debris	1.0x0.0x0.4	Alb	~41.25	108m N	~650	Yes		T09TAP005	Co-ordinates in Table 8.1 of report (good)	
Possible debris	1.0x0.0x0.3	Alb	~41.75	121m N	~650	Yes		T09TAP006		
Possible debris	0.9x0.0x0.4	Alb	~43.5	125m N	~725	Yes		T09TAP009		
Possible debris	0.5x0.0x0.4	Alb	~44.5	68m N	~775	Yes		T09TAP010		
Possible debris	0.9x0.0x0.4	Alb	~44.75	188m N	~780	Yes		T09TAP011		
Possible debris	1.0x0.0x0.2	Alb	~46	368m N	~800	Yes		T09TAP012		
Possible debris	1.4x0.0x0.3	Alb	~46	343m N	~800	Yes		T09TAP013		
KP 50-60										
Possible sediment mound	2.9x0.1x2.8	Alb	~58	130.9m NW	810.3	Yes	DOF Subsea (2013) Detailed Route Survey ST12590	Target Unidentified (TAUN) 31	Co-ordinates in Table 4.5 of report	Yes. No imagery available.

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
							OPL00-DOF-150-G-TRP-0002		(good)	Potential for raised/mound features to support Critical Habitat. Within likely area of impact.
Possible debris item	2.4x0.2x2.4	Alb	~59	54.7m NW	810	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Target Unidentified (TAUN) 30	Co-ordinates in Table 4.5 of report (good)	Yes. No imagery available. Item unknown and habitat potential cannot be excluded. Within likely area of impact.
KP 60-70										
Large wreck with growths of possible cold water coral	-	Alb	~60	2831m NNW	791	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Target 5	Co-ordinates on ROV video screen (good)	No. Feature is 2.8km away from TAP route and considered to be beyond likely area of impact.
Possible	3.3x0.2x3.	Italy	~64.	208.7m	792	Yes	DOF Subsea (2013)	Target	Co-ordinates	Yes.

Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
sediment mound	2		75	NW			Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Unidentified (TAUN) 28	in Table 4.5 of report (good)	No imagery available. Potential for raised/mound features to support Critical Habitat. Within likely area of impact.
Outcropping	-	Italy	65-68	-	700-800	Yes	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002 (page 37)	Outcropping	No co-ordinates; relative to a KP mark on 'SP06/SP07' route. Base route was also reportedly changed post-survey, resulting in mis-match between KPs surveyed/base route (p 84 of report) (low)	Possibly. Accurate location needs to be resolved.
Large outcrop	150x10x100	Italy	66.710	140m S		Yes		Outcrop; irregular shaped topographic high		
Large mound	200x10	Italy	67.36	55m S of TAP	775	Yes	Fugro (2017) Final Geophysical	Mound	Relative to a KP mark, but	Yes. No imagery

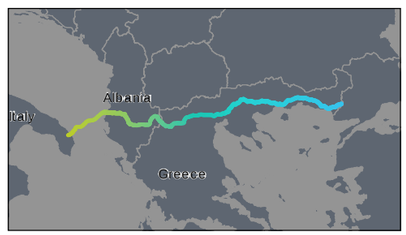
Feature	Size (m) LxHxW	Italy/ Albania	KP	Relation to TAP	Depth (m)	Inside EBSA?	Survey source	I.D used in survey report	Location data (confidence) (good) (low)	Requires further consideration re: Critical Habitat?
				(closest) Peak is 90m S of FOC			Report TAP Pre-construction Survey-Installation of Monitoring Station, Environmental and Geophysical Survey Adriatic Sea Fugro Document 750/16-J387		from 2016 survey presumably based on current Base Case (good)	available. Potential for raised/mound features to support Critical Habitat. Within likely area of impact (FOC crosses feature)
KP 70-80										
Mud mounds/ volcanoes and ridge formations	(possibly up to 5m height, page 39)	Italy	78.940-90.6	-	<160	Yes (in part)	DOF Subsea (2013) Detailed Route Survey ST12590 OPL00-DOF-150-G-TRP-0002	Mud mounds, volcanoes and ridge formations (page 28)	No co-ordinates; relative to a KP mark on 'SP06/SP07' route. Base route was also reportedly changed post-survey, resulting in mis-match between KPs surveyed/base route (p 84 of report) (low)	Possibly. Accurate location needs to be resolved.
Outcropping	-	Italy	78.32-78.76	-				Occasional areas of out outcrop (page 39)		
Outcrop	15x1.5x15	Italy	78.746	21m S				Most significant area of outcropping		

