





Bcb!HYWb]W'Gi a a UfmcZ9G=5 ·  
fDbj ]fcba YbhU 'UbXGcV]U' =a dUM5 ggYgga YbhL  
5`VUb]U

**Trans Adriatic Pipeline AG - Albania (Branch Office)**  
Torre Drin, Abdi Toptani street, 5th Floor  
Tirana, Albania

Phone: + 355 44 308 770 Fax: + 355 42 265 685  
[esia-comments@tap-ag.com](mailto:esia-comments@tap-ag.com)  
[www.trans-adriatic-pipeline.com](http://www.trans-adriatic-pipeline.com)



**Date 11 / 2012**

Copyright Reserved: This document may not be copied, shown to or placed at the disposal of third parties without prior consent of TAP AG.  
The latest version of the document is registered in the TAP Project's Database.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 2 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## TABLE OF CONTENTS

1	ABOUT THIS DOCUMENT	5
2	PROJECT OVERVIEW	6
2.1	Project Rationale	6
2.2	Key Features of the TAP in Albania	7
2.3	Project Construction	9
2.4	Pipeline Route	10
2.5	Implementation Timeline	12
3	INVESTIGATED PROJECT ALTERNATIVES	13
3.1	Onshore Pipeline Route Alternatives	13
3.2	Offshore Pipeline Route Alternatives	19
4	ENVIRONMENTAL AND SOCIOECONOMIC CHARACTERISTICS OF THE PROJECT AREA	22
4.1	Onshore Pipeline Route Characteristics	22
4.2	Offshore Pipeline Route Characteristics	23
5	STAKEHOLDER ENGAGEMENT	25
5.1	Stakeholder Consultation and Project Information Disclosure	25
5.2	Grievance Mechanism	29
6	ANTICIPATED IMPACTS, RISKS AND OPPORTUNITIES, AND FORESEEN MANAGEMENT MEASURES	30
6.1	Scope of the Assessment and Studies Undertaken	30
6.2	The Physical Environment	31
6.2.1	Ambient Air Quality and Climate	31
6.2.2	Acoustic Environment	32
6.2.3	Freshwater Resources (Groundwater and Surface Waters)	33
6.2.4	Subsurface and Soil Resources	34
6.2.5	Landscape and Visual Amenity	35
6.3	The Biological Environment	36
6.3.1	Flora, Fauna, Habitats and Biodiversity - Onshore	36
6.3.2	Flora, Fauna, Habitats and Biodiversity - Offshore	38
6.4	The Socioeconomic Environment	40
6.4.1	Land and Livelihoods, Fishery and Tourism	40
6.4.2	Infrastructure and Utilities	43
6.4.3	Traffic and Transportation	45
6.4.4	Economy and Employment	46
6.4.5	Community Health, Safety and Security	47
6.4.6	Community Cohesion	49
6.4.7	Workforce Social Issues	51
6.4.8	Cultural Heritage	51
6.5	Cumulative Impacts, Risks and Opportunities	53
6.6	Transboundary Impacts, Risks and Opportunities	54
6.7	Decommissioning Impacts, Risks and Opportunities	55
6.8	Non Regular Operation and Unforeseen Events	55
6.8.1	Onshore Pipeline	55

<div> Trans Adriatic Pipeline</div> <div></div>		Page 3 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

6.8.2 Offshore Pipeline 56

7 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING 57

## APPENDIX

TAP Albania Overview Map



## LIST OF TABLES

Table 7-1 Overview of Management Plans within the ESMP ..... 58

## LIST OF FIGURES



Figure 2-1	Context of TAP Gas Transmission Network .....	6
Figure 2-2	TAP Overview .....	7
Figure 2-3	Regular Pipeline Working Strip .....	9
Figure 2-4	TAP Onshore Route in Albania .....	11
Figure 2-5	TAP Offshore Route.....	12
Figure 3-1	Main Route Alternative 3 (South) and Alternative 6 (North) – 2010 Status .....	14
Figure 3-2	Alternatives Investigated in the Western Region and Compressor Station CS03 Site Selection (see detail in bottom left corner) .....	15
Figure 3-3	Route Alternatives ‘Korca Loop’ .....	17
Figure 3-4	Alternative E / Potom Route.....	18
Figure 3-5	Offshore Route Corridor Alternatives .....	20
Figure 3-6	Offshore Route Alternatives .....	21
Figure 5-1	Phases of Stakeholder Engagement for the TAP Project ESIA .....	25
Figure 5-2	Stakeholder Meeting Photographs .....	28



<div> Trans Adriatic Pipeline</div> <div></div>		Page 4 of 61									
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.				
Project Title:		Trans Adriatic Pipeline – TAP				AAL00-ERM-641-Y-TAE-1002					
Document Title:		ESIA Albania - Non-Technical Summary									

## ABBREVIATIONS

ALARP	As Low As Reasonably Practicable
ASCI	Area of Special Conservation Interest
BAP	Biodiversity Action Plan
barg	bars above atmospheric pressure
bcm	billion cubic metres
BVS	Block Valve Station
CS	Compressor Station
CS02	Compressor Station 02
CS03	Compressor Station 03
CSR	Corporate Social Responsibility
EBRD	European Bank for Reconstruction and Development
ECOW	Ecological Clerk of Works
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPC	Engineering, Procurement and Construction
ERM	Environmental Resources Management
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
ha	hectare
HSE	Health Safety and Environment
ICH	Intangible Cultural Heritage
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
kg	kilogram
km	kilometre
km <sup>2</sup>	square kilometre
Kp	Kilometre point of pipeline (aka. 'chainage')
LRF	Livelihood Restoration Framework
m	metre
m <sup>2</sup>	square metres
m <sup>3</sup>	cubic metres
masl	metres above sea level
MoEFWA	Ministry of Environment Forests and Water Administration
NGO	Non-Governmental Organization
NO <sub>x</sub>	Nitrogen Oxides
NTS	Non-Technical Summary
PR	Performance Requirement
SEI	Social and Environmental Investment
SEP	Stakeholder Engagement Plan
TAP	Trans Adriatic Pipeline
TAP AG	Trans Adriatic Pipeline joint venture company
UXO	Unexploded Ordinance

<div> Trans Adriatic Pipeline</div> <div></div>		Page 5 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## 1 ABOUT THIS DOCUMENT

The Trans Adriatic Pipeline (TAP) is a proposed pipeline scheme that will bring natural gas from new sources in the Caspian region to western and south-eastern Europe. The TAP will transport gas via Greece and Albania, across the Adriatic Sea and into southern Italy.

As part of the planning, design and permitting process for the TAP, the scheme must be subject to an Environmental and Social Impact Assessment (ESIA). An ESIA is a legal process and involves the identification of any significant environmental and socioeconomic effects (impacts, risks and opportunities) that are likely to arise from a development. The ESIA enables the project proponent, in this case TAP AG, to anticipate these effects and consider project controls and measures to reduce or prevent adverse impacts and risks and enhance beneficial effects throughout the project lifecycle.

The ESIA study for the TAP in Albania includes the pipeline itself (onshore and offshore) as well as temporary infrastructure required for the construction phase, such as access roads and construction camps, and permanent, supporting operational facilities, including block valve stations and potentially two compressor stations.

This document presents the Non-Technical Summary (NTS) of the ESIA conducted for the Albanian section of the TAP scheme (the 'Project'), describing the key features and summarising the results of the assessment<sup>1</sup> in non-technical language.

More specifically, it:

- Sets out the background to the TAP;
- Describes the TAP route and provides an overview of Project construction;
- Presents the alternatives that have been considered in developing the Project;
- Describes the current environmental and socioeconomic characteristics of the chosen route;
- Explains the stakeholder engagement that has already been carried out and what is planned for future phases; and
- Presents any significant beneficial and adverse impacts or risks that have been identified through the ESIA process and proposed measures to manage and monitor these.

<sup>1</sup> The assessment was undertaken by a team of independent specialists in accordance with Albanian legislative requirements as well as the European Union (EU) regulatory impact assessment and environmental framework.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 6 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.	AAL00-ERM-641-Y-TAE-1002	
Project Title: <b>Trans Adriatic Pipeline – TAP</b>							
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## 2 PROJECT OVERVIEW

### 2.1 Project Rationale

The TAP is intended to contribute to the security and diversity of Europe's energy supply by connecting to existing gas networks and will allow gas to flow directly from the Caspian basin into European markets. The TAP will provide the necessary infrastructure to transport gas from the *Shah Deniz II* field in Azerbaijan by the most direct route to Southern Europe (refer to Figure 2-1), once production begins in 2018.

**Figure 2-1 Context of TAP Gas Transmission Network**




Source: TAP AG (2012) *TAP\_Corporate\_Presentation\_Jan\_2012*

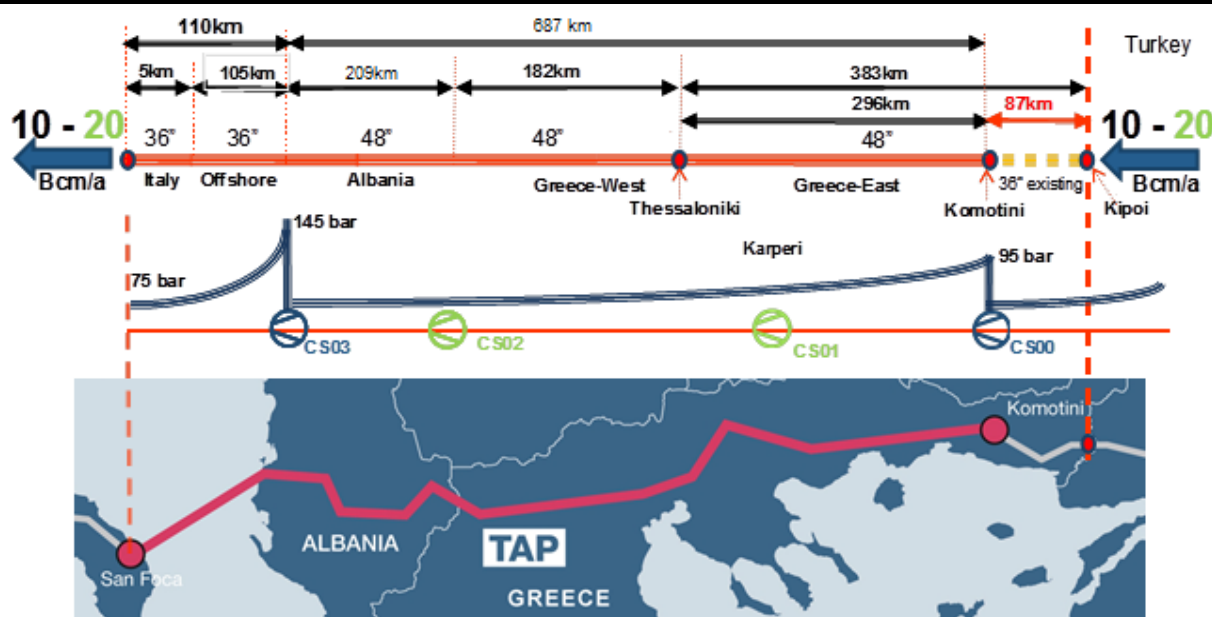
The European Union has recognised the TAP Project under the so-called TEN-E (*Trans-European Energy Networks*) guidelines as a *Project of Common Interest* for the European Union's overall energy policy objectives.

The TAP is a large diameter, high pressure gas pipeline that starts in North-Eastern Greece near Komotini from where it passes through northern Greece, next through Albania, the Adriatic Sea and finally comes ashore in southern Italy near the area of San Foca (Lecce).

An overview of the TAP Project as a whole is shown in *Figure 2-2*.

 Trans Adriatic Pipeline	Page 7 of 61				
	Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>	AAL00-ERM-641-Y-TAE-1002				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>					

**Figure 2-2 TAP Overview**



Source: TAP AG (2012) *TAP\_Corporate\_Presentation\_Jan\_2012*  
Legend: bcm/a = billion cubic metres/year; CS = Compressor Station

The pipeline is approximately 800 km long and is designed with a diameter of 48 inches onshore, and reduces to a diameter of 36 inches for the offshore section. The pipeline will initially have a capacity to transport 10 billion standard cubic metres of natural gas per year (bcm/yr), or approximately 1,119,000 m<sup>3</sup> per hour (average flow rate). In a second stage this capacity can be doubled to 20 bcm/yr by scaling up the installed capacity of the compressor stations.



The design lifetime of the pipeline is 50 years; but based on international pipeline industry experience, it can well be expected that the pipeline could actually be used much longer. The compressor station equipment and piping will be replaced after 25 years.

The design will ensure that the gas transport system fulfils all safety requirements of the applicable European Codes and Standards.

## 2.2 Key Features of the TAP in Albania

The pipeline system in Albania will require the following main installations:

- A buried 48 inch pipeline, approximately 203 km in length, from the Greek-Albanian border to compressor station CS03;
- A buried 36 inch pipeline, approximately 6 km in length, from CS03 to the landfall at the shore of the Adriatic Sea;
- A metering/compressor station (CS02) facility and associated electrical grid connection (approximately 1.5 km medium voltage transmission line) near the Albanian–Greek border;

<div> Trans Adriatic Pipeline</div> <div></div>		Page 8 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

- A compressor station (CS03) and associated electrical grid connection (approximately 8 km medium voltage transmission line) near the city of Fier;
- Approximately 10 block valve stations (BVSs) along the onshore route, with foreseen maximum intervals of 30 km, to interrupt the gas flow in case of maintenance or emergency;
- A 36 inch pipeline, nearshore section approximately 7 km in length and offshore section approximately 60 km in length, from the Albanian landfall to the mid line of the Adriatic Sea.

The 48 inch onshore pipeline will have a design pressure of 95 barg. The 36 inch pipeline will have a design pressure of 145 barg (bars above atmospheric pressure). Both onshore and offshore pipelines will be of a sufficient size for the base case as well as for later extension.

The CS02 facility will be located near the Albanian-Greek border. Subject to further technical system studies, the site will either be in Albania between the villages of Kuc and Trestenik, in Devoll district – this is presently the preferred location by TAP AG - or alternatively, on the Greek side, approximately 2 km west of the town of Mesopotamia. For the purpose of completing this ESIA it has been assumed that CS02 will be located on the Albanian side.

CS02 will initially be used as a gas metering and pipeline inspection ('pigging') station in the 10 bcm/yr phase. When the transportation capacity of the pipeline is increased to 20 bcm/yr the facility will be equipped with compressor units and extended to a full compressor station in order to raise the system pressure to the level required to transport the additional gas. It is expected that four 15 MW gas-driven turbine units (each with a thermal input of 45.45 MW) will be installed at the CS02 site, plus an additional standby unit.

CS03 will have three 15 MW gas turbines (two operational and one standby unit) installed in the 10 bcm/yr case, and a total of five units (four operational and one standby unit) installed in the 20 bcm/yr case.

The compressor stations will require a plot of approximately 35 hectares (ha), including safety and green spaces free from buildings or installations - the physical footprint of the facility installation will be approximately 20 ha. Once fully operational the compressor station buildings will be about 20 m high, the stacks of the gas turbines about 30 m, and there will be a vent at each station of about 70 m height.

The BVSs are unmanned, comprise mainly underground valve and piping installations, and require a plot of 20 x 30 m each. In line with international best practice, BVSs will be installed at intervals of no longer than 30 km along the onshore pipeline to interrupt the gas flow and isolate sections of the pipeline in case of any maintenance or emergency.

An overview map of the key onshore components of the Project in Albania is presented in **Appendix 1** of this document.

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 9 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

### 2.3 Project Construction

Subject to tendering by TAP AG, Project construction is likely to be undertaken by one or more international Engineering, Procurement and Construction (EPC) Contractor(s).

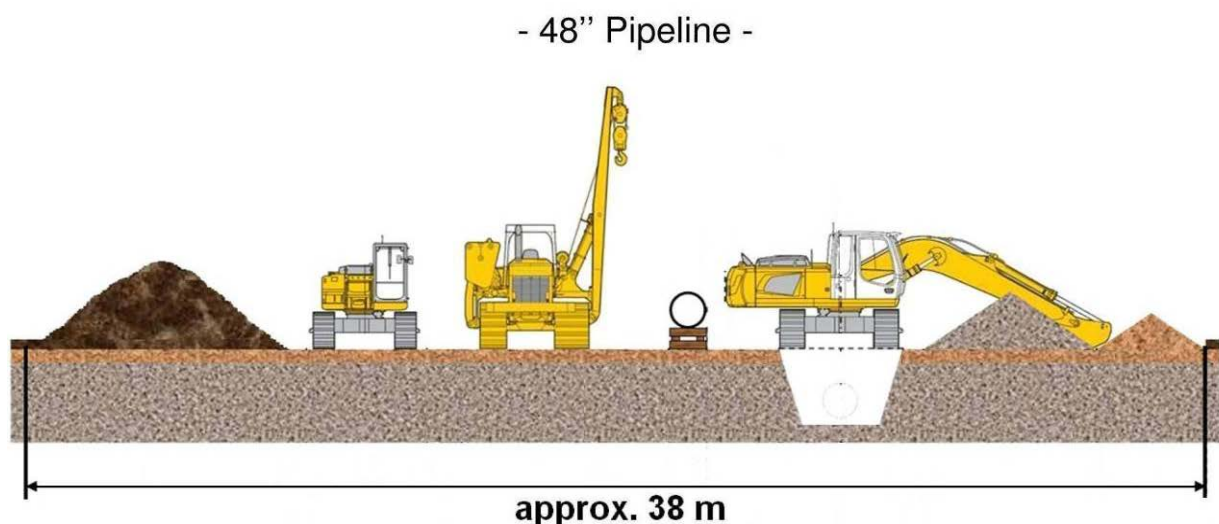
The pipeline and compressor stations will be constructed by established standard techniques.

The onshore section of the pipeline will be buried underground. The pipeline will be made of welded steel pipe sections which will range between 8 and 18 m in length. The steel pipe sections will be coated both inside and outside. The internal coating will be an epoxy resin which reduces friction, whilst the external coating will be 3-layer polyethylene to protect the pipeline from corrosion. The entire pipeline will be protected against corrosion by a cathodic protection system.

A main pipe yard<sup>1</sup> will be established close to the Port of Durres from which pipe sections will be distributed to eight smaller pipe yards (plus one optional) along the route. From these yards pipe sections will be transported to the construction sites along the working strip as required.

The pipeline working strip, the corridor to be cleared and temporarily occupied for construction, is 38 m wide, and can be reduced to 28 m where physical constraints require or to reduce certain vegetation losses, such as in established forest. In areas where the pipeline has to be constructed on top of mountain ridges the width can be further reduced to a minimum 18 m corridor. A typical cross section of the regular construction working strip is shown in *Figure 2-3*.

**Figure 2-3 Regular Pipeline Working Strip**





Source: ENT (2012) CPL00-ENT-100-F-DFT-0011\_02--Working Strip

Construction of the pipeline in mountainous and remote terrain will require the preparation of about 69 km of 'new' roads<sup>1</sup> and approximately 86 km of upgraded roads.

<sup>1</sup> Currently two options are being considered for the site of this facility. Both options are located on the border between the municipalities of Golem and Synej, approximately 15 km south of the Port of Durres. The site will be selected during the next phase of engineering.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 10 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

For safety reasons and in order to minimise impacts on existing land uses (e.g. agricultural) the buried pipeline will have a soil cover of minimum 1 m. This can be increased if necessary where conditions require, for example in environmentally sensitive areas or where the pipeline needs additional protection.

Temporary, self-contained camp facilities for personnel, construction equipment and material will be located along the route for construction of the pipeline and access roads, taking into account local infrastructure and good access possibilities. Camps will also be established at the compressor stations specifically for the construction of these facilities.

The offshore section will be laid on the seabed with the exception of the shallow water section (between 0 and 30 m water depth) which will be buried at depths between 0.5 and exceeding 2 m. At the landfall burial depth is expected to be up to 5 m. The dredging of a flotation channel (approximately 2 km in length) will be required in front of the landfall to allow the nearshore pipe lay barge to approach. A total of approximately 1,600,000 m<sup>3</sup> of marine sediments will be moved during the dredging operation, most of which will be reused during the channel backfill and seafloor reinstatement.