Figure 34 Known sensitive deepwater habitat of the Southern Adriatic

Legend:

- TAP base case route centreline
- Kilometre point (20km)
- Known sensitive deepwater habitats
- Treaty/Median line
- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
Known sensitive deepwater habitat of the southern Adriatic
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 390 of 406 Sheet 1 of 1

0 10 20
Kilometers
SCALE: 1:900,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-051[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 35 Deepwater habitat review KP 10-20

345000 350000 355000

4515000 4510000 4505000

Possible boulder
(DOF survey Target 37) Size: 3.0 x 0.2 x 3.0m.
X: 352051.38 Y: 4510651.23
Depth: 74.1m Distance to TAP Route: 36.0m

Possible boulder
(DOF survey Target 39) Size: 1.8 x 0.1 x 1.8m.
X: 354779.32 Y: 4512891.47
Depth: 58.5m Distance to TAP Route: 152.4m

Boulder or sediment mound associated with trawl scar
(DOF survey Target 35) Size: 1.5 x 0.1 x 1.5m.
X: 351818.24 Y: 4510787.26
Depth: 75.2m Distance to TAP Route: 220.1m

Boulder or sediment mound associated with trawl scar
(DOF survey Target 36) Size: 2.8 x 0.2 x 1.5m.
X: 351865.17 Y: 4510716.47
Depth: 75.0m Distance to TAP Route: 135.9m

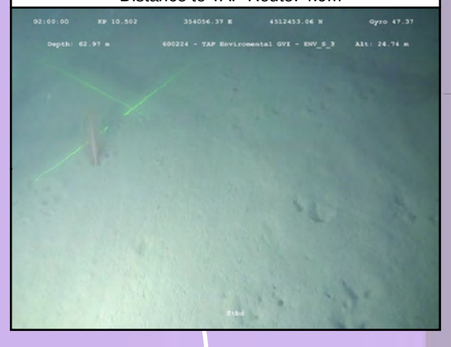
Possible debris
(DOF survey Target 34) Size: 1.4 x 0.2 x 1.0m.
X: 350854.38 Y: 4509567.73
Depth: 77.9m Distance to TAP Route: 60.4m

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

-50 -150

ENV_S_4
Bioturbated sediment with occasional sea pens
X: 349927.18 Y: 4508814.38
Time: 22:59:02 Depth: 79.26m
Distance to TAP Route: 14.8m

ENV_S_3
Bioturbated sediment with sea pens
X: 354056.37 Y: 4512453.06
Time: 02:00:00 Depth: 62.97m
Distance to TAP Route: 4.9m



ENV_S_3
Bioturbated sediment with sea pens
X: 354048.28 Y: 4512448.98
Time: 01:57:27 Depth: 63.04m
Distance to TAP Route: 2.6m

Legend:

- TAP base case route centreline
- Kilometre point

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

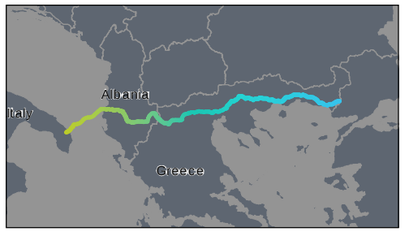
Features:

- Boulder or sediment mound associated with trawl scar
- Possible boulder
- Other environmental feature/debris
- Possible debris
- Mud mounds/ pockmarks/ volcanoes

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 10-20
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 392 of 406 Sheet 1 of 1

0 1 2
Kilometers
SCALE: 1:50,000 @ A3

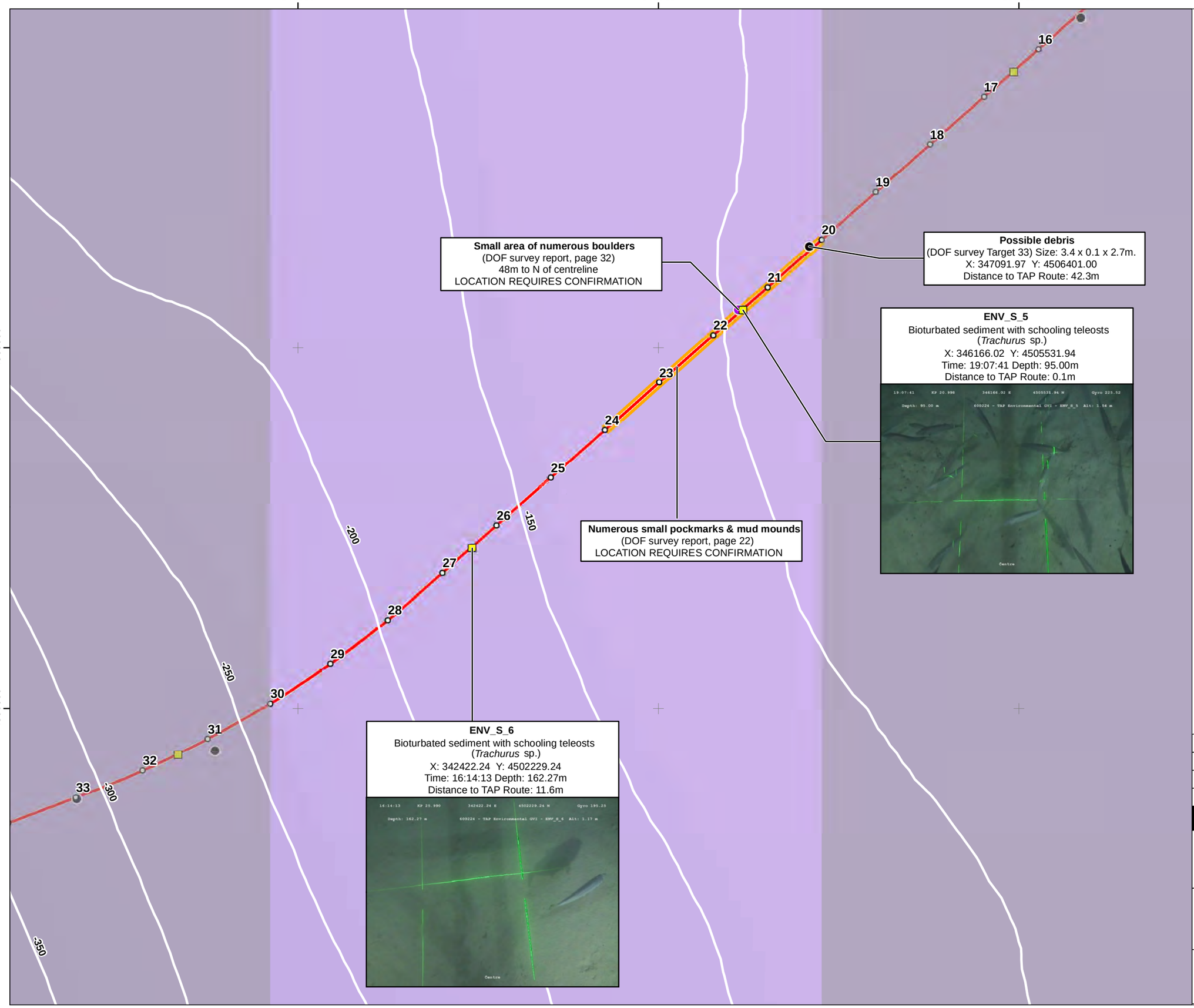
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-052[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 36 Deepwater habitat review KP20-30



Legend:

- KP_20_KP30_Photo_Lines
- TAP base case route centreline
- Kilometre point

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

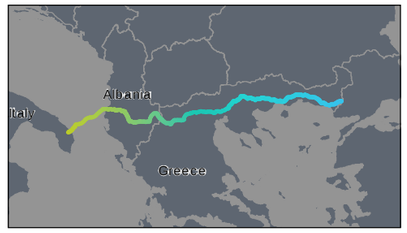
Features:

- Other environmental feature/debris
- Possible debris
- Mud mounds/ pockmarks/ volcanoes

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 20-30
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 394 of 406 Sheet 1 of 1