## 2.4 Pipeline Route

The route of the TAP in Albania has been selected following an extensive and thorough alternative route assessment process performed by the Project proponent, TAP AG, with the aim to select a technically feasible pipeline route with the least environmental, socioeconomic and cultural heritage impacts and risks (refer to *Section 3*).

Upon the selection of the preferred route, a refinement process was carried out with the aim to optimise it, particularly focussing on those sections which present any remaining technical, environmental, socioeconomic and cultural heritage constraints.

The final refined pipeline route through Albania enters from Greece close to the village of Trestenik, in the east of the country. It then passes through the Devolli valley until reaching the city of Korça. From there the route goes straight to the village of Floq, passes the Osumi Valley from Çorovodë to Berat, and then traverses the pre-Adriatic plain until reaching the seashore, approximately 15 km northwest of the city of Fier. An overview of the route is presented in *Figure 2-4*.

<sup>1</sup> Although some of the routes of these access roads follow existing tracks, in order for them to be utilized in the Project extensive reconstruction (i.e. widening, stabilisation or installation of retaining walls) is required and are therefore classified as 'new' roads to be constructed.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 11 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

**Figure 2-4 TAP Onshore Route in Albania**



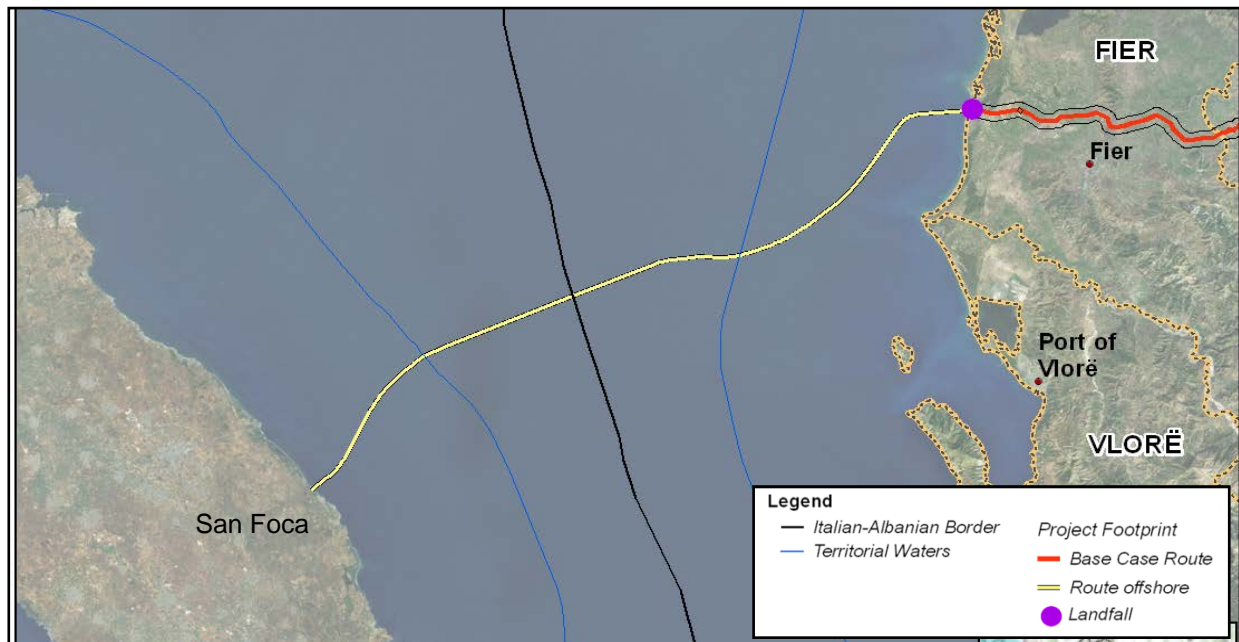
Source: ERM (2012)

From the landfall, the Albanian part of the TAP route continues with an approximately 60 km long offshore section of the pipeline along the Adriatic seabed, through Albanian territorial waters and into international waters until reaching the mid-point between Albania and Italy (refer to *Figure 2-5*).



<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 12 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

**Figure 2-5 TAP Offshore Route**



Source: ERM (2012)



## 2.5 Implementation Timeline

The main construction phase of the TAP Project in Albania is anticipated to commence in mid-2015 and will take approximately 3.5 years. It is likely that preparation of auxiliary facilities, such as establishing camp sites and access roads would commence in advance of this phase, during mid-2014.

Pipeline construction is a sequential process and will last only a few weeks at each location<sup>1</sup>, whereas construction of the compressor stations will be a continuous activity over a period of 20 months for the initial 10 bcm/yr stage of CS02 (if the Albanian site is selected during the final design stage) and 26 months for CS03.

Commissioning of the Project would then take place during 2018, immediately followed by start-up of operations.

<sup>1</sup> With the exception of limited sections in the mountainous Potom region.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 13 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						



### 3 INVESTIGATED PROJECT ALTERNATIVES

#### 3.1 Onshore Pipeline Route Alternatives

A Feasibility Study for the TAP Project was performed between 2003 and 2005 with the objective of identifying a suitable corridor to connect south-eastern Europe to Italy. The landfall of the offshore pipeline on the Albanian Adriatic coast was initially foreseen to be north of the city of Vlore. However, based on initial stakeholder consultations during in 2006/07, this landfall was shifted further northwards to the Hoxhara plain, west of the city of Fier. The initially foreseen route corridor branched southeast from near Kalivac/Shkoza, predominantly following the Vjosa River. This route crossed the *Hotova Fir-Dangelli National Park*<sup>1</sup>, running for 27 km through the National Park (7 km through its core zone) and requires the construction of 25 km new roads within the National Park. Whilst technically feasible, TAP AG reviewed the routing in 2008 and conducted an appraisal of alternative routes in 2009 / 2010 in accordance with conditions set forth by the Albanian government<sup>2</sup> and international best practice. During 2009 a total of 6 alternative route corridors were identified in the broader Hotova Region. Two of these six alternatives bypassed the National Park in the North and another technically feasible route was identified by-passing the core zone of the National Park but still crossing the *Sustainable / Traditional Use Zones* of the National Park. Subsequently, routes in the east and west of the Hotova Region were studied, completing the assessment for the entire central section of the onshore route in Albania. The alternatives were assessed by means of a technical, environmental, socioeconomic and cultural heritage appraisal. The interdisciplinary alternatives assessment led to the identification of two feasible and complete route alternatives (i.e. from the Albanian-Greek border to the Adriatic Sea coast), as presented in *Figure 3-1*: the northern route Alternative 6; and the southern route Alternative 3.

<sup>1</sup> This park is also known as the Hotova's National Park and Bredhi Hotovës National Park. and is often referred to in the text as 'National Park'

<sup>2</sup> Council of the Regulation of the Territory of the Republic of Albania (CRTRA) Decision 1, 14/8/2007

 Trans Adriatic Pipeline		Page 14 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type
Project Title:	Trans Adriatic Pipeline – TAP	AAL00-ERM-641-Y-TAE-1002				
Document Title:	ESIA Albania - Non-Technical Summary					

**Figure 3-1 Main Route Alternative 3 (South) and Alternative 6 (North) – 2010 Status**



Source: TAP AG (2011) TAP-FEED-AL EIA-REP-7001 – Albania Route Alternatives Appraisal



The comparison of both main route alternatives demonstrated that both options were found to be technically feasible and facing similar overall construction challenges. Similarly, no significant differences were found in terms of safety, socioeconomic and cultural heritage impacts.

Alternative 6 was found to face fewer challenges in terms of potential environmental impacts and interference with official planning zones. Alternative 3 however would cross the *Sustainable / Traditional Use Zones* of *Hotova National Park* for 18 km. As a result of the outcomes of the alternatives assessment, TAP AG selected Alternative 6 as the base case routing for its further planning and approval process in Albania.

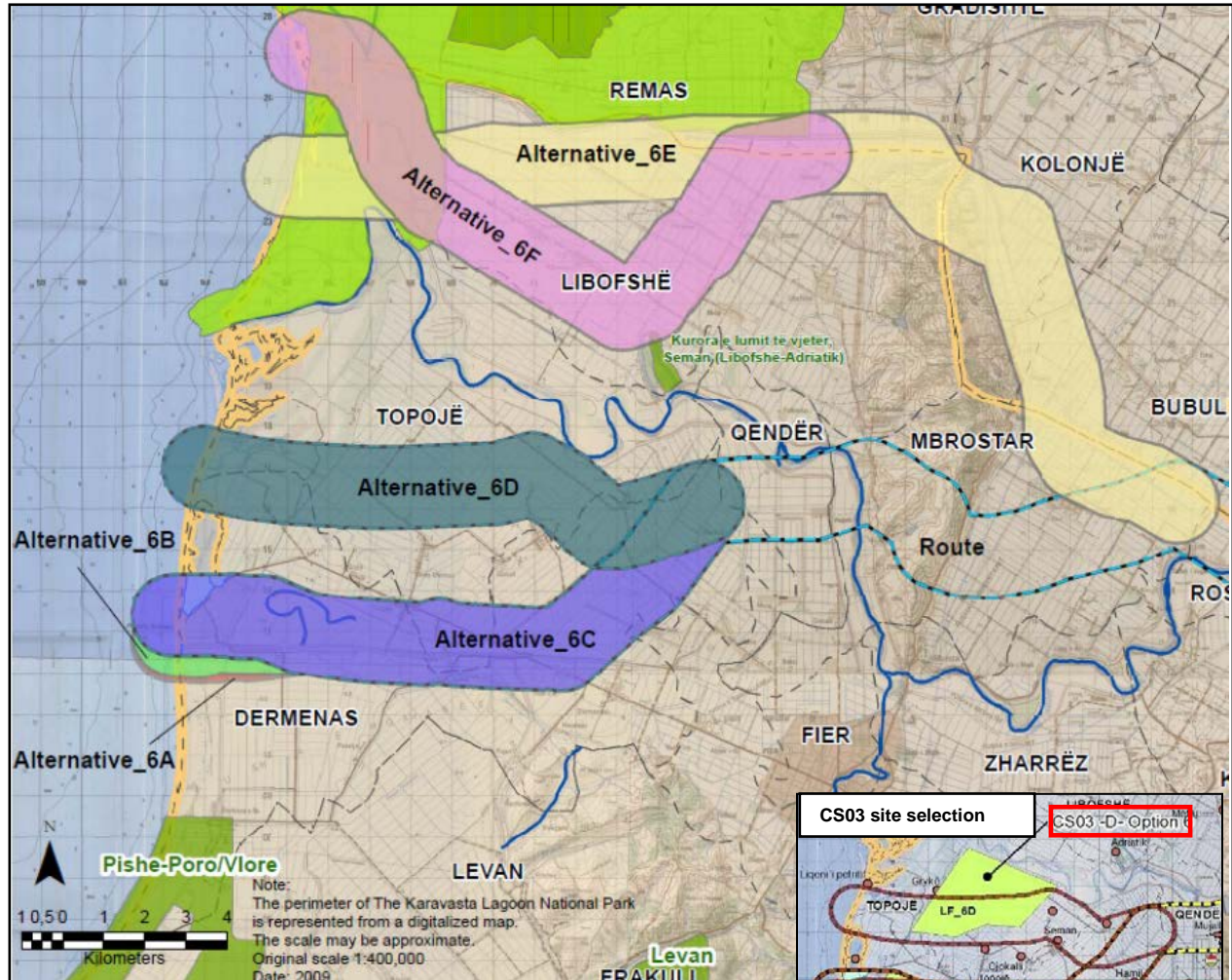
A similar combination of desk-based studies, field work and stakeholder engagement was used during 2010 and 2011 to identify, compare and select alternatives for the Eastern Region (between the Greek border and the central mountains) and the Western Region (between the city of Fier and the landfall location). Two main alternatives were studied in the Eastern Region and six in the Western Region).

*Western Region:* Once the area around Fier was identified, a selection of suitable landfall sites was carried out using multi-disciplinary criteria with the aim of avoiding interferences with: protected areas; areas of high ecological value (onshore and offshore); known cultural heritage sites and areas of high archaeological potential; military areas; tourist areas; fishing grounds; areas with known contaminated sediments; and populated places. The alternatives that were investigated are shown in Figure 3-2.



<div> Trans Adriatic Pipeline</div> <div></div>	Page 15 of 61					
	Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>	AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						


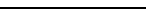
**Figure 3-2 Alternatives Investigated in the Western Region and Compressor Station CS03 Site Selection (see detail in bottom left corner)**



Source: TAP AG (2011) TAP-FEED-AL EIA-REP-7001 – Albania Route Alternatives Appraisal

Of the six initially identified landfall options, two (Alternatives 6E and 6F) were discarded as they fell within the extended boundaries of the *Karavasta Lagoon* protected area (Ramsar Site).

The remaining four landfall alternatives were found to be similar in environmental, socioeconomic and cultural heritage terms. Common to all alternatives are the habitats situated along the coastal belt (salt marshes, lagoons, Mediterranean pine forests, downstream of drainage channels), and the area further inland is dominated by a mosaic of agricultural land where natural habitats are quite scarce, fragmented and degraded. In socioeconomic terms, agricultural land use is prevalent, and new development plans for the area focus on the potential for future tourism development along the coastal area between the Semani River and River Vjose. The significant difference however was that the southern landfall options (i.e. Alternatives 6A, 6B and 6C) are located in the vicinity of the Roskovec - Hoxhara channel which is heavily polluted with crude oil (originating from the Marinez oil fields located approximately 25 km inland). These circumstances

<div> Trans Adriatic Pipeline</div> <div></div>		Page 16 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

were the main reasons for the selection of landfall route Alternative 6D and associated CS03 Option 6 (see *Figure 3-2*).

*Eastern Region:* During the early 2011 completion round of the route alternatives assessment, the 30 km long section between the Greek border and the central mountain region of Korca was evaluated in more detail, including another round of consultation with national and regional authorities and a re-evaluation of facts which had already been identified in earlier phases.

Key points of consideration included:

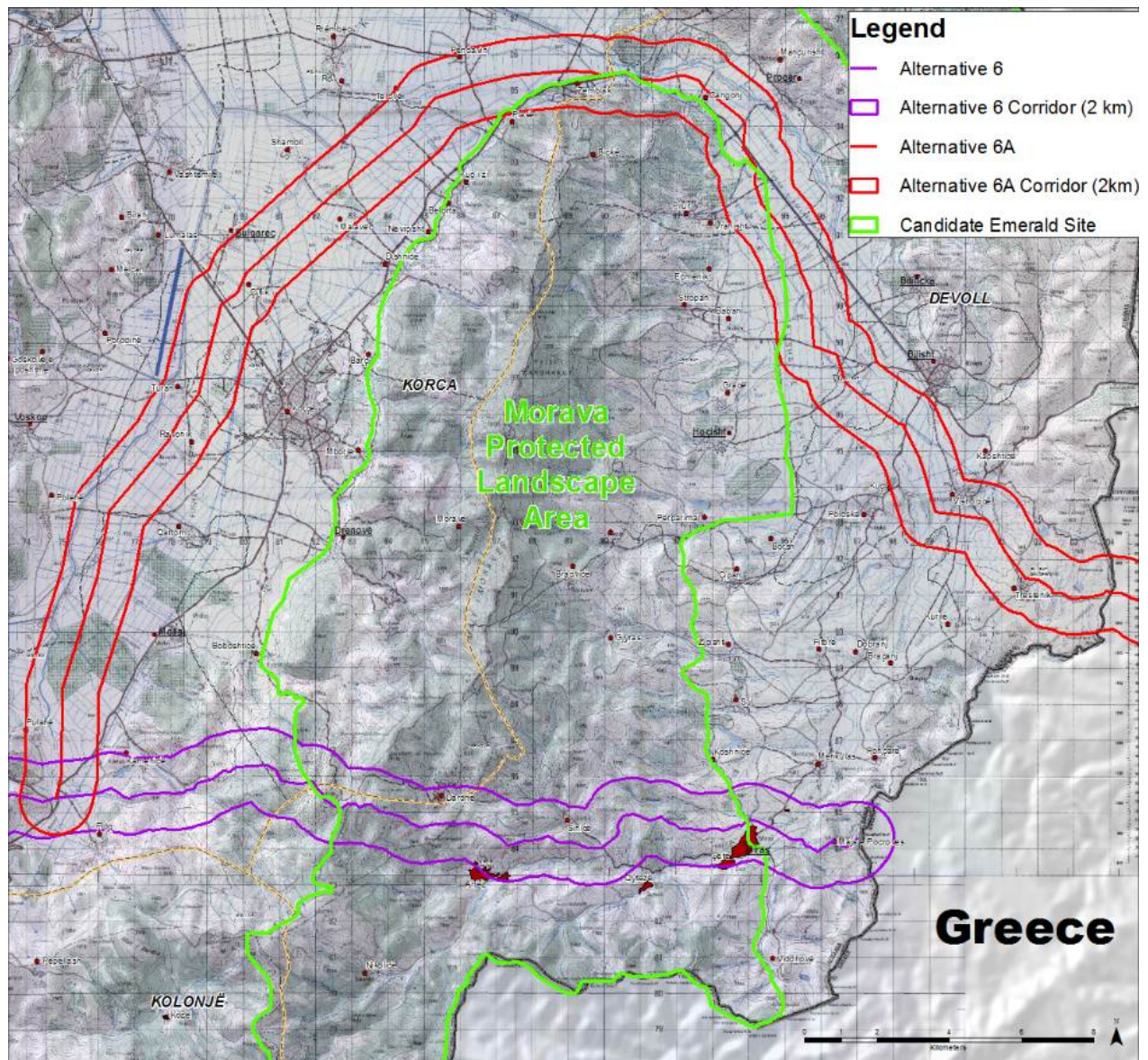
- Albania has proposed that the Morava Mountain Range become part of the Council of Europe's Emerald sites network and is envisaged to become a protected area that will connect the National Park of Drenova and the protected zone of Nikolice in the south. Further, the topography of the area implies significant work along very narrow mountain ridges with associated effects on local soil erosion and landscape.
- The area of Dardhë, in the mountains crossed by the pipeline corridor, is a major focus in the development and land planning of the region, as it is considered to have significant potential to attract tourism.
- Forests also have an important economic value within the study area, although the uncontrolled use, mainly for domestic purposes, has greatly exhausted this resource over the past years.

Taking these points into consideration, an alternative route was developed - the so-called '*Korca Loop*' - presented as Alternative 6A in *Figure 3-3*. Since the border crossing point had moved to the north, this also required a change of the route on the Greek side of the border.



<div><div><div>Trans Adriatic Pipeline</div></div><div></div></div>		Page 17 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							


**Figure 3-3 Route Alternatives 'Korca Loop'**



Source: TAP AG (2011) TAP-FEED-AL EIA-REP-7001 – Albania Route Alternatives Appraisal

As a result of these route refinement works, in November 2011 TAP AG incorporated the 'Korca Loop' into the base case (consolidated route Alternative 6A). The preferred location of the compressor station (CS02) was also chosen; a site more than 1,500 m southeast of the small settlement of Vishocicë.