0 1 2
Kilometers

SCALE: 1:50,000 @ A3

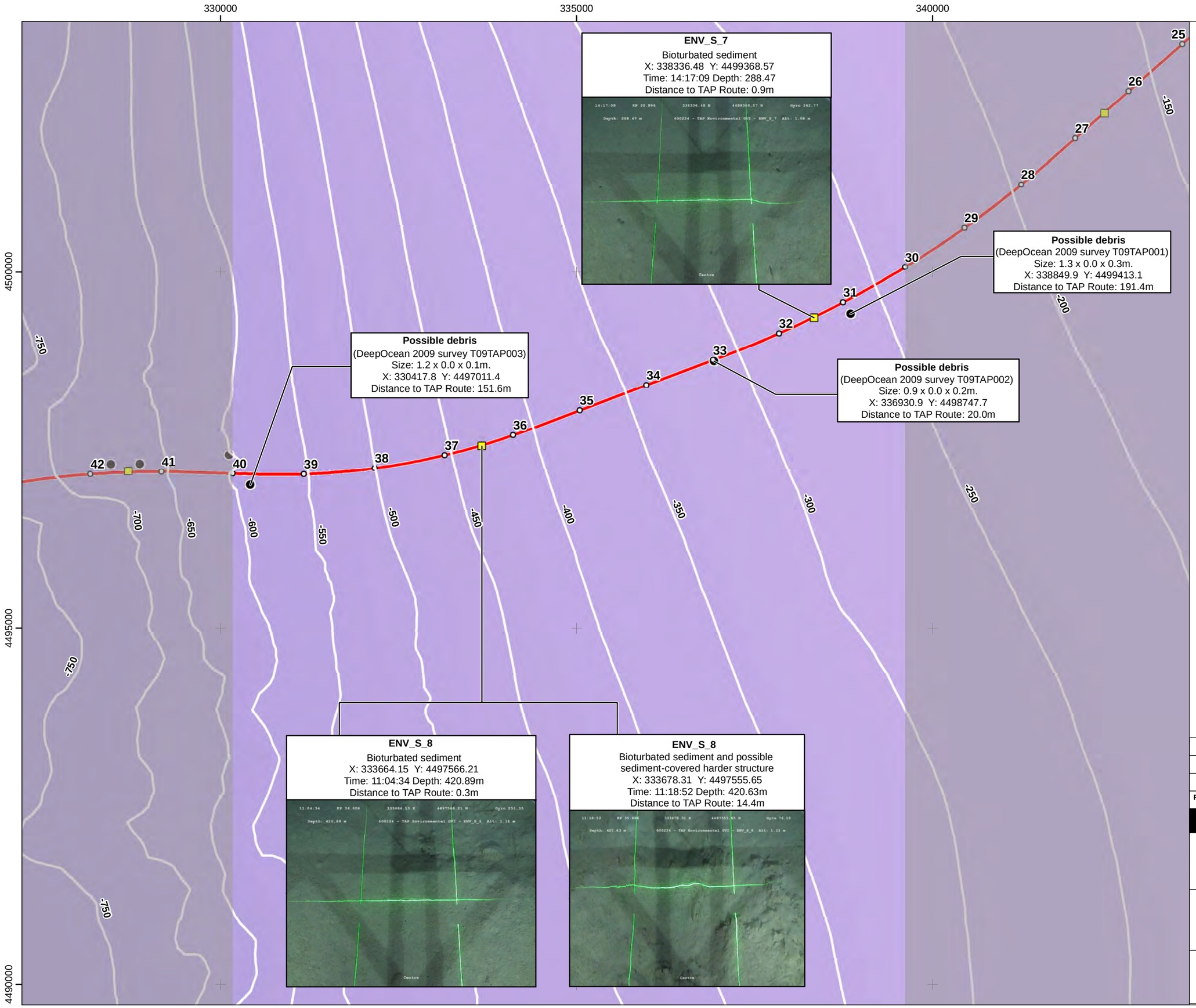
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-053[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 37 Deepwater habitat review KP30-40



Legend:

- KP_30_KP40_Photo_Lines
- TAP_Route_10k_Masking
- TAP base case route centreline
- Kilometre point

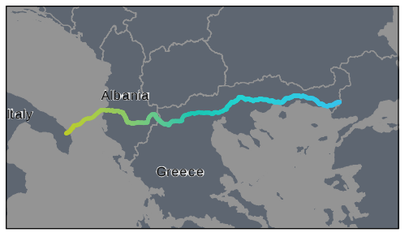
Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)
- Possible debris

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 30-40
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 396 of 406 Sheet 1 of 1

0 1 2
Kilometers
SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80636 TAP Offshore Monitoring Italy\05 - GIS\P80661-0541[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

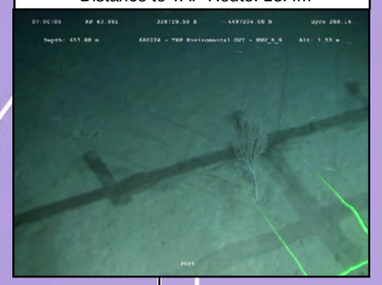
Figure 38 Deepwater habitat review KP40-45

325000

330000

4495000

ENV_S_9
Bioturbated sediment with solitary Anthozoa
X: 328719.58 Y: 4497204.08
Time: 07:00:05 Depth: 653.88m
Distance to TAP Route: 13.4m



ENV_S_9
Bioturbated sediment with solitary Anthozoa
X: 328718.69 Y: 4497203.26
Time: 07:00:22 Depth: 654.08m
Distance to TAP Route: 12.6m

ENV_S_9
Bioturbated sediment with solitary Anthozoa
X: 328703.94 Y: 4497216.09
Time: 06:54:51 Depth: 654.06m
Distance to TAP Route: 26m

Possible debris
(DeepOcean 2009 survey T09TAP009)
Size: 0.9 x 0.0 x 0.4m.
X: 326764.5 Y: 4497101.1
Distance to TAP Route: 125.4m

Possible debris
(DeepOcean 2009 survey T09TAP010)
Size: 0.5 x 0.0 x 0.4m.
X: 325715 Y: 4496828.1
Distance to TAP Route: 68.1m

Possible debris
(DeepOcean 2009 survey T09TAP011)
Size: 0.9 x 0.0 x 0.4m.
X: 325345 Y: 4496874.4
Distance to TAP Route: 188.1m

Possible debris
(DeepOcean 2009 survey T09TAP006)
Size: 1.0 x 0.0 x 0.3m.
X: 328464.4 Y: 4497301.2
Distance to TAP Route: 121.1m

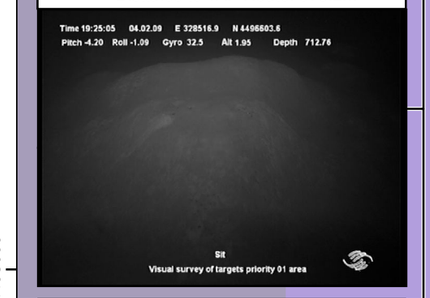
Possible debris
(DeepOcean 2009 survey T09TAP005)
Size: 1.0 x 0.0 x 0.4m.
X: 328869.3 Y: 4497303.3
Distance to TAP Route: 108.8m

Possible debris
(DeepOcean 2009 survey T09TAP004)
Size: 0.8 x 0.0 x 0.5m.
X: 330124.3 Y: 4497430.8
Distance to TAP Route: 258.6m

45 44 43 42 41 40

-550 -650 -700 -750

Large hummock of sediment
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 328516.9 Y: 4496603.6
Depth: 712.76
Distance to TAP Route: 578.2m

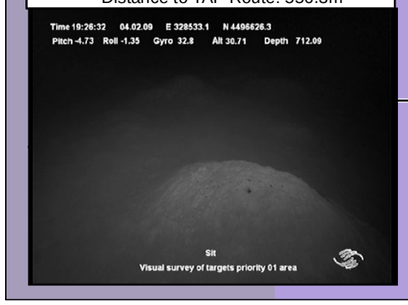


Hummocky sediment
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 328537.5 Y: 4496632.9
Depth: 711.68
Distance to TAP Route: 550.0m

Bioturbated sediment
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 328605.4 Y: 4496592.3
Depth: 710.03
Distance to TAP Route: 593.6m

Bioturbated hummocky sediment with possible individual coral-like organism
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 329162.0 Y: 4496631.4
Depth: 652.93
Distance to TAP Route: 565.5m

Large hummock of sediment with bioturbation
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 328533.1 Y: 4496626.3
Depth: 712.09
Distance to TAP Route: 556.3m



Hummocky disturbed seabed
X: 328535 Y: 4496631
Depth: 712m (DeepOcean 2009 survey)
Distance to TAP Route: 551.8m

Bioturbated hummocky sediment with possible individual coral-like organism
(Visual survey of Priority 1 area,
DeepOcean 2009 survey)
X: 328648.6 Y: 4496715.7
Depth: 701.27
Distance to TAP Route: 472.1m

Hummocky disturbed seabed
X: 329090 Y: 4496636
Depth: 663m (DeepOcean 2009 survey)
Distance to TAP Route: 561.0m

Legend:

Features:

- Hummock/ bioturbated sediment
- KP_40_KP45_Photo_Lines
- TAP_Route_10k_Masking
- TAP base case route centreline
- Kilometre point

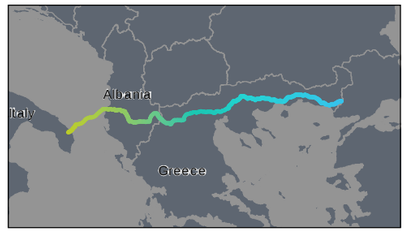
Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)
- Possible debris

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 40-45
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 398 of 406 Sheet 1 of 1

0 500 1,000
Meters

SCALE: 1:20,609.76 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-055[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 39 Deepwater habitat review KP45-50