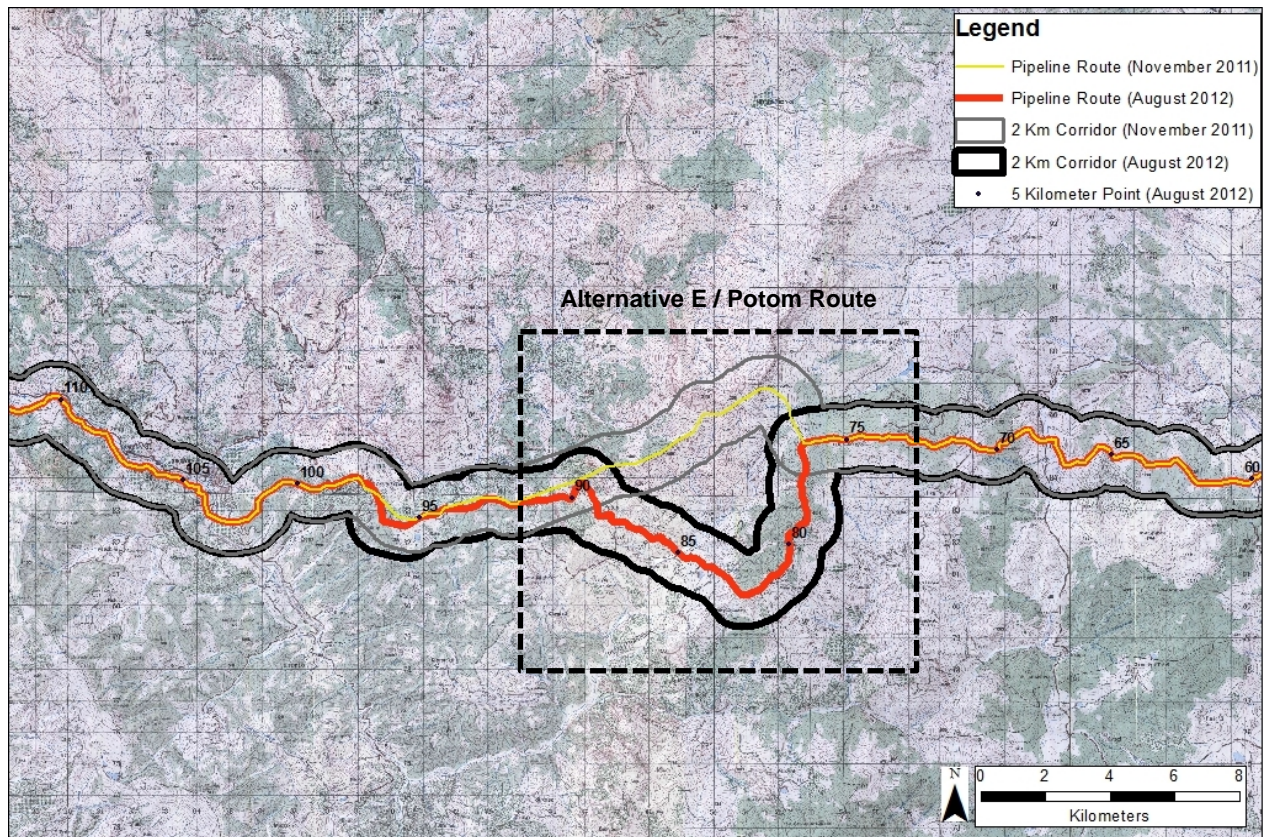


<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 18 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

Since the pipeline route was consolidated in November 2011, further technical studies<sup>1</sup> were conducted on the base case. Subsequent to these studies, TAP AG investigated the feasibility of alternatives to the tunnel section of the route (approximately Kp 78.5 to Kp 81<sup>2</sup>), with suitable options for respective road access.

As a technically feasible alternative to the tunnel section, route Alternative E (refer to ‘Pipeline Route (August 2012)’ in *Figure 3-4*) was identified in the Potom area. This alternative consists of diverting the pipeline route directly south along a ridge at approximately Kp 76, south of the settlement of Helmesi before heading northwest up the Stravecke River valley, past the settlement of Potom, to re-join the November 2011 base case route. Alternative E is also referred to as the ‘Potom Route’.



**Figure 3-4 Alternative E / Potom Route**



Source: ERM (2012)

<sup>1</sup> These investigations included more detailed studies on geotechnical conditions and constructability of an alternative solution on slopes and mountain ridges that might be used for such an alternative route.

<sup>2</sup> Base case route dated 25-11-2011.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 19 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.	AAL00-ERM-641-Y-TAE-1002	
Project Title: <b>Trans Adriatic Pipeline – TAP</b>							
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

At the end of July 2012, a field survey of the Potom Route was undertaken in order to allow a comparison of this proposed alternative with the November 2011 base case. Once the field survey was complete a preliminary identification and analysis of impacts that may be considered ‘red flags’<sup>1</sup> was completed to complement the detailed comparison of the alternatives. This report also provided preliminary information on mitigation measures associated with the identified red flags, and potential construction restrictions to help facilitate future decision making.

After due consideration of the technical aspects and sustainability of both alternatives, as well as implications on Project scheduling, route Alternative E / Potom Route was integrated into the base case route<sup>2</sup>. The selection of this alternative also required alterations to other Project components for this section of pipeline, including some changes to the network of access roads and the relocation of a pipe yard and construction camp near the settlement of Potom.

The decision to incorporate the Potom route into the base case was motivated by the following:

- The tunnel alternative would produce an irreversible impact to the environment in the form of a tunnel, whilst any impact caused during construction of the Potom alternative will be reinstated and only the maintenance road will remain;
- In accordance with the tunnel feasibility study, the soil excavated for the tunnel (approx. 120,000 m<sup>3</sup>) would have to be disposed of within the vicinity of the construction site, especially at the western portal. Whereas only a small quantity of the excavated soil for the Potom route will need to be disposed of, as most of the soil will be used for refilling, widening of the working strip and for road construction;
- Construction of the tunnel portals, tunnel and pipeline construction in the tunnel would need approx. 36 months, in addition to the continuous logistical traffic (trucks and cars). The Potom route effective construction time is estimated to be approx. 10-15 months; and
- Operation of the tunnel alternative would require continuous use of diesel generators to provide power for the safety systems installed in the tunnel. Fuel will therefore have to be transported to the site, with an associated increase in local air and noise emissions. The buried pipeline along the Potom route would only require standard service checks.


### 3.2 Offshore Pipeline Route Alternatives

The objective of the offshore route selection was to establish the shortest and shallowest possible connection between Albania and Italy, provided that such route was feasible from all technical, environmental and socioeconomic points of view. The offshore route selection process initially identified three main Adriatic crossing corridor alternatives between Albania and Italy:

<sup>1</sup> In this report a ‘red flag’ is a potential impact that is deemed significant based on professional experience, July 2012 survey results and the location of the identified impact to the route where specific construction restrictions and mitigation, and avoidance measures need to be considered in the final design of the pipeline, and prior to construction.

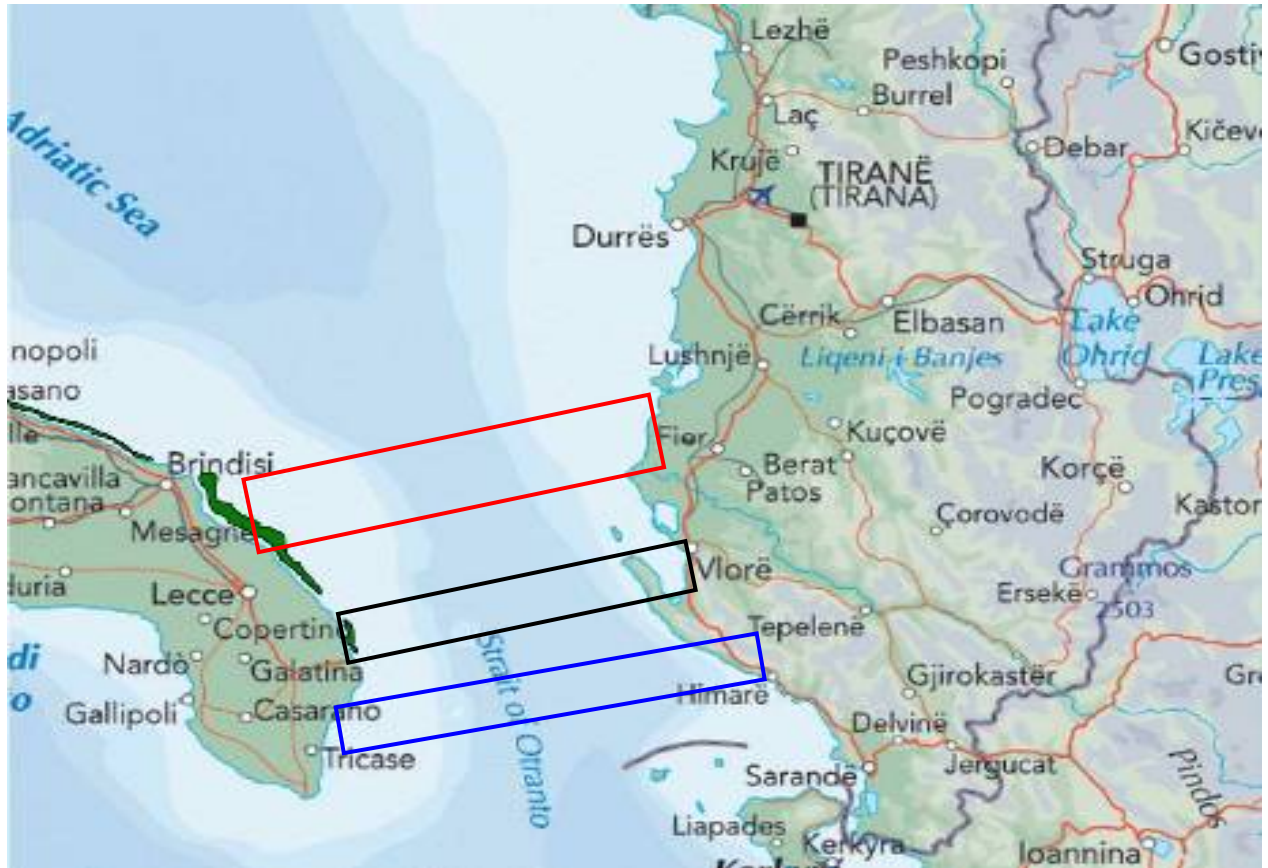
<sup>2</sup> Subsequently referred to as ‘August 2012 base case’ route.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 20 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.	AAL00-ERM-641-Y-TAE-1002	
Project Title: <b>Trans Adriatic Pipeline – TAP</b>							
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							


(from north to south) Fier to Brindisi; Vlore to San Foca; and Himare to Tricase (as shown in *Figure 3-5*).

**Figure 3-5 Offshore Route Corridor Alternatives**

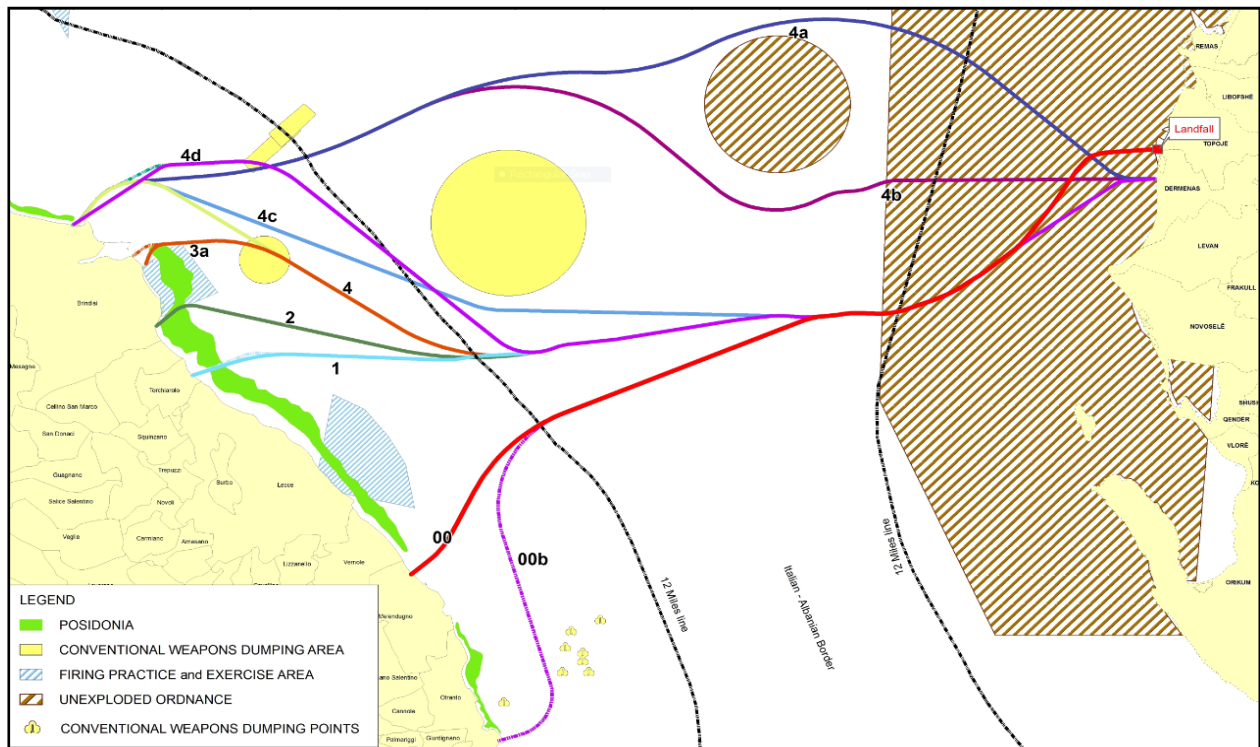


Source: TAP AG (2011) TAP-FEED-AL EIA-REP-7001 – Albania Route Alternatives Appraisal

Both the initial locations of the Albanian and Italian landfalls at the time, as well as the water depth and length of route variables, resulted in the initial selection of the northern corridor (Fier to Brindisi). Subsequent developments of the pipeline system, especially in Italy, and consideration of environmental and social constraints and sensitivities resulted in a crossing route which combines the two northern corridors and leads from Fier in Albania to the area of San Foca in Italy. Constraints considered in the route development included *inter alia*: protected areas; marine habitats of high ecological value (e.g. sea grass); archaeological sites; military areas; fishing areas; anchorage areas; geo-hazards (e.g. sub-sea landslides); landfall constraints; tourist areas; and existing offshore installations (such as platforms, pipelines, sub-sea wells, cables). One main constraint to offshore routing was the dumping grounds of unexploded ordinance (UXO) disposed of on the seabed at the end of World War II. Another key constraint was the stability of the Albanian slope between the continental shelf and the abyssal plain. The pipeline route alternatives and the finally selected route for crossing the Adriatic Sea are shown in *Figure 3-6*.



<div><div><div>Trans Adriatic Pipeline</div></div><div></div></div>		Page 21 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

**Figure 3-6 Offshore Route Alternatives**



Source: TAP AG (2011) TAP-FEED-AL EIA-REP-7001 – Albania Route Alternatives Appraisal

Note: Route 00 (red) = selected offshore pipeline route between Albania and Italy across the Adriatic Sea

 		Page 22 of 61				
Project Title:	Trans Adriatic Pipeline – TAP	Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type
Document Title:	ESIA Albania - Non-Technical Summary	AAL00-ERM-641-Y-TAE-1002				Ser. No.

## 4 ENVIRONMENTAL AND SOCIOECONOMIC CHARACTERISTICS OF THE PROJECT AREA

### 4.1 Onshore Pipeline Route Characteristics



The base case route selected through Albania can be subdivided into five distinct onshore sections based on their natural environment and land-use. From east to west according to the kilometre point (Kp) or chainage of the pipeline route, the main characteristics are as follows:

The **eastern section** (Kp 0-50) of the route passes close to the city of Korça and is primarily lowland agriculture, dominated by seasonal crops with pockets of permanent crops. To the west, the route crosses the Berat region, including the two districts of Berat and Skrapar. The mountainous area of Skrapar is scattered with small isolated settlements whose main economic activity is farming, often subsistence, both for seasonal crops and animals. The Berat district is characterised by larger and better connected settlements and although farming is prevalent, most have a more diverse economy. The city of Berat (population of 65,000) has a mixed economy, including a growing tourist industry. Refer to *Section 6.4* for detail on the anticipated effects of the Project on the socioeconomic environment.

This section of the route crosses the Devolli River and other more minor watercourses that have ecologically important aquatic habitat and riparian forest. The route also passes within proximity to a portion of the Cangonji Managed Natural Reserve (IUCN Category IV conservation status). Refer to *Section 6.3.1* for detail on the anticipated effects of the Project on the biological environment.

Much of the corridor of the **central-east section** (Kp 50-65) is forested, with areas of seasonal crop production found in the surrounding areas of the settlements. The Vithkuq Commune is hilly, with a mosaic of forested areas, grazing and seasonal crop production.

The **central section** (Kp 65-130) area is prevalently mountainous with altitudes above 2,000 masl; the Osumi River (main tributary to the Semani River) is the most important water source within the corridor. It starts in the Ostrovice Mountain and passes through an area of mixed forest. The first 20 km of the route in this section is remote, with one village called Backë, situated at the end of the road that connects this village to Çorovode (regional population centre), running through Çorovode municipality before passing through the communes of Qendër (Skrapar District), Vëndreshë, Bogovë and on to Polican. There is a mix of forest and pasture in the mountainous areas, and predominantly agricultural land in the lowland valleys of the Osumi river.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 23 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							



The **central-west** section (Kp 130-185) of the route begins in Polican and continues west through Berat and north of Fier until it reaches the village of Strum. The route passes through a variety of landscapes, beginning in a mountainous area outside of Polican which is a mosaic of seasonal and permanent crop production and grazing. The route runs north of the city of Berat through an area of olive groves, vineyards and fruit trees (the main income source in this area). The route then enters the land of Kutalli Commune where there is a mix of forest and arable land. As the route leaves Kutalli Commune the land begins to flatten and becomes increasingly dominated by large agricultural plains, with communes relying on seasonal crops such as wheat, maize, oats and vegetables.

The **western section** (Kp 185-209) of the route is located in the Fier district. It starts in an area of undulating hills which then flatten as the route moves towards the Adriatic coastline. In this area the settlements are large and well connected. Agriculture remains important; especially livestock, but also vegetables produced in extensive greenhouses. There are several large industrial areas in and around Fier that also offer alternative employment. This section traverses the coastal plain of Grykederdhja Semanit-Pishe Poro (Fier) natural area which supports a wide range of ecological habitats and a diverse assemblage of birds, including breeding terns and wintering raptors. Despite routing efforts, a number of sites with recognized conservation importance are still crossed or within proximity to the route: the Semani River, to the northeast of the village of Mujalli, has rich riparian forest along its banks and water reservoirs located several hundred metres to the east and west of the crossing point; and the coastal lagoons and salt marshes located just north of the landfall are considered of special ecological interest.

## 4.2 Offshore Pipeline Route Characteristics

The offshore section of the pipeline route (assessed in this ESIA) will extend approximately 60 km from the landfall on the Albanian coast to the median line in the Strait of Otranto (i.e. midway between Albania and Italy in the Adriatic<sup>1</sup>). The section starts at a beach located in an area west of Fier. The nearshore section is approximately 7 km long, up to approximately 30 m water depth, stretching along a very gentle and regular slope (< 3%). After that point it enters the offshore section proper, sloping down to about 100 m water depth, where after 30 km it passes the boundary of Albanian territorial waters (i.e. 12 miles / approximately 20 km directly from the coast). After another 23 km, at a depth of approximately 750 m, it crosses into Italian territorial waters.

<sup>1</sup> The offshore section from the midway point to the Italian landfall is assessed in the ESIA for TAP Italy.

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 24 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							



The offshore Project area is located approximately 150 km north of the transition between the Ionian Sea and the Adriatic Sea with a physical and biological environment typical for this part of the Mediterranean. The water exchange between the Adriatic Sea and the Ionian Sea follows a seasonal pattern; in the eastern region, the inflow of water from the Ionian Sea prevails however during the summer and spring, the exchange mechanism is weakened and during the autumn, the outflow of Adriatic deep water is high. In terms of morphology, the deep seabed plain is located approximately at the median line between Italian and Albanian waters, and the Albanian continental slope is deeply incised by canyons and channels. In the Albanian nearshore and coastal section the seabed is very flat, due to historical coastal recession.

The nearshore environment along the Albanian Coast has been affected by considerable pollution in the last 30 years, both by discharge of polluted river water into the sea and by direct discharge of untreated urban and industrial wastewater. Nearshore sediments were found to have elevated levels of metal concentrations. No sensitive or protected habitats are found in the immediate area of Project influence along this nearshore section. Also there are no designated or proposed protected marine sites within a radius of 30 km from the pipeline landfall.

The offshore waters are an important migration route for sea turtle nesting grounds located further north, but no baseline evidence was found of nesting grounds on the section of the Albanian coastline where the landfall is proposed. Seven marine mammal species are known to inhabit the Adriatic, bottlenose and striped dolphin being the most common.

The main type of fishing activity along the Albanian coast is trawling, and to a lesser extent purse seiners, both fishing from the main ports. There are no landing sites or coastal communities in the vicinity of the landfall area. Fishing activities in the proposed Project area consist of very small scale artisanal fisheries, and trawling areas that start at a distance of approximately 6 to 7 km from the coast and extend over the border with Italy. Marine traffic is also infrequent in the Project area when compared with other parts of the Adriatic. There is limited tourism infrastructure in the Project coastal area, with beaches predominantly being used by the local population during summer months.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 25 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						

## 5 STAKEHOLDER ENGAGEMENT

### 5.1 Stakeholder Consultation and Project Information Disclosure



TAP AG is following the local Albanian EIA requirements which include public consultation and disclosure, and in addition the EBRD PR10 requirements for stakeholder engagement. This is embracing statutory stakeholders such as authorities, agencies and administrations, as well as NGOs and the public, in particular the population in the vicinity of the pipeline route and Project facilities. For structuring the activities TAP AG has set-up a *Stakeholder Engagement Plan* (SEP).

The process of stakeholder engagement to support the TAP ESIA is being undertaken through six phases, as shown in *Figure 5-1*. At present, Phases 1-4 are all complete and Phase 5, public disclosure and consultation on the results of the ESIA is upcoming, after submission of the ESIA to the competent authorities.

**Figure 5-1 Phases of Stakeholder Engagement for the TAP Project ESIA**

<p><b>Phase 1- Pre-Scoping</b></p> <p>Strategic engagement with government and key informant groups in order to provide overall information about the Project, gauge its viability and identify any key issues early.</p>	Completed
<p><b>Phase 2 – Route Refinement</b></p> <p>Introduce the Project to key stakeholders including national, regional and local authorities and potentially affected communities, to identify any key issues and sensitivities such as sites of interest to be considered in route selection as well as identify any vulnerable groups and gather baseline information.</p>	
<p><b>Phase 3 – Scoping</b></p> <p>Revisit the stakeholders contacted during the Route Refinement phase at a national and regional level along with those along the chosen route in order to provide further detail on the project and generate feedback on the scope, approach, key issues and key stakeholders to be consulted.</p>	
<p><b>Phase 4 – Main ESIA Preparation Phase</b></p> <p>Maintain the relationships developed during the previous phases, and ensure all stakeholder issues have been identified. Revisit national and regional authorities and affected communities along the chosen pipeline route to provide a project update and an opportunity to comment, express any concerns and discuss issues. Also familiarise stakeholders with the grievance mechanism and provide information on the next stages of the Project.</p>	
<p><b>Phase 5 – ESIA Disclosure and Consultation</b></p> <p>Present stakeholders with the final ESIA report at the end of the ESIA process. Includes providing information on the project impacts and mitigation measures designed to minimise or, where possible, to enhance them.</p>	Planned
<p><b>Phase 6 – On-going Engagement during Project Implementation</b></p> <p>Continue to engage with stakeholders throughout the Project lifetime in order to manage the relationship between TAP AG and stakeholders.</p>	

Source: ERM (2012)

<div> Trans Adriatic Pipeline</div> <div></div>		Page 26 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

The following main stakeholder activities have so far been completed:



**Phase 1:** Between June 2005 and January 2009, initial stakeholder consultations on the Project were undertaken by TAP AG. This included a total of 11 meetings with national and regional level agencies, including: the Ministry of Environment, Forestry and Water Administration; the Territory Adjustment Council of the Fier and Gjirokaster Regions; the Council of the Regulation of the Territory of the Republic of Albania (CRTRA); the Albanian Head of the Institute of Monuments & Culture; and the Department of Economy, Trade and Energy. Discussions at this early stage were predominately focused around Project authorisation and approval to proceed with ESIA studies.

**Phase 2:** Between May 2009 and March 2010, intensive fieldwork was undertaken as part of the routing process. This included wider stakeholder engagement to introduce the proposed project to all potentially affected stakeholders and gather additional information on constraints relevant for the route refinement process. During this phase, 4 regional, 6 districts, 30 communal and 68 village administrations and authorities were consulted.

After completion of the route refinement process, a public disclosure program was carried out during June and July 2010. This involved 8 national level institutions (6 ministries and 2 agencies), a focus group discussion with NGOs and 7 meetings at a regional and local level including NGOs and commune village representatives. These meetings informed stakeholders about the results of the route selection process and the location of the proposed route corridor.

**Phase 3:** In April 2011, following the identification of the preferred route, an ESIA Scoping exercise was carried out with the participation of government and NGO representatives and local authorities including regional representatives, heads of commune/municipality and heads of village. Meetings were also held in Tirana with national government representatives and NGOs. In total, 11 meetings were held with 37 representatives from national level authorities based in Tirana including Ministries, governmental agencies and regulators. In addition, a meeting was held with NGOs and other interested parties comprising 12 organisations from a variety of sectors. Additionally regional, commune and village level government stakeholders were invited to participate in meetings organised by TAP AG in Korca, Corovoda, Berat and Fier. These included regional representatives from 7 communes and 21 settlements along the route in which there were 66 participants. During this phase, the main channel of communication with local communities was through the local authorities. Heads of villages were provided with materials to support them to inform their communities of the scoping process and provide channels for communication direct to the TAP Project.

**Phase 4:** In June and September 2011, engagement focused at the local level in order to ensure that stakeholders had an opportunity to learn about the Project, to ask questions and raise concerns. Engagement was also used to gain information that was of importance in the assessment of impacts and development of mitigation measures, as well as to further refine the route in certain sections. The views and concerns of stakeholders raised were used to further refine the route in the on-going ESIA process. In total during this phase of stakeholder

<div> Trans Adriatic Pipeline</div> <div></div>		Page 27 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

engagement approximately 140 consultation events with different formats were held with an outreach of about 1,460 recorded participants.<sup>1</sup> This included 71 local level meetings across 32 communes and 69 settlements along the route (in Devoll 8; in Korca 16; in Skrapar 13; in Berat 22; and in Fier 12), 38 focus group discussions in villages (in Devoll 6; in Korca 7; in Skrapar 7; in Berat 10; and in Fier 8), and 24 local key informant interviews (in Devoll 4; in Korca 7; in Skrapar 3; in Berat 5; and in Fier 59).

Key questions and topics raised by local stakeholders related to<sup>2</sup>:



- Understanding of the Project, its elements and implementation aspects and timeline (refer to *Section 2*);
- Project impacts on land and livelihood and foreseen compensation (refer to *Section 6.4.1*);
- Impacts and their mitigation such as: noise and disturbance; potential contamination of water resources; disruption to access routes; interaction with local development areas; cultural heritage and impacts to forestry (refer to specific assessment summaries provided in *Section 6*);
- Project benefit requests related *inter alia* to: training and employment opportunities; road improvements; improvement to community infrastructure such as irrigation and sewer systems; and improvement to education and health facilities (refer to *Sections 6.4.2* and *6.4.4*);
- Provision of gas for local supply (refer to *Section 6.4.2*);
- Concern over the capacity of the government to regulate the Project effectively to ensure that standards are upheld; and
- If and how revenues levied from the Project would be shared at local level (refer to *Section 6.4.4*).

An additional 7 meetings were held in February 2012 with high level stakeholders. These included traffic authorities to discuss the proposed approach to assess the effect of Project generated traffic on the local and regional road networks. Meetings were also held with representatives of the Ministry of Environment and two environmental NGOs to present TAP AG's approach in assessing any potential Project interactions with Protected Areas along the route. In addition, TAP AG met with the Head of Albanian Archaeological Services to discuss future opportunities to collaborate and present TAP AG's cultural heritage field survey activities.

<sup>1</sup> Due to constraints that became known during consultations in June 2011, a re-routing was undertaken in response, and stakeholder engagement on the new route section (known as Alternative 6A, the *so-called* 'Korca loop') took place in September 2011. This new section starts from the Greek-Albania boarder in the village of Trestenik (Bilisht municipality, Devoll district) and goes to Ujëbarde (Mollaj commune, Korca district).

<sup>2</sup> Local perceptions of the TAP Project and a detailed account of stakeholder consultation during ESIA development are presented in *Section 7* of the main ESIA document. Specific Project responses to comments, concerns and expectations raised during recent detailed planning can be found in *Section 8.24* of the main ESIA document.



<div> Trans Adriatic Pipeline</div> <div></div>	Page 28 of 61					
	Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>	AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						



**Figure 5-2 Stakeholder Meeting Photographs**



*Pictures: top left – key informant interview in Poshnjë (Berat); top right – women's focus group in Qafë (Potom Commune, Skrapar); bottom left – community meeting in Seman (Topoje Commune, Fier); bottom right - community meeting in Trestenik (Progër Commune, Devoll). Source: ERM (2011)*

**Phase 5:** The next phase of engagement will be ESIA disclosure which is planned to be undertaken along the route during 2013. This involves dissemination and presentation of the final ESIA report in Albanian to all stakeholders, including the public.

Comments raised by stakeholders during the ESIA disclosure and consultation will be documented as an *Addendum* to the ESIA along with the *Project Response* of how the Project has taken these matters into account.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 29 of 61							
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title:		Trans Adriatic Pipeline – TAP				AAL00-ERM-641-Y-TAE-1002			
Document Title:		ESIA Albania - Non-Technical Summary							

Phase 6: TAP AG will continue to undertake stakeholder engagement activities throughout the Project development and implementation. It will also monitor and evaluate outreach effectiveness for further improvement of the process if needed. During Project construction TAP AG will inform communities about construction activities through bulletins on the Project website and via press and media announcements, including local postings in the settlements. TAP AG will be in close contact with the local municipalities via the *Community Liaison Officers* who will also follow-up on grievances that may occur (see *Section 5.2*). Also, during Project operation, TAP AG will keep stakeholders informed on planned activities (e.g. pipeline maintenance or station venting) and will proactively provide information on pipeline safety and emergency response by leaflets and information events. Regarding the envisaged *Social and Environmental Investment (SEI) Programme*, TAP AG will organise stakeholder and community meetings as required.



## 5.2 Grievance Mechanism

During Phase 1 – 5 TAP AG has recorded all comments and suggestions received from stakeholders and has provided opportunities for feedback. For Project implementation (Phase 6), a *Grievance Mechanism* will be set up by TAP AG. Any affected individual (including Project construction workers), group of people or organisation can report any complaints, or other problems relating to any aspect of the Project freely, without cost and with no retribution. Reported grievances will be followed up by TAP AG who for this purpose will appoint Community Liaison Officers. Contact details will be published at the time of ESIA report disclosure. The CLOs will be present on site and will serve as the direct point of contact for communication of any concerns or grievances for local people in the villages along the route. Upon receipt of complaint or comments the CLOs will investigate the matter and trigger corrective actions as needed. The grievance process will be documented and within 21 working days of log-in, TAP AG will inform the complainant about the proposed resolution of the grievance, for example, how a corrective action is planned or the reasons why no action will be undertaken. In case a more complex grievance issue arises that cannot be readily resolved, a “*conflict resolution committee*” including local representatives may be established.

Information about the Grievance Process will be provided in the updated *Stakeholder Engagement Plan* (SEP), which will be available to the public during ESIA disclosure in all local administration offices and at any time on the Project website (Contact details for the TAP branch office in Tirana are provided at the end of this NTS.)

All construction workers will be informed of the Grievance Process when they join the Project and information on contact points will be made available. All contractors and sub-contractors will be required to operate to the same standards as TAP AG and to provide regular reports on all received complaints or suggestions and how they have been addressed.

The *Grievance Mechanism* will remain in place after construction throughout Phase 6 as described above.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 30 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## 6 ANTICIPATED IMPACTS, RISKS AND OPPORTUNITIES, AND FORESEEN MANAGEMENT MEASURES

### 6.1 Scope of the Assessment and Studies Undertaken



Based on the pertinent regulatory requirements, the Project is subject to Environmental Impact Assessment (EIA) as part of the permitting procedure in Albania. While the Albanian regulatory framework refers to EIA only, TAP AG is also looking at the socioeconomic implications of the Project as per international best practice. Through the Environmental and Social Impact Assessment (ESIA) process, TAP AG identifies, addresses, and manages all socioeconomic, environmental and cultural heritage impacts, risks and opportunities in a systematic and comprehensive manner.

In addition to the Albanian local standards TAP AG has selected the *Performance Requirements* (PR) of the *European Bank for Reconstruction and Development* (EBRD) to serve as the benchmark to ensure that adverse impacts and risks to people, their rights, livelihoods, culture and environment is avoided or, where avoidance is not possible, minimised, mitigated, offset and/or compensated, and also where feasible, to identify and adopt opportunities to enhance environmental and social performance of the Project. This approach also provides for conformance with European Union (EU) Directives and further with the requirements of the *Performance Standards* (PS) of the *International Finance Corporation* (IFC) and other international project finance institutions (IFIs) who refer to these standards (e.g. Equator Principles). TAP AG are committed to fulfil the above principles and the requirements of the EBRD PRs and have set this out in a policy document on ESIA for the TAP Project.<sup>1</sup>

The ESIA covers onshore and offshore environments and its spatial scope varies depending on the respective receptor. It also considers transboundary effects on neighbouring Italy and Greece. The temporal scope of the ESIA covers the three main phases of the Project, *i.e.* construction and pre-commissioning; operations and maintenance; and decommissioning.

The assessment was informed by a number of studies and supporting information which includes *inter alia* modelling studies for air and noise emissions for pipeline and compressor station construction and operation, a hydrotest concept, a sediment dispersion modelling study for the nearshore marine section at the landfall, studies on geohazards (such as land stability, seismicity) and geotechnical conditions. The assessment of impacts on designated protected areas (including proposed Emerald sites) and sites of conservation note was informed by an *Habitats Directive Assessment* (HDA). The assessment of socioeconomic impacts and risks is further informed by a *Human Rights Impact Assessment* (HRIA) study.

<sup>1</sup> <http://www.trans-adriatic-pipeline.com/tap-project/health-safety-and-environment/corporate-social-responsibility/>

<div> Trans Adriatic Pipeline</div> <div></div>		Page 31 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

The impact assessment used a commonly accepted, internationally practiced ESIA methodology.<sup>1</sup> Based on the nature of the predicted impacts and the evaluation of impact significance, mitigation and management measures were identified and further actions specified.

Risks and impacts resulting from non-routine operation scenarios and their mitigation were assessed based on risk assessment studies. The assessment of construction impacts has also looked at environmental and socioeconomic risks such as accidental spills to soil and water; traffic accident risk from logistics, socioeconomic community risks, socioeconomic issues of employment including worker rights, etc. These topics are dealt with qualitatively, whereas operational risks are discussed also in quantitative terms.

The impact assessment results are presented in the following sections for the construction and operations phase. Potential impacts resulting from the decommissioning phase are presented for the total of relevant receptors at the end of this Section.

## 6.2 The Physical Environment

### 6.2.1 Ambient Air Quality and Climate

#### Construction and Pre-Commissioning Phase:

Onshore: Project construction may locally lead to nuisance from dust generated by construction traffic. Standard mitigation measures such as suppression by water spraying will be applied where dust generating activities like earthworks or transport on unpaved roads take place in the immediate vicinity of settlements. Settlements in the vicinity of the compressor station construction sites are unlikely to be significantly affected by dust since they are located over 1 km from the working sites.



Offshore: Offshore construction will only lead to a highly localised increase in airborne pollutants as a result of the operation of construction vessels. In terms of local air quality the highly dispersive nature of the marine environment and the absence of local receptors results in any impact being not significant.

#### Operation and Maintenance Phase:

Onshore: Project operation, notably the operation of the compressor stations, is not anticipated to result in significant ambient air impacts on the relatively unpolluted airsheds. The results of the dispersion model show that the operation of both compressor stations<sup>2</sup> does not lead to any significant increase in NO<sub>x</sub> short or long term concentrations at sensitive receptors in the relevant airsheds when compared to the relevant Albanian and EU limit values.

<sup>1</sup> The significance of impacts is evaluated based on the importance of the receptor, its sensitivity towards Project specific activities and the characteristics of the impact, including considerations on reversibility.

<sup>2</sup> The compressor stations will be fuelled with low sulphur natural gas.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 32 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						

Specific greenhouse gas emissions (GHG) from the compressor station operations are relatively low when compared to other conventional thermal power generation due to the use of natural gas. In total, CS02 and CS03 operation together (in the 20 bcm/yr case) will emit approximately 706,000 tons CO<sub>2</sub> equivalent/year. However, since Albania is not very industrialised and most of its power is produced by hydro power plants, the TAP Project will for the near to mid-term future significantly add to Albania's GHG emissions, as the operation of the compressor stations will account for approximately 7 % of the country's GHG emissions when compared to estimates for 2010.

Offshore: During operation, occasional maintenance work will require the presence of vessels which will not have a significant impact and is comparable to any increased presence of other vessels in the region.

### **6.2.2 Acoustic Environment**

#### Construction and Pre-Commissioning Phase:

Onshore: Construction of the pipeline and the compressor stations will result in temporary noise disturbance for the population in the vicinity of construction sites. Whilst pipeline construction and logistics will mostly take place during daytime, construction of the compressor station may require some limited night-time work. The designated compressor station sites are, however, located over 1 km from the nearest sensitive receptors.

Offshore: Construction of the pipeline and the presence of vessels will result in a localised, temporary noise impact on receptors present within the vicinity of works. Birds and marine mammals will potentially be exposed to noise produced by construction vessels but this impact is considered not to be significant, as fauna will typically be able to avoid the limited areas of disturbance. Nevertheless, mitigation will include limiting noise generation during peak breeding seasons.

Seabed intervention works, which include dredging of the flotation channel and trenching, are limited to a very small section of the pipeline route near the landfall. No significant impacts on fish or marine mammals are anticipated (see *Section 6.3.2*).

#### Operation and Maintenance Phase:

Onshore: During operation, the areas immediately surrounding the compressor station sites will experience permanently increased noise levels from turbine operation, whereas the pipeline will not be a source of noise. Noise dispersion modelling has shown that the compressor stations are anticipated to operate within relevant noise limit values.

The planned once-per-year depressurisation of the compressor stations will create a few days of elevated noise levels. Although this may be perceived as a nuisance by the population of the nearest settlements, they will be pre-informed about relevant planned maintenance activities and the planned station venting events.



<div><div><div><div></div><div>TAP</div><div>Trans Adriatic Pipeline</div></div><div><div>e-on</div></div></div></div>		Page 33 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

Offshore: The temporary presence of occasional vessels for offshore maintenance work will have no significant impact on the acoustic environment.

### 6.2.3 Freshwater Resources (Groundwater and Surface Waters)



#### Construction and Pre-Commissioning Phase:

*River crossings:* the highest potential for direct impacts on surface waters will be at locations where the pipeline route makes watercourse crossings. In total about 372 watercourses of various dimensions will be crossed along the Albanian section (the largest being the Osumi and Semani rivers). The technically preferred crossing method for the Osumi River is the open-cut technique. However, in response to ecological sensitivities identified for the Osumi River and other watercourses, trenchless crossing methods are to be considered depending on local topographical and geotechnical constraints. Further technical and environmental investigations will therefore be undertaken during the crossing agreement process for each watercourse to determine which crossing method will be used (in consultation with the relevant authorities). A *Watercourse Crossing Plan* will be established through the *Environmental and Social Management Plan* (ESMP) framework (refer to *Section 7*) for each crossing which will include site-specific specifications for minimising sediment dispersion and impacts on river ecology. An *Erosion and Sediments Control Plan* will be developed in parallel to detail erosion control measures and long-term site stability / erosion monitoring at the crossings.

*High groundwater table areas:* the pipeline route crosses several sections where high groundwater tables are likely to be encountered. Groundwater pumping needs and surface runoff will be identified and managed as part of the *Water Management Plan*. Intensive dewatering of the pipeline trench during construction will be avoided by state-of-the-art technical measures (subject to further detailing of construction concept). This will minimise discharge to surface waters and keep the local groundwater level stable (fluctuations in shallow groundwater can dry topsoils, thus affecting vegetation and building foundations in the proximity).

*Accidental spills at large pipeline construction sites:* potential risk for uncontrolled site run-off and accidental spills of fuels and lubricants will be efficiently controlled by site runoff management, wastewater treatment, waste management and the proper storage and handling of such substances. Such control measures will be implemented through a number of plans and procedures which are standard practice in the industry: *Pollution Prevention Plan*, *Waste Management Plan*, *Hazardous Materials Management Procedure*, and *Spill Prevention and Response Plan*. Special caution will be required to prevent silting or spills near locations where the shallow aquifer or surface water is used for local water supplies.