320000

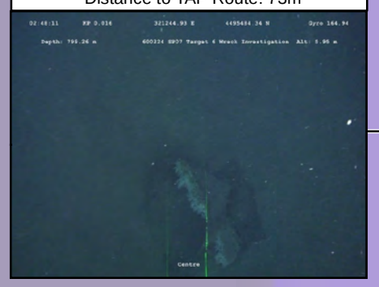
325000

4495000

Possible debris
(DeepOcean 2009 survey T09TAP012)
Size: 1.0 x 0.0 x 0.2m.
X: 324292.4 Y: 4496841.4
Distance to TAP Route: 368.1m

Possible debris
(DeepOcean 2009 survey T09TAP013)
Size: 1.4 x 0.0 x 0.3m.
X: 324119.5 Y: 4496780.9
Distance to TAP Route: 343.7m

Target 6
Wreck and/or debris
with possible cold water coral
(Madrepora oculata/Lophelia pertusa)
X: 321244.93 Y: 4495484.34
Distance to TAP Route: 73m



45

46

47

48

49

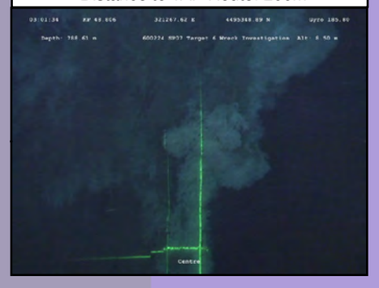
50

51

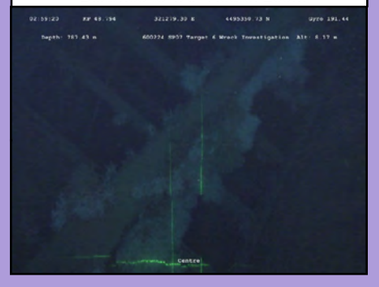
-800

ENV_S_10
Bioturbated sediment
X: 323784.12 Y: 4496376.73
Time: 19:19:31 Depth: 797.85m
Distance to TAP Route: 16.6m

Target 6
Wreck and/or debris
with possible cold water coral
(Madrepora oculata/Lophelia pertusa)
X: 321267.62 Y: 4495348.89
Distance to TAP Route: 206m



Target 6
Wreck and/or debris
with possible cold water coral
(Madrepora oculata/Lophelia pertusa)
X: 321279.3 Y: 4495350.73
Distance to TAP Route: 209m



Legend:

- TAP base case route centreline
- KP_45_KP50_Photo_Lines
- TAP_Route_10k_Masking
- Kilometre point

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

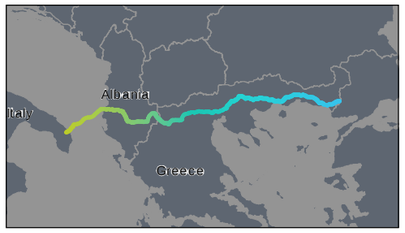
Features:

- Possible debris
- Tentative cold water coral

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 45-50
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 400 of 406 Sheet 1 of 1