Special measures will also be required where the pipeline crosses potentially contaminated lands (hydrocarbon contamination from previous crude oil production from the Marinez oil fields around KP 184-186). Here excavated soil and groundwater will need to be properly disposed of as hazardous waste and will be managed through a *Contaminated Lands Crossing Plan*.

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 34 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

*Water intake:* the Project will require large quantities of fresh water (an approximate total of 245,000 m<sup>3</sup>) for hydrotesting<sup>1</sup> from local watercourses. A specific *Hydrotesting Plan* will be prepared by TAP AG before commencement of the activities. The guiding principles will include: (1) water abstraction and discharge limited to surface water sources with larger flows, (2) consideration of seasonal changes and (3) reuse of hydrotest water for consecutive pipeline sections. A *Water Management Plan* will also be established to set out procedures for managing and minimizing water used (including water required for domestic uses at construction camps and localised dust suppression).

#### Operation and Maintenance Phase:

Potential impacts on water sources during operation are limited to storm water runoff at the compressor stations. Water will be collected and sent via sediment traps and oil separators before discharge. The potential for accidental spills is unlikely as no regular handling of any large quantities of hazardous substances is foreseen and standard storage and housekeeping of these substances will be the practice.

Water consumption at compressor stations will be minimal and therefore no conflict with water use for irrigation, public water supply or similar is anticipated.

### **6.2.4 Subsurface and Soil Resources**

#### Construction and Pre-Commissioning Phase:



Soil is a non-renewable resource that performs many vital functions: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials.

The construction of permanent Project components will cause the loss of soil resources at certain locations, including: (1) 69 ha (2 x 34.5 ha) of agricultural lands at the compressor station sites (CS02 and CS03) (2) a total of 0.6 ha at block valve station sites (each BVS 20 x 30 m = 600 m<sup>2</sup>; 10 BVS = 6,000 m<sup>2</sup>) (3) a total of 140 ha along approximately 69 km of newly established access roads<sup>2</sup> and approximately 86 km of upgraded existing roads (widening and compacting).

Although soils along the working strip will be removed during construction and reinstated after installation of the pipeline, resources will be modified to some extent. Some 795 ha will be covered under the working strip, of these about 216 ha were identified sensitive to compaction and 55 ha sensitive to erosion.

<sup>1</sup> Hydrotesting (or hydrostatic testing) is the most common method for testing the integrity of the pipeline and checking for any potential leaks (e.g. from faulty welds or cracked pipe work) prior to commissioning. The test involves placing water inside the pipeline at a certain pressure and for a pre-defined test duration to check that the pipeline is not damaged and will not leak during operation.

<sup>2</sup> Including 8 km of optional new road from Vithkuq to Ostrovice.

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 35 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

In order to minimize and manage potential negative impacts on soils a range of mitigation measures will be established. The range of measures will be developed through the ESMP and specifically include the definition of an (1) *Erosion and Sediments Control Plan* (to manage excavation activities and detail restoration work procedures), a (2) *Spill Prevention and Response Plan* (to minimize the risk of and the impacts due to any unintentional pollution from construction activities), and a (3) *Contaminated Lands Crossing Plan* (for managing existing contaminated soils in areas being crossed by the route such as the Verri village - Kp 184 - 186).

If subsurface material excavated from the working trench is suitable, it will be recycled for bedding and padding for pipeline laying. If additional aggregate material (i.e. sand and gravel) is required it will be obtained from local designated and approved quarries, where possible. If new sources are required the appropriate permits will be obtained prior to extraction. An *Aggregates Management Plan* will also be established to provide recommended best practice procedures needed to ensure adequate management of aggregate material throughout construction.

#### Operation and Maintenance Phase:

During operation there are no relevant activities that may create any significant impacts to soils, other than the presence of permanent above-ground installations (as discussed for the construction phase). Pipeline route maintenance involves only occasional route inspection by vehicles.

### **6.2.5 Landscape and Visual Amenity**

#### Construction and Pre-Commissioning Phase:

Construction activities, especially the working strip itself will be visible during the construction phase. However, the majority of the working strip will typically be integrated into the landscape a couple of years after site restoration and vegetated areas have re-established. The pipeline route will, however, remain visible in the landscape as a narrow corridor where it crosses woody vegetation (forested areas and shrublands) and permanent plantations such as orchards and vineyards, as the pipeline protection strip of 8 m width must be kept free from woody vegetation. This corridor will mainly be visible from a distance, in particular from where the pipeline route is running perpendicular on wooded slopes. In addition, new roads of total about 69 km which have to be built for construction access may affect views locally.



A *Landscape Management Plan* will be developed to detail landscaping and restoration works of lands along the pipeline route, in conjunction with a *Site Reinstatement Plan*.

#### Operation and Maintenance Phase:

The 209 km long onshore pipeline section<sup>1</sup> will be buried and therefore will not be visible as a feature itself. Only above-ground installations, most prominently the compressor stations CS02

<sup>1</sup> If elevation is considered, the total onshore pipeline length in Albania is 211.8 km.



<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 36 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

and CS03 with a building height of about 20 m, and each station with 5 stacks of about 30 m and a 70 m high vent each, will be visible. The site for CS02 is located in undulating terrain near the hill lands towards the Greek border and will be levelled; CS03 is located in the coastal floodplain and will be elevated by 1.5 m above the flat terrain. CS02 will be seen from more places at a distance due to the surrounding topography. Distance to the closest settlements for both stations is 1 - 2 km, but photomontages from representative viewpoints and the villages indicate that the present rural area character will be noticeably changed. To mitigate the technical impression of the installations, it is foreseen to use a building design that makes it less prominent against the rural background, and to plant vegetation screens composed of trees around and in the vicinity of the stations. These will become effective once the vegetation has matured after about 10 years, and for near distance views would conceal most of the buildings, leaving only stacks and vent visible. Further detailed planning will specify these measures in a *Landscape Design Plan* for each station. The foreseen approximately 10 block valve stations along the route are relatively small sized features with mainly underground installations and therefore no significant impacts on the landscape are predicted.


The pipeline sections across the remote Ostrovice Mountain ridge will lead to changes to the ridge topography. Five sections of ridge line, covering a cumulative distance of 28.5 km (the longest section being 12 km) will be modified to the south and west of Ostrovice Mountain (subject to further detailed engineering). Where the route runs on the ridgeline, cutting of the crest will provide a minimum construction platform of 18 m in width. Cut material will be properly deposited at suitable slopes and landscaped. A view shed analysis and photomontages confirm that visual impacts from these ridge modifications will not be significant for views from settlements in the vicinity, since the viewpoints are all below the modified areas. From higher elevations such as from the roads and tracks of the Ostrovice Mountain area, occasional local users will however see the ridge modifications. The modified ridge lines will likely remain as bare rock as, due to the topographic and climatic conditions, there are very limited possibilities for landscape mitigation. However, the area is not currently a tourist area and is only sparsely populated, thus the number of potentially affected viewers is likely to be limited.

## 6.3 The Biological Environment

### 6.3.1 Flora, Fauna, Habitats and Biodiversity - Onshore

#### Construction and Pre-Commissioning Phase:

Out of the total of about 795 ha within the working strip 482 ha are agricultural lands and therefore should be easy to restore from the temporary work activities. Certain key areas have been identified along the route in which areas of high ecological value are present. The total loss of natural or EU-listed habitats from the working strip footprint amounts to about 376 ha, of which about 104 ha are made up of forest habitats (roughly 28% of the whole working strip). Additionally, habitat loss will occur where access roads are constructed / upgraded, and in areas required for the permanent and temporary facilities such as the compressor stations, grid connections, block valve stations, storage yards and construction camps. Vegetation will be

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 37 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							



allowed to re-establish after construction works are completed with the exception of the 8 m pipeline protection strip where only annual crops or low vegetation are allowed to protect pipeline integrity and to provide access possibilities for pipeline route inspection and maintenance activities (total of 167 ha). Thus in areas where the pipeline passes through natural or semi-natural environment, this pipeline protection strip will not be able to regenerate over time to the original habitat type unless the original habitat is grassland or similar. Losses of vegetation of ecological note – especially old growth forest - will be of key importance within the Vithkuq – Ostrovice, Corovode and Osumi River valley areas. In these areas impacts on mature forest will be reduced by applying a reduced working strip (28 m width) to the extent that constructability and construction logistics permit. Further transplanting of plant specimens from the working strip will be applied for certain protected species; this is limited however to species for which regrowth success is likely. Losses of natural and semi-natural vegetation will be mitigated by habitat restoration or replacement, i.e. replanting the temporary affected footprints with regional plant species and seeds. These measures will be detailed in the *Site Reinstatement Plan* and *Landscape Management Plan*.

The pipeline route traverses a range of fauna habitats important for large mammals and birds. Disturbance will be minimised by avoiding construction of relevant pipeline sections at sensitive times, such as breeding or hibernation periods and restricting construction time to daytime hours. In addition, the implementation of specific fauna plans will allow minimization and mitigation of impacts on fauna (e.g. *Biodiversity Action Plan*, *Bear/Large Mammal Interaction Plan* and *Osumi River Biodiversity Action Plan*).

River crossings have the potential for disturbing and impacting riverine ecology. Impacts on flora and fauna will be reduced by using trenchless crossing techniques, or where this is not possible due to geotechnical or other technical feasibility constraints, open crossing techniques that minimise sediment dispersion and turbidity plumes in the river flow will be used at periods of the year when river discharge is low. Environmental protection and mitigation measures for each river crossing will be included in the *Water Courses Crossing Plan*. In addition, other relevant plans/procedures will include: *Spill Prevention and Response Plan*, *Waste Management Plan* and *Hazardous Materials Management Procedure*, *Erosion and Sediments Control Plan*.

Despite efforts to avoid important areas of conservation through the design of the pipeline route, a number of sites with recognized conservation importance will be crossed including the Nationally Protected Forest of Merkeza Monument as well as a number of designated sites (although not formally protected by Albanian law) which are also crossed by the route. These are at Morava (candidate Emerald Site and CORINE Biotope<sup>1</sup>) – crossed at its northern margin, Vithkuq – Ostrovice (CORINE Biotope), and the Grykedhja Semanit – Pisha Poro (CORINE Biotope). The crossing length of these sites is approximately 13 km in total. Further, consultation

<sup>1</sup> The CORINE Biotopes database is an inventory of sites of major importance for nature conservation. The European Corine classification was developed in the 1980s and is used to derive 'habitats', meeting the requirements of the European Habitats Directive.

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 38 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

undertaken with the Ministry of Environment, Forestry and Water Administration (MoEFWA) in February 2012 and in July 2012 has identified that the current boundary of the Tomorr-Kulmak candidate Emerald Site and National Park submitted to the Council of Europe is incorrect, and since the boundary has been formally corrected, this site will now remain unaffected by the TAP Project.

The Vithkuq-Ostrovica CORINE Biotope site was assessed in a *Habitats Directive Assessment* (HDA, annexed to the main ESIA) as being potentially affected by disturbance and loss of priority species and habitats within and adjacent to the CORINE Biotope. Also the multiple crossings of the ecologically sensitive Osumi River, downstream of the settlement of Corovode, have the potential to cause cumulative impacts on aquatic habitats and species, depending on the final crossing techniques.

Therefore, in designated areas, as well as other sensitive sites, careful implementation of the mitigation measures identified in the ESMP is required. In addition, where required, compensation in the form of biodiversity offsets will be included.

TAP AG will require from the EPC contractor that the implementation of ecological mitigation measures (as they will be further detailed in a *Biodiversity Action Plan* (BAP) for construction and site restoration) will be supervised by an *Ecological Clerk of Works* (ECoW).

#### Operation and Maintenance Phase:


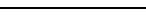
During Project operation, indirect impacts on flora and fauna are anticipated within the Vithkuq-Ostrovica and the Corovode areas (from improved access). Therefore, as part of the BAP and to compensate for indirect habitat losses that are difficult to predict (especially as the Vithkuq-Ostrovica access road is optional), biodiversity offsets will be implemented to restore forest in these areas. Furthermore, careful monitoring of illegal logging and poaching activities, as well as species and habitats will all be carried out as part of the BAP and this information will be used to help with future designation in these areas. In order to avoid fauna disturbance during operation, the schedule and mode of pipeline route patrols and any activities to keep the pipeline protection strip from deep rooting permanent vegetation will need to consider sensitive fauna periods.

### **6.3.2 Flora, Fauna, Habitats and Biodiversity - Offshore**

#### Construction and Pre-Commissioning Phase:

The offshore pipeline route in Albanian waters is approximately 60 km in length, however the corridor of potential impacts along the route changes in width as the Project construction and operation scope changes (e.g. direct laying on sea bed, intervention works, shore approach method, etc.) and as well as the nature of the physical environmental conditions (e.g. sediment types, bathymetry, etc.).

The main impact sources are the temporarily dredged flotation channel which will be approximately 2 km long from the end of the cofferdam and will have an approximate width of 160 m and 7 m of depth, the handling of anchors, intervention works in the seabed including

<div> Trans Adriatic Pipeline</div> <div></div>		Page 39 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

dredging (floatation channel), and the construction of a cofferdam at the landfall, pipe-laying, vessel movement and the activities associated with hydrostatic testing of the pipeline.

Construction works on the seabed will result in the disturbance and subsequent re-suspension of sediments together with the associated compounds such as nutrients and contaminants, which are present.

Pipe-laying can result in the re-suspension and spreading of sediments due to the current generated in front of the pipeline as the pipeline is lowered on the seabed. This is exacerbated if dredging activities are conducted during the autumn / winter months because of increased wave and current action. During the construction period the highest suspended sediment concentration is likely to be found in the cofferdam area. Anchor handling involves the placement and retrieval of 10-12 anchors on the seabed for every 200-600 m of pipeline laid. Both activities will result in the re-suspension of sediments.


The use of silt screens in terms of sediment re-suspension, the dredging, and backfilling of the flotation channel will be a Project mitigation measure. This will limit the spatial distribution of the sediments. Anchor handling and pipe-laying are expected to have an insignificant impact on spreading but will also be managed in order to minimize physical disturbance to the seabed. Anchors will not be dragged through the seabed but rather raised for relocation, and dynamic positioning will be used in deeper waters, which will not require anchor handling.

The release of hydrotest water during pre-commissioning is likely to cause some seabed disturbance due to re-suspension of sediments also to potentially interfere with the plankton dynamics. Nevertheless these are expected to be not significant.

The natural seabed surface that will be affected due to the construction activities will be restricted to the flotation channel, the pipeline corridor, and to the anchor corridor, resulting in a temporary loss of benthic habitat. In the deeper areas of the Albanian offshore environment, the impact from pipe-laying activities is also predicted to have both short-term and long-term effects on the benthos. Short term adverse effects will be avoided by re-routing to avoid sensitive habitats, in particular deep water corals (investigations are underway to provide additional baseline information to inform the detailed route planning).

Most benthic species are predicted to be able to survive even high levels of sediment deposition from construction activities. The area is expected to recover due to re-colonisation by individuals migrating from other areas.

Vessels associated with construction works will not represent a significant increase in disturbance to fish that live near the surface or in the water column (pelagic species). Pelagic species and fish that live at the bottom zone (demersal and benthic fish species) will simply move away from any area of excessive noise and vibration created during the construction phase and return once it is completed.

<div><div><div>Trans Adriatic Pipeline</div></div><div></div></div>		Page 40 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

No impacts on marine mammals are anticipated as piling near the landfall will occur in the shallow water at less than 5 m water depths, and this is not their common foraging grounds. The underwater noise will attenuate with distance and work as a deterrent during the time of the landfall construction activity. Noise and vibration are expected to have a maximum behavioural zone of influence on dolphins of approximately 1 km. In most cases marine mammals would vacate the construction area at the first instance of a foreign sound or change in background noise. This range is minimal compared with the normal activity range of these animals. The risk of marine mammal collision with vessels is considered insignificant as this risk exists mainly at speeds above 20 knots and construction fleet vessels are not expected to travel at such speeds at any point.

Potential nuisance to birds in the open waters (e.g. migrating birds, post moult flocks and birds feeding) are linked presence of vessel during construction works and would not be relevant. Similarly no disturbances on protected areas are envisaged as the Albanian offshore environment does not host any marine protected sites nor proposed sites.

Potential exists for the presence of deep water coral reefs in the vicinity of the proposed pipeline route of the TAP Project but all current literature places these coral reefs in the western Adriatic (i.e. outside Albanian waters). If during the planned detailed survey of the offshore route, any of these habitats is found, it will be circumvented by appropriate local re-routing. Impacts on designated sites and sensitive habitats are considered not significant.

#### Operation and Maintenance Phase:

After the offshore pipeline is constructed, no activities in the sea or on the seabed are foreseen during operation.

Fish species that spawn in the Albanian offshore environment predominantly spawn in the water column and therefore the physical presence of the pipeline on the seabed will not cause an obstruction to spawning. Similarly there will be no impact to fish migration. The physical presence of the pipeline may locally alter the benthic community as solid surfaces that are placed in marine environments often become colonised by marine organisms. It is expected that the pipeline will form a hard surface in what is a mixed sand and soft bottom area which will support a different community of benthos to that of the surrounding seabed. The addition of hard substrates (such as the pipeline itself and materials used during rock dumping) can have a positive impact on fish populations due to an increased habitat heterogeneity and the associated increase in prey availability gained from the presence of the pipeline and associated materials.

## **6.4 The Socioeconomic Environment**

### **6.4.1 Land and Livelihoods, Fishery and Tourism**

*Land Use and Ownership Impacts:* The Project will require permanent land take for the above ground installation, i.e. compressor stations, block valve stations, and new and upgraded roads. Overall the permanent land take caused by the Project totals approximately 70 ha for above

<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 41 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

ground installations and about 140 ha for new / upgraded roads. This land take mainly affects agricultural land (mostly private) and forests (mostly public). Additionally, areas for deposition of spoil rock and overburden in the mountainous sections of the route will be required. TAP AG will permanently acquire the land for the aboveground installations. The present landowners will be compensated at replacement value (market value plus any transaction costs). Subject to agreements, the ownership of certain new roads may be handed over to the public administration.

Pipeline construction requires a temporary land take of roughly 800 ha in total which is a result of the working strip, pipe yards and camps, etc. The amount of forest clearance required during the construction phase varies between districts, but in total 244 ha of forest will need to be cleared, which accounts for 30% of all land use within the working strip.

Wood from these areas is the main source of fuel for heating and cooking throughout the study area and an additional source of income for some households. Alternative energy sources are limited and the impact is dependent on the level of forest clearance in a single area and access to alternative areas. For instance, 108 ha of forest will be cleared in Skrapar, but within a 200 m corridor either side of the working strip there is an additional 400 ha of forest, which can be used for the collection of firewood.



Following completion of construction, reinstatement and planting along the pipeline route will be undertaken in accordance with the *Site Reinstatement Plan* and *Landscape Management Plan*. This will aim at restoring the environment to preconstruction conditions as far as possible. The pre-construction situation will be surveyed and recorded as baseline for compensation. Reinstatement measures will be agreed with the land owners / users and the local administration. Erosion protection measures will be applied as required, land drainage will be reinstated and affected irrigation systems and local roads and tracks will be repaired if damaged during construction.

In order to address land related issues and in particular compensation, TAP AG has developed a *Land and Easement Acquisition (LEA) Strategy* and the Draft *Land Access Plan (LAP)*<sup>1</sup>. The landowners will be compensated for losses and damages incurred during construction. This includes any loss of structures (e.g. greenhouses), permanent crops and loss of harvest, etc.

The ownership of the land on the pipeline route will not change, however the land will be subject to land easements which restrict certain future uses by the landowners. This includes a permanent pipeline protection strip of 8 m width where, to protect the integrity of the pipeline, no planting of trees or deep rooting permanent crops will be allowed. Approximately 100 ha of agricultural land will fall under this restriction. Agricultural works with annual crops can be carried out without problems after the pipeline has been laid. Fruit trees etc. can be replanted in the

<sup>1</sup> TAP AG is currently identifying affected properties and the related market prices which will be used as a reference for relevant land transactions.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 42 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title:		Trans Adriatic Pipeline – TAP				AAL00-ERM-641-Y-TAE-1002	
Document Title:		ESIA Albania - Non-Technical Summary					

working strip during reinstatement, but the permanent pipeline protection strip must be kept free. Land easements will be compensated by TAP AG.