0 500 1,000
Meters

SCALE: 1:20,000 @ A3

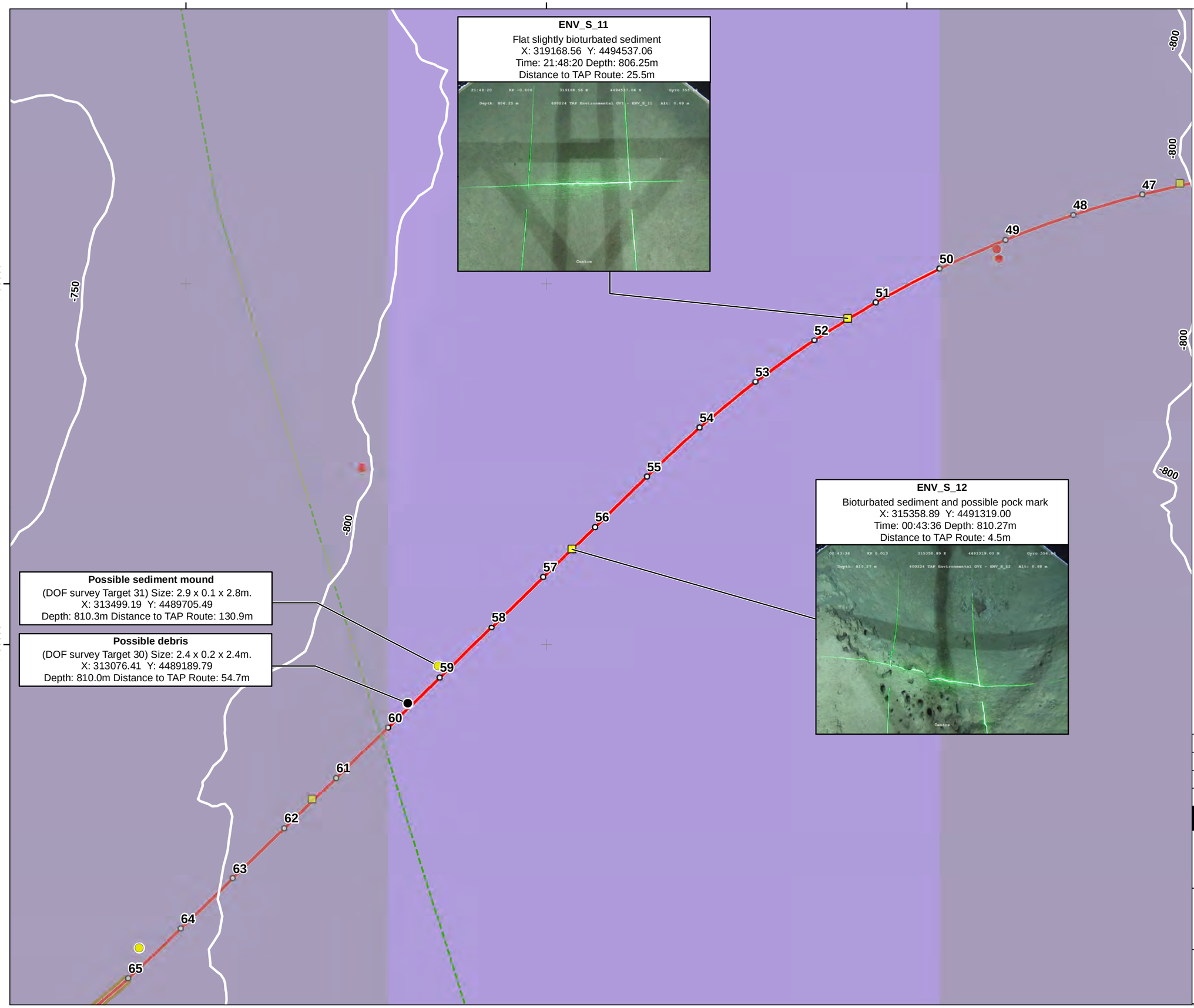
N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-056[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 40 Deepwater habitat review KP50-60



Legend:

- TAP base case route centreline
- Kilometre point
- Treaty/Median line

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

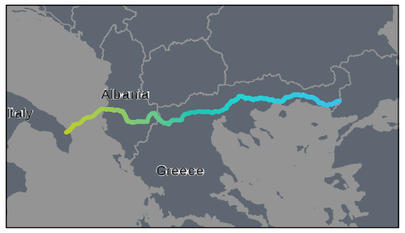
Features:

- Possible debris
- Possible sediment mound
- Tentative cold water coral
- Occasional rock outcropping

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 50-60
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 402 of 406 Sheet 1 of 1

0 500 1,000
Meters

SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-057[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 41 Deepwater habitat review KP60-70

305000 310000 315000

4490000 4485000 4480000

Target 5
Large wreck with possible cold water coral
(Madrepora oculata/Lophelia pertusa)
X: 312446.24 Y: 4492445.27
Distance to TAP Route: 2831m
Time: 00:35:59 Depth: 791.25m
Distance to TAP Route: 2831m

ENV_S_14
Bioturbated sediment with echinoid
X: 308106.51 Y: 4484445.16
Time: 05:40:59 Depth: 780.25m
Distance to TAP Route: 36.2m

ENV_S_13
Bioturbated sediment
X: 311745.32 Y: 4487876.95
Time: 03:08:59 Depth: 804.42m
Distance to TAP Route: 38.2m

Possible sediment mound
(DOF survey TAUN 28). Size: 3.3 x 0.2 x 3.2 m
X: 309351.03 Y: 4485796.77
Distance to TAP Route: 208.7m

Occasional outcropping
(DOF survey report, page 37)
Area of irregular topography which appears to be associated with occasional outcropping of the sub-seabed geology. Areas of outcrop may have been formed as a result of a massive slide and represent slide blocks from the upper slope area
LOCATION REQUIRES CONFIRMATION

Large Outcrop
(DOF survey report, page 37)
Size: 150x10x100m. Average slope 7.5◦.
X: 307864.103 Y: 4484175.5783
Distance to TAP Route: 114.7m
LOCATION REQUIRES CONFIRMATION