In addition, land use will be restricted by the required safety zones. No construction of any buildings will be allowed within a 20 m distance either side of the pipeline (safety zone). Between 20 and 200 m from the pipeline (enlarged safety zone) only single buildings are permitted, but planned settlement development (such as local development plans set-up by the municipalities) is restricted not to approach closer than 200 m to the pipeline. Due to the mainly linear and presently mostly still uncontrolled settlement development this safety zones requirement causes actual restrictions on several occasions along the route which requires further coordination with municipalities. Compensation is considered to cover land value changes due to establishment of the safety zones and the associated land use restrictions.

Compensation for permanent and temporary land take will be carried out according to Albanian regulations and EBRD's PR5. TAP AG will establish a *Land and Easement Acquisition Plan* and details about compensation will be communicated with private and public landowners/users and agreements on land purchase and easement rights will be made well in advance before construction begins.

*Onshore Livelihood Impacts:* Since the agriculture structure in the region along the route frequently consists of small holdings which are of significance for household incomes, foodstuff self-supply and subsistence, actual livelihood impacts will need to be further addressed after a complete survey of the route. Further activities of local people who herd animals, collect forest produce or are engaged in bee-keeping are likely to be temporarily affected, however mostly only for few weeks until the pipeline is laid and construction has moved on; such impacts will also be investigated in more detail.

TAP AG will develop a *Livelihood Restoration Framework* (LRF). Entitlements for affected persons will be communicated before construction commences. Entitlements will be defined in accordance with EBRD's PR5. In the interim, whilst the LRF is being finalised, a preliminary *Draft Entitlement Matrix* has been drafted by TAP AG, which identifies the type of impact from land and easement acquisition for each Project activity and provides guidance on how stakeholders should be compensated.

*Offshore Livelihood Impacts (fishery Impacts):* The offshore construction and pre-commissioning phase is expected to last approximately 4 months. During certain parts of this period some interference with fishermen is likely to occur. This interference however is expected to be limited in geographic area and confined to a limited number of Project vessels (i.e. the temporary loss of a portion of fishing ground due to a safety zone of approximately 2-3 km radius to the pipe laying barge during construction).

The construction activities will result in temporary navigation restrictions for coastal fisheries in the near shore area up to 2 km from the location where dredging works will be undertaken. These activities will not affect trawler fisheries because these operate beyond the 2 km from the coast.

<div><div><div><div></div></div><div>TAP</div><div>Trans Adriatic Pipeline</div></div><div>e-on</div></div>		Page 43 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

After the pipeline is installed there will be no restrictions on marine vessel movements in the area. No restrictions on the operation of fishing equipment, including bottom trawling, will apply (trawling tests conducted in the North Sea show that the trawl equipment crosses this type of pipeline without any significant problems).

*Tourism Impacts:* The Project construction phase in the coast will take place mostly during winter months avoiding the peak holiday season (July and August) and minimising potential disturbance to nearby local business and residents using the beach for recreational purposes. During summer months local residents will be allowed to move through the landfall area by means of a 9-10 m wide shore corridor. After use for construction, the site will be restored to its original condition.



#### 6.4.2 Infrastructure and Utilities

##### Construction and Pre-Commissioning Phase:

The pipeline route on its 209 km onshore length through Albania will inevitably cross a number of infrastructures and utilities. This includes about 140 roads of different category including one highway in Fier, 11 main roads, 24 secondary roads and over 100 gravel and dirt roads. Roughly 80% of the road crossings will occur in the eastern route section in Korça and Skrapar districts, mostly secondary and gravel roads. Crossing activities will lead to temporary inconveniences such as delays and detours for road users. This is of particular importance to remote settlements and their accessibility in case of a local emergency and for local people who rely on a single road to bring their produce to market. In addition to roads, numerous public utility lines will need to be crossed such as piped water, sewer lines, and electricity and telecommunication cables. Further, the route will be crossing areas with irrigated lands, mainly in Devoll, Korça and Berat areas and in the coastal plain to the west of Fier drainage networks used for flood control will be crossed. Thus pipeline construction will disrupt both irrigation and drainage systems. By temporarily affecting their function, this could impact on the income and livelihoods of local farmers who rely on irrigation while at the same time increasing flooding risk.

As a mitigation measure for all infrastructure crossings documented, *Crossing Agreements* will be made with the public or private owners and works will be carried out in consultation with local municipalities and regional agencies in charge. Public notice of construction activities and implications will be made available locally. *Community Liaison Officers* will be present at work fronts to ensure that impacts from planned disruptions are minimised and that any unplanned disruptions are properly managed. A *Grievance Mechanism* will be in place with a rapid response schedule and access of affected stakeholders to a compensation process in case any unplanned disruption results in loss of livelihoods.

*Road Infrastructure:* In line with international best pipeline construction practice, major roads, such as the highway, national and regional main roads are foreseen to be crossed by trenchless methods. This will avoid any immediate impact or traffic disruption on the infrastructure and will avoid traffic disruption at the crossing location. Secondary roads (e.g. municipal, local, forest, private roads) and other carriage ways and tracks will be crossed by open cut as a standard

<div><div><div>Trans Adriatic Pipeline</div></div><div></div></div>		Page 44 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

technique. Such crossings of smaller roads can typically be accomplished within a short time so that road passage at these locations usually will be interrupted for no longer than 1–3 days. Temporary diversions will be established where no reasonable alternative local access exists. For all those roadways that serve as only settlement access or regular service e.g. of local buses, or access to agricultural lands, a temporary local diversion will be established (typically, short temporary gravel road next to the crossing section) to ensure uninterrupted accessibility of settlements. After the pipeline is installed at the crossing, all damage to public or private roads will be repaired and the conditions prior to pipeline construction will be reinstated in agreement with local authorities and infrastructure owners.



*Irrigation and Drainage Systems:* TAP AG will establish via surveys an understanding of local irrigation systems and their water supply (including boreholes, pump wells and other structures such as pump houses), times when water is needed for irrigation and which quantities and which network and irrigated area (outreach of supply of an affected irrigation feeder /supplied area) will be affected when the system is cut by the pipeline trench. Based on this, detailed planning will be made of measures to provide water supply bypasses and ensure continued irrigation flow during pipeline construction and consequent rehabilitation of irrigation systems. The same approach will apply to the drainage channels.

*Utility Lines:* Third party underground utility supply lines, e.g. water pipes and underground electricity cables, or sewage discharge pipes will be crossed by established construction methods. Short term interruptions of typically a few hours will occur upon agreement with the responsible authorities and the affected stakeholders and local population will be informed ahead of construction by local announcements accordingly. This will be especially important with regard to disruption of irrigation systems and public road access to settlements and agricultural areas.

#### *Operation and Maintenance Phase:*

Project implementation will assist in the improvement of regional infrastructure. About 69 km of new access roads to the pipeline route will be built and over 86 km of existing roads and tracks will be upgraded. Both new and upgraded roads will use gravel in order to support the way for Project vehicles (pipe trucks and construction machinery). Of the approximately 69 km of new access roads, 36 km are planned in Skrapar District, mostly in Potom and Qender communes. Also, around 40% of the upgrades of existing roads will take place in Skrapar district. Project access will be newly built / or upgraded to the needs of the Project, i.e. gravel surface roads. Subject to agreements with the district and relevant authorities (including the MoEFWA) and related agencies regarding the topics of fauna disturbance and making forest accessible with increasing risk of illegal logging and poaching), these new roads may be made accessible for public use. This may provide an opportunity to contribute to the area's economic development through the new possibility for these communities, historically cut-off from each other, to exchange goods and services.

With regard to other infrastructure such as water, telecommunications, sewage, waste and possibly health facilities might have been enhanced to support construction activities. TAP AG is

<div> Trans Adriatic Pipeline</div> <div></div>		Page 45 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

committed to continue working with government and local communities to achieve sustainable benefits for local settlements through the hand-over of these after finalising construction. TAP AG will develop an *Infrastructure and Utilities Management Plan* to maximise the use of Project infrastructure with a view to community needs. In undertaking a needs assessment prior to drafting the plan, TAP AG will pay special attention to the situation of settlements located in isolated areas and with poor access to infrastructure and services such as those in eastern Korça and Skrapar district as well as areas of population growth. The *Infrastructure and Utilities Management Plan* will be developed in close coordination with local utilities companies, authorities at the regional and local level and communities to ensure that investment is appropriate and sustainable. The plan will also undergo a consultation process with affected communities.

With regard to making gas locally available, the design of the TAP system technically allows it to provide gas to the Albanian network but TAP AG is not a local gas supplier. However, if necessary, tie-in points for transfer into the national system would be assessed during the next phase of engineering in consultation with the Albanian government.



#### 6.4.3 Traffic and Transportation

##### Construction and Pre-Commissioning Phase:

*Onshore:* For the western section of the Project, all pipes will be distributed to the yards along the pipeline route from the main pipe yard close to the Port of Durres. Transportation will be provided by regular trailers as all yards are accessible via national roads. For the eastern section (a length of approximately 50 km from the Greek border) there are two options for pipe transport: one route is from Thessaloniki across Greece and the second one is from Durres across Albania. At present the access via Greece is the preferred solution, but as some other infrastructure projects are planned, the situation in Albania might improve in the future and access via Durres could then be an option.

The preliminary logistics concept for the onshore pipeline indicates that road traffic generated by the construction activities will be substantial and this will add to existing traffic which is running on roads that presently are mostly in poor condition. Traffic prognosis for construction logistics for key routes and traffic nodes suggest that daily road users will be likely confronted with delays over the construction period mainly will likely increase overtaking actions by road users and thus traffic accident risk. Construction traffic, particularly on local roads, may also present a hazard to pedestrians and cyclists and livestock that will be less used to frequent and heavy vehicle movements. This will also be the case where logistic routes cannot avoid passage through settlements in more remote regions.

In order to minimise hindrance, delays and traffic risks, TAP AG will develop a *Traffic Management Plan* based on the detailed logistics. This plan will be consulted with regional and local administration and agencies including traffic police.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 46 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

*Offshore:* Project vessel movements will add to existing navigation and shipping traffic in the Project area, potentially increasing marine traffic safety risks. However, marine traffic in the study area is minor compared to the main west longitudinal route along Italian or the transversal routes in the north. The offshore construction activities will require a number of vessels including two different pipelay vessels during the offshore pipeline construction activities, one for the nearshore section (7 km offshore to the coast), and one for deeper waters. In addition, other vessels will be needed for construction activities, such as supply vessels to provide needed materials, crew vessels to ensure the crews shift, pipe carrier barges, cutter suction dredgers for trenching and dredging works, etc.

#### Operation and Maintenance Phase:

During operation of the pipeline system, there will be only a few maintenance and patrol vehicles in regular operation. Therefore no relevant traffic impacts will occur.

#### **6.4.4 Economy and Employment**

##### Construction and Pre-Commissioning Phase:



In general, construction activities for the Project will generate economic benefits from taxes paid by the Project in-country and to the local administration.

The construction workforce for the TAP Project in Albania is estimated at 1,500 for the main construction phase. Pipeline construction is estimated to require 700 workers over a period of 24 months (3 - 7 months for each pipeline spread, depending upon difficulty of terrain; a workforce of 450-500 will be required for the compressor station CS03 and another 300-350 for CS02 (which initially for 10 bcm/yr system transport capacity will be only a metering station – without compressors installed<sup>1</sup>). Estimated duration of work is 26 months for compressor station CS03 and 20 months for CS02 in the first stage.

Subject to TAP AG's tendering strategy, it is likely that one or more Engineering, Procurement and Construction (EPC) contractors and a number of local subcontractors will carry out the works, which may mean the construction workforce being comprised of both foreign nationals and Albanians. Hiring of workforce and sourcing of materials will be managed by the primary contractors. These will be required to meet TAP AG's Corporate Social Responsibility (CSR) requirements set out in the TAP AG policies and the best practice implementation guidance documents of EBRD regarding workers management, accommodation and rights.

Construction will require to a large extent a trained and specialized workforce. It is likely, therefore, that demand for unskilled local or regional along the route will be relatively low. Also, given the short timeframe for the pipeline construction phase there will be limited possibility for unskilled workers to develop other skills on the job. However, as the construction duration of the compressor stations will be longer, it is expected that there will be more opportunities for on-the-

<sup>1</sup>. Since CS02 in the initial 10 bcm/yr case will be a metering station only, the fitting of the compressors for the 20 bcm/yr case will require a smaller workforce of 100 – 150 people at a later stage.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 47 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

job training and learning for the workforce on these components. TAP AG will also encourage contractors to source goods and services from local suppliers and to provide opportunities for local hiring. In the course of Project preparation, TAP AG is undertaking a *Supply Side Analysis* for local content development to promote purchasing and recruiting from within Albania and the regions where the Project is being constructed.<sup>1</sup> The findings of this analysis will inform Project targets to be set out in the *Local Content Development Plan*.

Construction workers will be accommodated in a number of construction camps spread along the pipeline route (7 pipeline camps (plus two optional) and one camp at each compressor station). Camps will be fully serviced, and although a large portion of materials and supplies may come from the Tirana region or other commercial and trade centres, depending on the availability of supply items, regional economies may profit from the supply of foodstuff and other items. Populated areas close to construction camps may benefit from more employment and local spending than remote regions that are only passed by the pipeline route. Also, workers in their free time would likely create more demand in local markets, shops and bars/restaurants during the construction period. However, any increase of local business will be short-term in nature and not anticipated to be significant (It may be higher in the vicinity of static construction sites, such as the compressor stations, due to the longer-term presence of workforce).

#### Operation and Maintenance Phase:

A general economic benefit for Albania during the operation of the system will be taxes paid during Project operation.

The permanent workforce of TAP AG for pipeline system and station operation is estimated to be less than 100 employees; most of these will be highly qualified. In addition, contractors will be involved for facility maintenance and security. Therefore, on a limited scale, permanent positive local economic effects may remain present in the regions where the compressor stations are located.



### **6.4.5 Community Health, Safety and Security**

#### Construction and Pre-Commissioning Phase:

A large infrastructure project like the TAP has the potential for a number of public health and safety risks for communities along the pipeline route and in vicinity of the compressor stations. Key risks relate to construction workforce interaction with local communities, such as the unprofessional conduct of workers, spread of communicable diseases, increased risk of road accidents caused by construction logistics and transports, strain on local services (such as health care), and environmental change.

<sup>1</sup> Whilst it is not possible to predict the actual economic benefits in monetary terms at this stage, an indication of the order of magnitude the economic opportunity value potential can be derived by comparison with similar projects (extrapolated on the length of the pipeline section). According to TAP AG's preliminary estimate of the Project's local benefits to Albania (*TAP-CEA-RP-001-Rev.0*) economic opportunities associated with the procurement of goods and services could amount to the order of 250 million Euros or higher.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 48 of 61							
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title:		Trans Adriatic Pipeline – TAP				AAL00-ERM-641-Y-TAE-1002			
Document Title:		ESIA Albania - Non-Technical Summary							

Depending on the outcomes of the construction tendering, parts of the peak 1,500 person workforce could also potentially originate from countries with cultural differences that will need to be sensitively managed to avoid adverse impacts on local communities.



TAP AG will undertake a number of international best practice management measures to address the various public health, safety and security risks involved with the presence of a large workforce during construction activities. A *Community Health and Safety Management Plan* will be developed to avoid or minimise risks and adverse impacts to community health (including safety and security) that may arise from Project activities. Contractors will be required to comply with strict requirements and safeguards. This includes setting up of a *Workers Code of Conduct* (including alcohol policy, forbidding illegal social activities and consumption of illegal substances) and mandatory awareness training for workers as part of their induction, voluntary health screening of workers, provision of health facilities in the camps (primary health care and basic first aid), as well as other measures detailed in the full ESIA.

A *Traffic Management Plan* will be developed to identify effective measures to safely manage Project construction traffic on the public road network and within working areas, and therefore minimise the risk of accidents. Drivers of trucks and construction equipment will need to be qualified and undergo HSE training and to demonstrate health fitness. Information meetings will be arranged with local populations to explain about warning signage and the need to avoid site trespassing during construction.

A *Grievance Mechanism* will be available to local population and the Project's *Community Liaison Officers* will be on site to address any community health, safety and security issues with immediately impacts. The Project will provide health care for any member of the community injured as a result of Project activities.

TAP AG will undertake a capacity / needs assessment of equipment and personnel regarding hospitals along the route and in Tirana to determine if facilities have sufficient resources and equipment to deal with emergencies (e.g. construction accidents). Special agreements will be organised with suitable hospitals to provide health care in emergency situations. These agreements will include provision of additional equipment or training of staff if required by TAP.

TAP AG will develop *Emergency Response Plans* taking into account access to health care, major incidences, multiple casualty events and pandemics. These will be developed in consultation with national emergency providers and local health care facilities and will cover all contractors and subcontractors, as well as consideration of the local community.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 49 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						

#### Operation and Maintenance Phase:


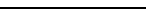
Public health and safety during operation has been considered in the design of the facilities and the risk assessments undertaken. The Project includes built-in safety features according to established European standards and norms for pipeline systems (i.e. pipe section wall thickness will vary depending on proximity to, and density of, populated buildings). In order to address the handling of residual risks associated with non-routine events during operation, TAP AG's *Emergency Response Plans* (ERPs) will also specify the actions required in case of non-routine events and incidents.

The ERP for operation will be developed according to Albanian and EU requirements and international industry standards and best practice. The ERP will be consulted with the competent authorities, emergency services/civil defence and the municipality administrations along the pipeline route and around the compressor stations. Based on consultations with relevant stakeholders, TAP AG will investigate the capacity of statutory local and regional emergency response providers to participate in emergency response activities. TAP AG will provide necessary training, engagement in the organisation of drills and exercises, and if needed, will also provide any necessary improvements of equipment e.g. of local fire brigades / civil defence units. Households in communities in the vicinity will receive information via leaflets which will provide advice should a pipeline leak or incident occur.

During operation, the Project installations will be guarded by security personal. The compressor stations will be permanently guarded, while the pipeline route will be regularly patrolled. TAP AG will address the topic of facility security and potential implications for public security according to national Albanian requirements and with the *Voluntary Principles on Security and Human Rights*, which are considered international best practice in this field.

#### **6.4.6 Community Cohesion**



The TAP Project will bear the socioeconomic risks associated with the fact that communities and individuals might feel potentially disadvantaged due to perceptions of unfair distribution of benefits and burdens during project implementation. This may lead to frictions and impact on community cohesion. Consultation outcomes during ESIA preparation have shown that strong community expectations towards the Project exist, in particular with regards to employment during construction and operation, and regarding other potential community benefits. Expectations are set before the background of low waged employment in the study area where official unemployment figures range from 5% (Devoll) to 13% (Berat) – although the level of unemployment may be much higher, in the smaller and more remote settlements along the route.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 50 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

As described in *Section 6.4.4*, Project implementation will result in a temporary planned influx of a relatively large workforce to the Project area composed of up to 1,500 foreign and Albanian workers; and of these it is estimated that 20%-30% would be Albanian unskilled workers. Workers will mostly be housed in self-contained camps and will be subject to the *Workers Code of Conduct* with regard to their behaviour and conduct towards local people.

Potential community cohesion issues will be addressed by TAP AG through measures which include the following main elements:

- TAP AG and its contractors will recruit and source goods locally and will strive to provide other local opportunities.
- Land issues will be managed through the *Land and Easement Acquisition (LEA) Framework* which creates transparent and equal management of impacts for communities and affected landowners/users. Should livelihoods be affected, impacts will be mitigated through a *Livelihood Restoration Plan (LRP)*.
- Through its policy on *Corporate Social Responsibility* and the delivery of a *Social and Environmental Investment (SEI) Program*, TAP AG will optimise the benefits that may be brought by the Project through infrastructure enhancement. Implementation of the SEI programme will aim to distribute benefits in a transparent and fair way and with equal opportunities for the communities in sharing benefits. The SEI will be developed in consultation with the communities and this will take into account any vulnerable and marginalised groups in the population such as the Roma.
- TAP will implement a *Grievance Mechanism* to address individual and community concerns and complaints related to Project impacts, in particular during construction and reinstatement activities.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 51 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

#### 6.4.7 Workforce Social Issues

##### Construction and Pre-Commissioning Phase:

Depending on the tendering outcomes, it is possible that construction workers may come from different regions of the world and different cultural backgrounds. This potentially presents a range of social risks (as identified in the *Human Rights Impact Assessment*). TAP AG will include social clauses in EPC contracts regarding fair treatment of workers, a safe work site environment, and acceptable conditions of accommodation and supply of food. These conditions will be compliant with the relevant Albanian legislative requirements and relate to TAP AG policies and best practice recommendations of EBRD and IFC. TAP AG will require the EPC contractors to inform workers about their rights and establish their own workers grievance mechanisms and undertake surveys and focus group feedback interviews for early detection of unsatisfactory situations. TAP AG will undertake compliance audits at the camps and worksites to check compliance with contractually required standards. TAP AG will set up a construction supervisory team that includes HSE officers, HR and CSR specialists.<sup>1</sup>

Further, TAP AG, will request the EPC contractor to undertake due diligence check-up on working conditions (including HSE, social conditions) of production sites of foreseen major supply items for the Project (such as the line pipes, fill and bedding materials) and to ensure that materials supplied are produced under safe and fair working conditions that satisfy TAP AG's policy requirements

##### Operation and Maintenance Phase:

The staff required for operation of the TAP pipeline system in Albania will be less than 100 people, mainly working at the compressor stations. TAP AG's operational staff will be employed according to TAP AG's employment policies which will be in compliance with Albanian and EU regulations regarding conditions of work. Staff will receive all required training to work in a safe environment. Any contractors maintaining the stations, patrolling the route or providing security of the installations will be contractually required to apply with TAP AG's social and HSE requirements.<sup>2</sup>

#### 6.4.8 Cultural Heritage



##### Construction and Pre-Commissioning Phase:

*Onshore:* Routing of the pipeline, compressor stations, block valve stations and also routing new roads have avoided known cultural heritage as far as possible. However, a number of

<sup>1</sup> A *Project Health and Safety Management Plan* (H&S Plan) will be developed to provide a framework for: planning health and safety; accident and incident investigation; and health and safety auditing. This will include a *Construction Health and Safety Management Plan* to cover the occupational health and safety of the construction workforce. A *Workers Management Plan* will also be developed to address potential risks to worker rights, labour standards by summarizing expectations and procedures to maintain quality working conditions, activities and conduct.

<sup>2</sup> An *Operational Health and Safety Management Plan* will be developed (as part of the overarching *Project Health and Safety Management Plan*) to address the occupational health and safety of the Project workforce during system operation.



<div> Trans Adriatic Pipeline</div> <div></div>		Page 52 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

archaeological heritage and monuments remain in the vicinity and also areas with high potential for unknown sites are crossed by the pipeline, which could produce archaeological finds during earthworks. Based on the Project footprint, a total of 37 cultural heritage sites will be subject to impacts as a result of Project related activities: one archaeological structure, five intangible cultural heritage (ICH) sites, seven monuments, and 24 known archaeological sites. The 24 archaeological sites are located within the reduced working strip (less than 18 m from of the pipeline corridor); within 4 m of a logistics component or access road; and in the footprint of some Project components. The two monuments will be subject to direct physical impacts if the 8 km optional access road from Vithkuq to Ostrovice is constructed. The other five monuments will be impacted by temporary restriction of user access during construction. The five ICH sites will suffer impacts from vibration, pollution, and restriction of user access during the construction phase.

The Project has implemented a series of measures and protocols to minimize impacts to known and potential cultural heritage sites during construction. Some of the archaeological sites will be further investigated by trial excavations in advance of construction<sup>1</sup>. In case any finds are made, TAP AG will follow the instructions of the competent authorities and, if required, finds would be rescued.

The Project will implement a *Cultural Heritage Management Plan* that will set out the construction phase requirements for dealing with known cultural heritage. This will include a *Chance Finds Procedure* that prescribes what needs to be done in case a find is made during excavation works. Any finds will be dealt with consistent with Albanian regulatory and EBRD PR8 requirements.



For monuments and ICH that are close to the working strip, work sites and logistics roads, and in particular when they are in the vicinity of sections where blasting and hammering will be employed for trenching, temporary support to protect structural integrity will be provided (e.g. *Memorials of Martyrs* in proximity to access roads at Kp 113 and Kp 117). The status before and after will be recorded by experts and TAP AG will repair any damage occurring.

*Offshore:* The key sources of impacts on cultural heritage will result from seabed-disturbance as outlined above. Physical damage to a site usually results in loss of scientific, cultural or historical value. However, as identified throughout the baseline section, the undertaken nearshore survey has yielded no evidence of objects or remains of archaeological interest. Specific surveys planned to be carried out in late 2012 for the deep offshore area, should reveal the presence of any unknown sites.

#### Operation and Maintenance Phase:

During operation, no physical impacts to cultural heritage are anticipated. Route patrolling and station maintenance schedules will take into consideration the use of intangible cultural heritage by the local people.

<sup>1</sup> Selection of sites to be determined in consultation with competent authorities.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 53 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							


## 6.5 Cumulative Impacts, Risks and Opportunities

Cumulative impacts might arise from the combination of activities associated with the TAP Project together with other third party developments or projects in the same area of influence and at the same time of implementation.

Only three large projects have an implementation schedule with the potential to coincide with the construction of the TAP Project. These are the new Vier – Vlore Road By-Pass and the Hydro Power Plants (HPPs) on the Devoll and the Osumi:

- *Fier – Vlore Road By-Pass*: Impacts on road users: Delays to existing road users arising from possible interactions between the construction of the TAP Project and the Vier – Vlore Road By-Pass are unlikely to occur. Construction traffic on local roads may lead to inappropriate over-taking of slow moving construction vehicles and introduce a safety hazard to pedestrians and cyclists on these roads where they are used to low levels of baseline traffic. Impacts would be, however, short term associated with the duration of construction, particularly the peak construction periods, and would be managed through the implementation of a *Traffic Management Plan*.
- *Devoll HPPs*: Should the three hydro schemes proposed on the Devoll upstream of the Osumi confluence be constructed at the same time as the river crossings required for the TAP Project, these activities may interact to have cumulative impacts on fresh water resources, fish populations and riparian habitats. Impacts from the TAP Project itself will be mostly short term and will occur during the construction period. The potential for cumulative impacts will therefore be limited to the short periods of time when the river crossings are being constructed i.e. 2-4 weeks for “open-cut” crossings and up to four months for “trenchless” crossings. For terrestrial and aquatic ecological receptors, cumulative impacts arising from the interaction between the construction of the TAP Project and the Devoll Hydro Power Plants are therefore likely to be not significant given the impacts the hydro power plant construction would cause.
- *Osumi HPPs*: Should the seven hydro power plants proposed along the Osumi River be constructed at the same time as the river crossings required for the TAP Project between Çorovoda and Berat, these activities may interact to have cumulative impacts on fresh water resources, fish populations and riparian habitats. However, given the disturbance that hydro power plant construction would entail for the river, the crossing activities would be comparatively minor and short term sources of impact on water quality.

Other, smaller investment proposals in the project area are either located at some distance from the TAP Project pipeline and compressor stations and out of the protection zone of the pipeline, or their delivery schedule is unlikely to coincide with the TAP Project. A cumulative impact during the construction and operation of the TAP Project is therefore unlikely to occur.

<div><div><div>Trans Adriatic Pipeline</div></div><div></div></div>		Page 54 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## 6.6 Transboundary Impacts, Risks and Opportunities

The main transboundary effect between Albania and Greece is that the routing in one country is directly affecting the neighbouring country. Apart from that, no significant transboundary impacts are anticipated to occur during normal activities of the construction or operation phase, provided that good construction practice is exercised.

Transboundary impacts during construction could occur related to ecological receptors, e.g. disturbance of migratory birds and large carnivores that live in the Albanian-Greek border hill lands. The habitat areas within Albania directly at the border where the pipe alignment is located are generally not considered of high quality and impacts will be temporary in this region.



The area at Trestenik and Bilisht is known to support populations of Brown Bear (*Ursus arctos*) and Wolf (*Canis lupus*) which pass between Greece and Albania. Due to the current lack of scientific baseline data the permeability / connectivity of bears living between both countries remains uncertain. Nevertheless it is quite possible that they constitute a single population and therefore viability of bears in Eastern Albania also depends on conservation of bears in Western Greece. As per the Project activities and proposed ESMP, potential impacts are considered to be either negligible or of minor significance. Nevertheless careful management and implementation of the *Biodiversity Action Plan* (BAP) is needed to minimize impacts.

Based on modelling undertaken in the scope of the ESIA, no significant transboundary airshed or visual impacts towards Greece are anticipated from the envisaged Compressor Station CS02, which is planned to be located about 4 km from the border:

Based on a preliminary view shed analysis, the only settlement that may take notice of the CS02 in Albania is the Greek village of Leropigi, about 6 km away. This village is located under a hill flank and has a view to the south and west into Albania, which is lower terrain. There is a chance of visibility of the vent, but the station building and the 30 m stacks would only be visible from the hilltops around Leropigi.

Emission modelling for the CS02 airshed indicates that for the relevant substance NO<sub>x</sub>, the short term concentrations (NO<sub>x</sub> 99.8 Percentile of hourly ground concentration from CS02 emissions) would reach up to 26 µg/m<sup>3</sup> in a location approximately 1 km away from the Greek border and 2.3 km northwest of Leropigi village in Greece (EU limit value for 99.8 percentile = 200 µg/m<sup>3</sup>). The highest average long term NO<sub>x</sub> concentration on Greek territory will be less than 0.5 µg/m<sup>3</sup> in the area of the Albanian-Greek border and some 3 km north west of Leropigi village (EU limit value for annual average = 40 µg/m<sup>3</sup>).

During operation of the pipeline system (onshore and offshore), limited transboundary effects could occur due to non-routine events such as accidents or explosions. However, since natural gas is being transported no transboundary pollution impacts would be expected as any leaked gas will immediately disperse in the atmosphere.

<div><div><p>Trans Adriatic Pipeline</p></div><div></div></div>		Page 55 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

Offshore transboundary impacts of activities in the Albanian land or territorial waters of the Adriatic Sea are not expected to affect any neighbouring country territory due to the long distance (Greece to the South and Montenegro and others to the North). Some degree of transboundary impact could result from operations inside the Albanian *exclusive economic zone* (EEZ) at the border to the vicinity of the Italian EEZ area. This will be related during construction time to air emissions, noise, treated water discharge etc. from installation and support vessels working in the Albania EEZ. These transboundary impacts are considered negligible.

## 6.7 Decommissioning Impacts, Risks and Opportunities

Impacts from the decommissioning of the TAP pipeline system will depend on the state-of-the-art decommissioning approach and available dismantling techniques available at that time. Depending on the approach and technologies available, the onshore pipeline may either remain in the ground or will be removed partly or completely. Although not many precedence examples are available, common international practice today is to abandon the pipeline in the ground ('abandonment-in-place'). In this case the pipeline would be inspected, purged and secured against structural collapse to avoid ground subsidence which would potentially lead to impacts and risks to subsequent land use. If the pipeline is removed from the ground, e.g. to recover the pipe steel, activities would be similar to the construction stage but in reverse order. It is assumed that in such a case, similar equipment, machinery and vehicles would be used and similar impacts would occur, requiring potentially similar mitigation. The offshore pipeline is anticipated to remain in place after decommissioning of the system.

Although again dependent on the approach used, the workforce required for pipeline and compressor station decommissioning will likely be less than required for construction. Therefore beneficial effects on local employment and local businesses cannot be reasonably predicted from today's perspective but will likely be less than those for construction.

Any decommissioning activities will be subject to permitting requirements applicable at that time and subject to consultation with affected owners and stakeholders of affected properties and structures. A *Pipeline Abandonment Plan* that covers all relevant items will be prepared by TAP AG before any the works. Management of social risks regarding workers and the public will be undertaken similar to construction and to European social standards applicable at the time.



## 6.8 Non Regular Operation and Unforeseen Events

### 6.8.1 Onshore Pipeline

The TAP pipeline system will transport natural gas which is highly flammable. TAP AG will implement the Project according to established European and international standards to provide safe operation of the system and minimise risks associated with natural gas.

During the development of the pipeline and its associated infrastructure, TAP AG has sought to avoid, and minimise risks from non-routine events through pipeline routing and compressor station siting and through the technical design of the system and its components. This has



<div> Trans Adriatic Pipeline</div> <div></div>		Page 56 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							



considered Albanian national requirements, European Union standards, best international industry practice and the requirements of EBRD's PR3 (Pollution Prevention) and PR4 (Community Health Safety and Security) and relevant IFC EHS Guidelines. Through these appraisals and assessments, *state-of-the-art* measures have been identified and incorporated into the Project.

In the course of further detailing of design and risk assessment, the potential long-term risks to pipeline integrity over its lifetime on the section from the CS03 to the landfall will be investigated and it will be determined if additional pipeline protection measures may be required due to long term meandering of the Semani river.

### 6.8.2 Offshore Pipeline

Accidental events potentially leading to fuel and oil spills into the marine environment cannot be ruled out for vessel operations during construction. Sea refuelling activities will pose the highest risk of accidental release however the size of spills for such events is typically small. In the unlikely event of a major spillage, possibly from a vessel collision, a maximum of around 10,000 m<sup>3</sup> could be released (total fuel capacity of lay vessels). Diesel is a light petroleum distillate which is expected to undergo rapid dispersion and evaporation. Consequently, any slicks are likely to break up and disperse in a short space of time. A *Marine Oil Spill Contingency Plan* will also be developed to assist the rapid response to any accidental marine spills.

A study has been conducted to evaluate the risk of the offshore pipeline being damaged as a result of ship traffic-related interference such as ships grounding, sinking and anchor dragging or dropping. Significant damage to a pipeline may lead to the rupturing of a pipeline, resulting in a subsequent uncontrolled release of gas. The probability of a pipeline failure or rupture occurring however is very low, based upon the design and engineering principles and techniques employed and considering the low vessel traffic in the sea area where the pipeline passes.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 57 of 61				
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		AAL00-ERM-641-Y-TAE-1002				
Document Title: <b>ESIA Albania - Non-Technical Summary</b>						



## 7 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING

As a result of the ESIA process, an *Environmental and Social Management Plan* (ESMP) has been compiled to provide a framework for the implementation of measures identified through the assessment to manage construction, operation and decommissioning of the Project. Measures set out in the ESMP are designed to avoid or reduce and to mitigate, compensate or offset adverse impacts and to minimise and manage risks from Project activities that may cause harm or nuisance on the environment, the construction workforce and operation staff and local population. Where possible, measures are included to enhance positive effects of project implementation.

Actions defined in the ESMP relate to the various management plans and procedures identified and specified in the Impact Assessment.



The ESMP contains more detailed information on the foreseen environmental and social and socioeconomic management and monitoring arrangements, the roles and responsibilities of TAP AG and its contractors for implementing these mitigation measures, and provisions for monitoring to assess the effectiveness of measures.

*Table 7-1* provides an overview of the main management plans (under the ESMP framework) that TAP AG will put forward to the EPC contractor for construction and for TAP AG's operation of the Project.

<div> Trans Adriatic Pipeline</div> <div></div>		Page 58 of 61							
		Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title:		Trans Adriatic Pipeline – TAP				AAL00-ERM-641-Y-TAE-1002			
Document Title:		ESIA Albania - Non-Technical Summary							

**Table 7-1 Overview of Management Plans within the ESMP**

<b>Topic / Title</b>	<b>Purpose / Objective</b>
<b>Construction and Pre-commissioning</b>	
<b>ENVIRONMENTAL</b>	
<i>Aggregates Management Plan</i>	Provides recommended best practice procedures needed to ensure adequate management of aggregate material (including sand, gravel, crushed stone) throughout construction.
<i>Biodiversity Action Plan (BAP)</i>	Deals with the management of impacts on the terrestrial and freshwater environment, the implementation of mitigation and compensation measures and offsets; the BAP measures during construction are supervised on site by Ecological Clerk of Works to be part of construction supervisory management structure.
<i>Contaminated Lands Crossing Plan (if required)</i>	Subject to further detailed routing in the section Kp 179-181, this plan – will provide details for crossing contaminated lands from previous crude oil production in the area.
<i>Erosion and Sediments Control Plan</i>	Aims to minimise erosion at construction sites, to avoid water pollution by sediment plumes from uncontrolled site runoff and to manage and monitor long-term site stability / erosion at watercourse crossings.
<i>Hazardous Materials Management Procedure</i>	Defines how TAP AG and contractors will select, handle, store and dispose of the chemicals in order to prevent damage to people and the environment.
<i>Hydrotesting Plan</i>	Defines the hydrotest water intake and discharge points and methods to avoid impacts on aquatic ecology, river bed and banks, and any user conflicts.
<i>Landscape Management Plan</i>	Details landscaping and restoration works (e.g. specifies vegetation screens at the compressor stations) of lands along the pipeline route, in conjunction with the <i>Site Reinstatement Plan</i> .
<i>Marine Oil Spill Contingency Plan</i>	Provides for contingency measures in the case of marine accidents during marine construction and off-shore pipeline laying activities.
<i>Pollution Prevention Plan</i>	Details (onshore) working site good practice to avoid / minimise pollution risk during construction (including handling of potentially hazardous materials, product specific practices etc). To be developed in conjunction with the <i>Spill Prevention and Response Plan</i> , <i>Hazardous Materials Management Procedure</i> and <i>Waste Management Plan</i> .
<i>Site Reinstatement Plan</i>	Deals with the general reinstatement of lands along the pipeline route to be undertaken following completion of construction.
<i>Spill Prevention and Response Plan</i>	Provides for preventing spills of oil and lubricants, cleaning agents etc. and for clean-up of any accidental spills that may occur.
<i>Waste Management Plan</i>	Deals with the handling and proper disposal of wastes and waste water generated during construction including wastes from construction camps.
<i>Watercourse Crossing Plan</i>	Sets out the details of the construction methods and environmental protection measures, such as sediment dispersion reduction, for each water course crossing.
<i>Water Management Plan</i>	Established to monitor and minimise Project water use during construction (in conjunction with the <i>Hydrotesting Plan</i> ) and manage groundwater pumping needs and construction site surface runoff.
<b>SOCIAL</b>	
<i>Community Health Management Plan</i>	Manages local public health, safety and security issues during construction.
<i>Construction Health and Safety Management Plan</i>	Part of an overarching <i>Project Health and Safety Management Plan</i> . Deals with occupational health and safety of the construction workforce (including <i>Bear/Large Mammal Interaction Plan</i> to be implemented for the workforce in certain regions).

<div> Trans Adriatic Pipeline</div> <div></div>		Page 59 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.-Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

<b>Topic / Title</b>	<b>Purpose / Objective</b>
<i>Cultural Heritage Management Plan (including Chance Finds Procedure)</i>	Sets out the construction phase requirements for dealing with known cultural heritage and chance finds.
<i>Grievance Mechanism</i>	Provides a documented process to deal with any suggestions or complaints of the population affected by the Project.
<i>Infrastructure and Utilities Management Plan</i>	Deals with minimising of roads and utility interruption during construction.
<i>Land and Easement Acquisition Strategy and Land Access Plan</i>	Deals with the management of temporary and permanent acquisition of easement rights for the pipeline and land for above ground installations and road access (in conjunction with the <i>Livelihoods Restoration Framework</i> ).
<i>Livelihoods Restoration Framework and detailed Livelihood Restoration Plan</i>	Deals with compensation and special assistance for situations where temporary construction land take and permanent easement or acquisition for the pipeline, permanent access roads and the compressor stations leads to severance for plot owners or users.
<i>Local Content Development Plan</i>	Deals with measures to enhance participation of local businesses in the procurement of goods and services to the Project, and to enhance the job opportunities for Albanian and local (Project region) workforce.
<i>Social and Environmental Investment (SEI) Program</i>	Deal with enhancement of positive project effects and sharing of benefits with local communities e.g. by provision of infrastructure.
<i>Stakeholder Engagement Plan</i>	Describes the public consultation and disclosure activities in the ESIA Process and during project implementation.
<i>Traffic Management Plan</i>	Sets out measures to manage construction traffic on the public road network and on construction sites, in order to minimise risk of accidents.
<i>Workers Management Plan (including Workers Code of Conduct)</i>	Deals with the management of construction workforce-related social issues, such as conditions of work, accommodation and transport, code of conduct etc.
<b>Operation and Maintenance</b>	
<i>Emergency Response Plans</i>	Regulates the emergency response in the event of spills, fire, accidents, earthquakes and floods and includes also all kind of trainings for staff and contractors and third party emergency responders.
<i>Operation Health and Safety Management Plan</i>	Part of an overarching <i>Project Health and Safety Management Plan</i> . Deals with occupational health and safety during system operation.
<b>Decommissioning</b>	
<i>Pipeline Abandonment Plan</i>	At the time when it becomes relevant, this plan will specify in sub-plans the measures to deal with environmental and social impacts and risks associated with decommissioning, abandonment and/or dismantling of pipeline and the compressor stations.