Large Mound
(Fugro 2017)
KP 67.36. 200m wide 10m high
X: 307514 Y: 4483660
Distance to TAP: 55m; distance to FOC: 0m

55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73

-650 -750 -800 -650

Legend:

- TAP base case route centreline
- Kilometre point
- Treaty/Median line

Geophysical Survey Coverage:

- Total area surveyed in 2016
- Geophysical survey area (MBES/ SBP/ SSS)
- Anchoring buffer

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

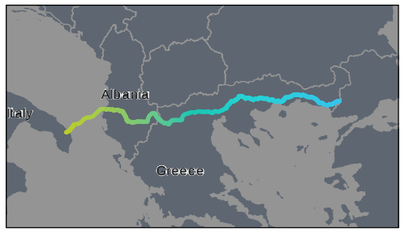
Environmental Features:

- Seabed target (environmental)
- Possible debris
- Possible sediment mound
- Other environmental feature/debris
- Tentative cold water coral
- Occasional rock outcropping

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 60-70
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 404 of 406 Sheet 1 of 1

0 500 1,000
Meters
SCALE: 1:50,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-058[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

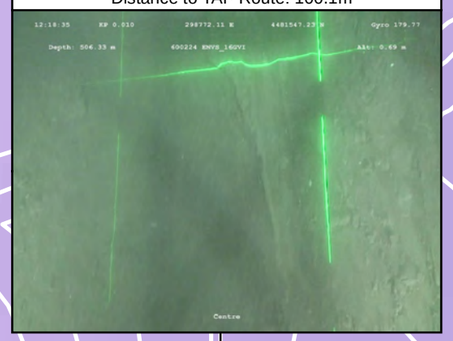
Figure 42 Deepwater habitat review KP70-80

295000 300000 305000

4485000

4480000

ENV_S_16
Clay/rock outcrop
X: 298772.11 Y: 4481547.23
Time: 12:18:35 Depth: 506.33m
Distance to TAP Route: 100.1m



ENV_S_16
Striated sediment (stiff clay)
X: 298776.64 Y: 4481533.16
Time: 12:37:54 Depth: 506.15m
Distance to TAP Route: 114.1m

Seabed punctuated by mud mounds/volcanoes and ridge formations
(DOF survey report, page 28)
LOCATION REQUIRES CONFIRMATION

Outcropping (KP: 78.320 - KP 78.760)
(DOF survey report, page 39)
The most significant feature measured 15m x 1.5m x 15m, 21m south of the route at KP78.746.
Outcrops were probably formed as a result of sediment slides, removing the overlaying sediments
LOCATION REQUIRES CONFIRMATION

ENV_S_15
Bioturbated sediment with echinoid
X: 303719.61 Y: 4482094.90
Time: 09:31:10 Depth: 704.21m
Distance to TAP Route: 153.5m

-150 -200 -250 -300 -350 -400 -450 -500 -550 -600 -650 -700 -750

80 79 78 77 76 75 74 73 72 71 70

Legend:

- TAP base case route centreline
- Fibre Optic Cable (FOC)
- Kilometre point

Geophysical Survey Coverage:

- Total area surveyed in 2016
- Geophysical survey area (MBES/ SBP/ SSS)
- Anchoring buffer

Previous TAP Surveys:

- Environmental survey stations (Gardline, 2012/2013)

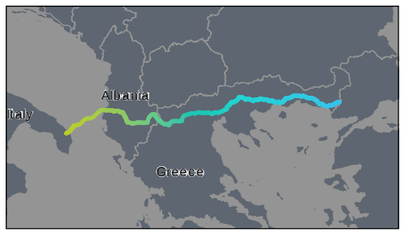
Features:

- Mud mounds/ pockmarks/ volcanoes
- Occasional rock outcropping

Designated Area:

- EBSA (Ecology or Biologically Significant Marine Area - South Adriatic Ionian Strait)

Coordinate System: WGS 1984 UTM Zone 34N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter



Rev	Date	Description	Drn	Chk	App
A		First draft		NOD	CY

TAP Critical Habitat Assessment

RSK

Trans Adriatic Pipeline

TITLE:
TAP Deepwater Habitat Review
KP 70-80
CAL00-C5577-640-Y-TRB-0001_Appendix 7
Page 406 of 406 Sheet 1 of 1

0 500 1,000
Meters

SCALE: 1:35,000 @ A3

N W E S

REV 3

Document Path: P:\08-International\P80661 TAP critical habitats assessment\02 GIS\P80661-059[A].mxd

© Crown copyright, All rights reserved. 2017 License number 0100031673
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community