These plans, related sub-plans and implementation procedures will be developed in the further stages of Project preparation.


<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 60 of 61					
Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.		
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

**For Inquiries please contact:**

Trans Adriatic Pipeline AG  
– Albania (Branch Office)  
Torre Drin, Abdi Toptani Street  
Tirana, Albania  
Fax: + 355 42 265 685  
Tel.: + 355 44 308 770  
e-mail: [esia-comments@tap-ag.com](mailto:esia-comments@tap-ag.com)

Copies of the full, detailed ESIA and supporting documentation can be viewed or downloaded at:  
<http://www.trans-adriatic-pipeline.com/tap-project/health-safety-and-environment/environmental-and-social-impact-assessment/esia-in-albania/>



<div><div> Trans Adriatic Pipeline</div><div></div></div>		Page 61 of 61					
		Area Code	Comp. Code	System Code	Disc. Code	Doc.- Type	Ser. No.
Project Title: <b>Trans Adriatic Pipeline – TAP</b>		<b>AAL00-ERM-641-Y-TAE-1002</b>					
Document Title: <b>ESIA Albania - Non-Technical Summary</b>							

## APPENDIX 1

### TAP Albania Overview Map

LEGEND

PROJECT COMPONENTS

- PIPELINE ROUTE-ALBANIA
- CAMP SITE \*
- CAMP SITE (OPTIONAL)
- PIPE YARD
- PIPE YARD (OPTIONAL)
- MAIN PIPE YARD OPTIONS
- BLOCK VALVE STATION (BVS)
- COMPRESSOR STATION
- ELECTRICAL GRID CONNECTION

HYDROTESTING WATER ABSTRACTION AND DISCHARGE POINT

- STANDARD
- OPTIONAL

LOGISTIC ROADS

- NEW ROAD \*\* (TAP PROJECT)
- NEW ROAD - OPTIONAL (TAP PROJECT)
- ROAD TO BE UPGRADED (TAP PROJECT)
- ROAD IN GOOD CONDITION
- ROAD CONSTRUCTION PLANNED/ ONGOING (NOT BY TAP PROJECT)

LOCATION OF NEW ACCESS ROADS

Road	nearest Kp
Access road 1	Durrës
Access road 2	208
Access road 3	202
Access road 4	179
Access road 5	148
Access road 7a	70
Access road 7b (optional)	76
Access road 8	82

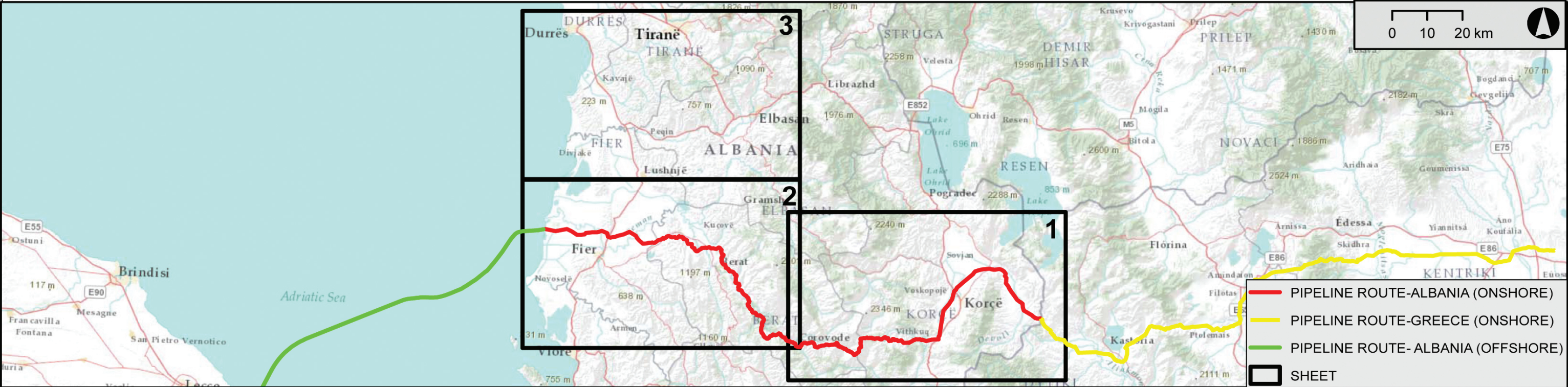
BOUNDARIES

- NATIONAL BORDER
- REGIONS

Notes  
\* Compressor station camp sites not indicated on map

\*\*Although some of the routes of these access roads follow existing tracks, in order for them to be utilized in the Project extensive reconstruction (i.e. widening, stabilization or installation of retaining walls) is required and are therefore classified as 'new' roads to be constructed.

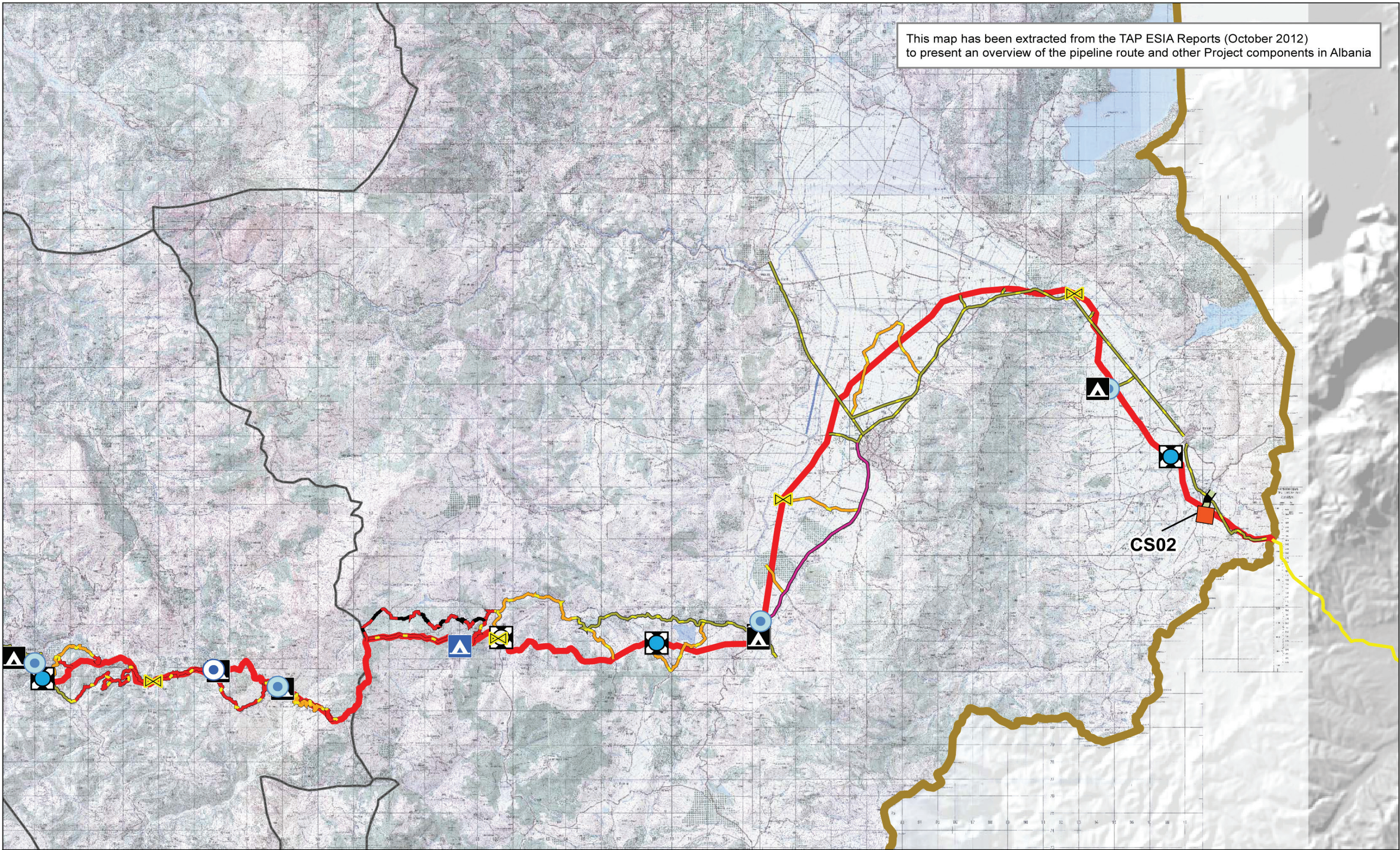
[This map has been extracted from the TAP ESIA Reports (October 2012) to present an overview of the pipeline route and other Project components in Albania]



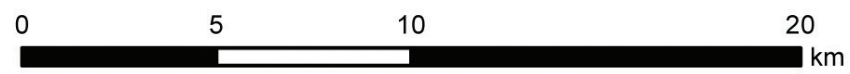
								ORDERING COMPANY	<div>TRANS ADRIATIC PIPELINE</div> <div><div>TAP</div><div>Trans Adriatic Pipeline</div></div>				DOCUMENT TITLE																											
									TRANS ADRIATIC PIPELINE				Non- Technical Summary																											
													Appendix 1 - TAP Albania Overview																											
													Company Representative				Turid Thormodsen		Scale: 1:282.600						Sheet		0 of 3													
0I	2012-11-09	Issued for Acceptance					PEM	PIB	SAA				Company Reference				C201				Document-No.						Rev.													
0H	2012-10-31	Issued for Acceptance					PEM	PIB	SAA												AAL00 - ERM - 641 - Y - TAE - 1002						0I													
REV.	DATE	DESCRIPTION					PREPARED	CHECKED	APPROVED	DATE	ACCEPTED		ENVIRONMENTAL RESOURCES MANAGEMENT										Engineer Representative		Heinz Josef Joemann		Location		Originating Company		System-code Discipline		Document Type		Sequenz Number		At Number		Revision	
NO.							EON - New Build & Technology					Trans Adriatic Pipeline											Document Originator				Maria del Carmen Peña		ENT - PROJECT NO. 2101.C11111.131.52.02		GIS - FILE NO. AAL00 - ERM - 641 - Y - TAE - ENG.mxd		Size A4							



This map has been extracted from the TAP ESIA Reports (October 2012)  
to present an overview of the pipeline route and other Project components in Albania




The Legend is found on sheet 0 - coverage



Coordinate System: WGS 1984 UTM Zone 34N  
Source Reference Map: © ESRI Basemaps + Topomap 1:50000



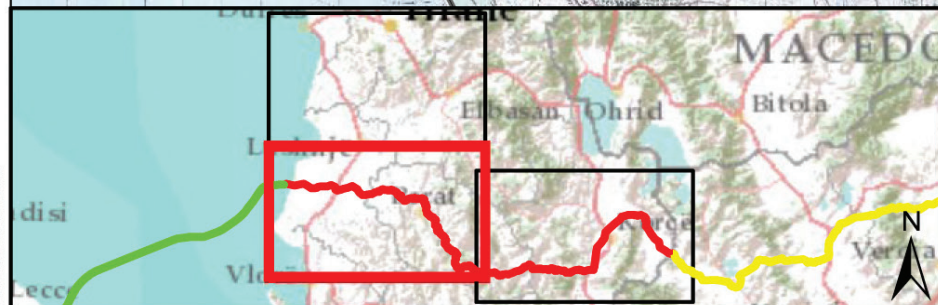
ORDERING COMPANY <div></div>		DOCUMENT TITLE <div>Non - Technical Summary Appendix 1 - TAP Albania Overview</div>							
PROJECT TITLE <div>TRANS ADRIATIC PIPELINE</div>		Scale: 1:282.600				Sheet 1 of 3			
ORIGINATOR <div>Environmental Resources Management</div>		Document-No. <div>AAL00 - ERM - 641 - Y - TAE - 1002</div>						Rev. <div>01</div>	
		Location	Originating Company	System-code	Discipline	Document Type	Sequenz Number	At Number	Revision
		ENT - PROJECT NO. 2101.C11111.131.52.02			GIS - FILE NO. AAL00 - ERM - 641 - Y - TAE - ENG.mxd				Size A4



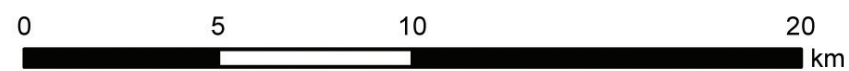
This map has been extracted from the TAP ESIA Reports (October 2012)  
to present an overview of the pipeline route and other Project components in Albania

CS03

ORIGINAL SIZE A4



The Legend is found on sheet 0 - coverage



Coordinate System: WGS 1984 UTM Zone 34N

Source Reference Map: © ESRI Basemaps + Topomap 1:50000

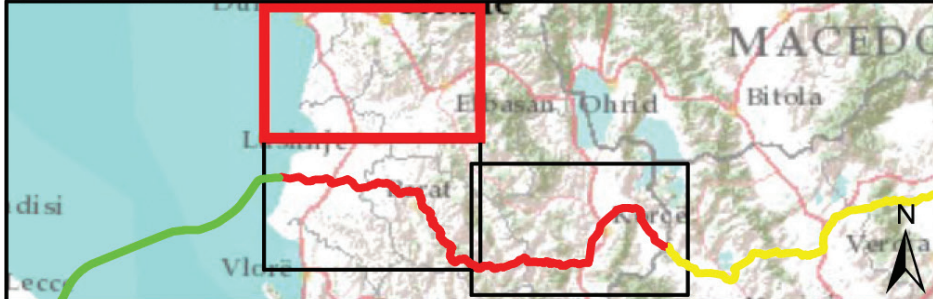
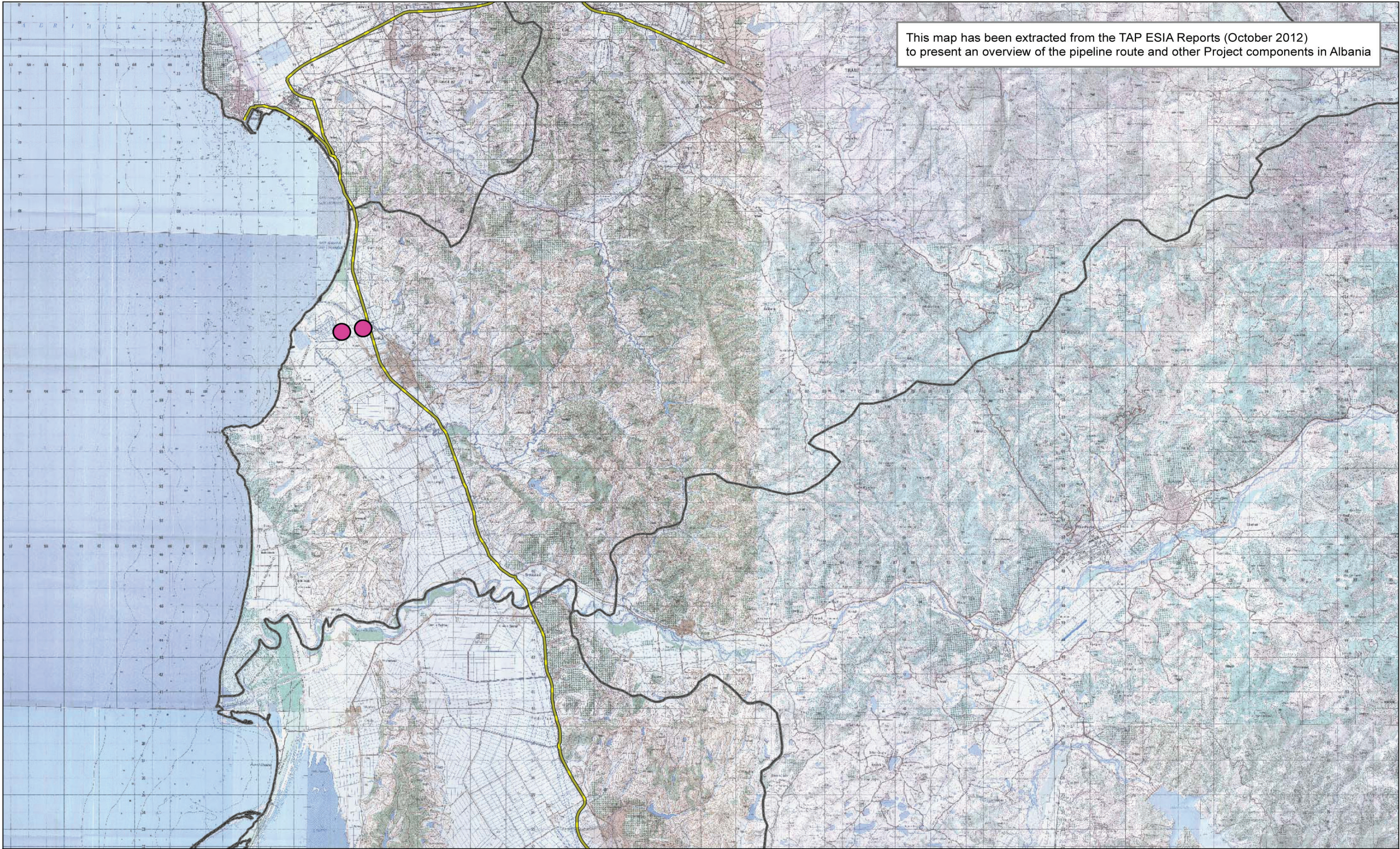


ORDERING COMPANY	<b>TAP</b> Trans Adriatic Pipeline
PROJECT TITLE	TRANS ADRIATIC PIPELINE
ORIGINATOR	Environmental Resources Management

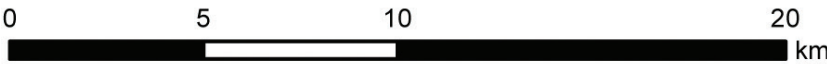
DOCUMENT TITLE		Non - Technical Summary Appendix 1 - TAP Albania Overview	
Scale: 1:282.600	Document-No.	Sheet	2 of 3
AAL00 - ERM - 641 - Y - TAE - 1002		Rev.	01
ENT - PROJECT NO. 2101.C11111.131.52.02	Location	Originating Company	System- code
GIS - FILE NO. AAL00 - ERM - 641 - Y - TAE - ENG.mxd	Discipline	Document Type	Sequenz Number
Size A4	At Number	Revision	



This map has been extracted from the TAP ESIA Reports (October 2012)  
to present an overview of the pipeline route and other Project components in Albania



The Legend is found on sheet 0 - coverage



Coordinate System: WGS 1984 UTM Zone 34N

Source Reference Map: © ESRI Basemaps + Topomap 1:50000



ORDERING COMPANY	<b>TAP</b> Trans Adriatic Pipeline
PROJECT TITLE	TRANS ADRIATIC PIPELINE
ORIGINATOR	Environmental Resources Management

DOCUMENT TITLE						
Non - Technical Summary Appendix 1 - TAP Albania Overview						
Scale: 1:282.600					Sheet	3 of 3
Document-No.  AAL00 - ERM - 641 - Y - TAE - 1002						Rev.  01
Location	Originating Company	System-code	Discipline	Document Type	Sequenz Number	At Number
ENT - PROJECT NO. 2101.C11111.131.52.02		GIS - FILE NO. AAL00 - ERM - 641 - Y - TAE - ENG.mxd				Revision  Size A4