Application File for the Amendment of the Environmental Permit

Terpollar Re-route
Table of Contents

1 INTRODUCTION .................................................................................................................. 7
  1.1 Project Overview ........................................................................................................... 7
  1.2 Project Assessment ....................................................................................................... 7
  1.3 This Report .................................................................................................................. 11

2 LEGAL FRAMEWORK ........................................................................................................ 14

3 PROJECT DESCRIPTION .................................................................................................... 16
  3.1 Overview ..................................................................................................................... 16
  3.2 Pipeline Construction .................................................................................................. 18
    3.2.1 Pipeline Re-route construction ............................................................................ 18
    3.2.2 Access track construction .................................................................................. 25
    3.2.3 Temporary camp construction ............................................................................ 25
  3.3 Terpollar Re-route ....................................................................................................... 26
    3.3.1 Re-route alignment ............................................................................................. 26
    3.3.2 Access track alignment ....................................................................................... 30
    3.3.3 Temporary small camp location .......................................................................... 33
  3.4 Terpollar Re-route Construction .................................................................................. 33
    3.4.1 Introduction .......................................................................................................... 33
    3.4.2 Construction Duration and Timing ....................................................................... 34
    3.4.3 Machinery, Equipment, Transportation and Traffic .............................................. 35
    3.4.4 Construction camp, services, utilities and access track ......................................... 37
    3.4.5 Pre-construction activities .................................................................................... 38
    3.4.6 Pre-commissioning: Pressure Testing during Construction (Hydrotesting) ............ 39
    3.4.7 Road Crossing ...................................................................................................... 40
    3.4.8 Construction workforce ....................................................................................... 40
    3.4.9 Use of Resources and Environmental Interferences during Construction and Pre- 
        commissioning .......................................................................................................... 40
  3.5 Terpollar Re-route clean-up and restoration ................................................................. 47
  3.6 Terpollar Re-route Operation and Maintenance .......................................................... 48

4 BASELINE CONDITIONS .................................................................................................. 50
4.1 Overview ............................................................................................................... 50
4.1.1 Environmental Baseline Overview ..................................................................... 50
4.1.2 Socioeconomic Baseline Overview ....................................................................... 51
4.1.3 Cultural Heritage Baseline Overview ................................................................. 52
4.2 Terpollar Re-route ................................................................................................. 54
4.2.1 Environmental Baseline ....................................................................................... 54
4.2.2 Socioeconomic Baseline ....................................................................................... 70
4.2.3 Cultural Heritage Baseline ..................................................................................... 80

5 ASSESSMENT OF IMPACTS ...................................................................................... 86
5.1 Overview ............................................................................................................... 86
5.1.1 Environmental Impact Assessment Overview ....................................................... 86
5.1.2 Socioeconomic Impact Assessment Overview ...................................................... 86
5.1.3 Cultural Heritage Impact Assessment Overview .................................................... 87
5.2 Terpollar Re-route .................................................................................................. 89
5.2.1 Environmental Impact Assessment ....................................................................... 89
5.2.2 Socioeconomic Impact Assessment ...................................................................... 112
5.2.3 Cultural Heritage Impact Assessment .................................................................. 119

6 ENVIRONMENTAL, SOCIAL AND CULTURAL HERITAGE MANAGEMENT AND MONITORING ................................................................................................................. 124
6.1 Environmental Impacts and Mitigation Measures ................................................. 124
6.2 Socioeconomic Impacts and Mitigation Measures ................................................. 130
6.3 Cultural Heritage Impacts and Mitigation Measures .............................................. 134

ANNEX 1: FIELD SURVEY SUMMARY DATASHEETS
ANNEX 2: BASELINE FEATURE MAPS
ANNEX 3: FIELD SURVEY NOTES
ANNEX 4: LANDSCAPE

LIST OF TABLES
Table 1.1 List of Prepared ESIA Addendums. .............................................................. 10
Table 1.2(143,701),(416,731) ESIA Addendum requirements based on the Decision of Council of Ministers No 686 dated 29.07.2015. ................................................................. 12
Table 3.1 Pipeline Construction – Key Project Data from TAP ESIA Albania .......... 19
Table 3.2 Detailed Terpollar Re-route construction timings* ...................................... 35

Restricted Information: This document is property of Contractor. It must not be stored, reproduced or disclosed to others without written authorization from Contractor.
Table 3.3  Number of Employees, Temporary Land Take and Infrastructure of the Construction Camp – Key Project Data. ................................................................. 38
Table 3.4  Access Track Construction and Telepheric – Key Project Data. ................................................................. 38
Table 3.5  Project Land Easement during Construction. .................................................................................. 41
Table 3.6  Raw Material Requirements. ........................................................................................................ 42
Table 3.7  Water usage. .............................................................................................................................. 43
Table 3.8  Typical Noise Levels for Construction Equipment. ........................................................................ 43
Table 3.9  Typical Noise Levels for Pre-commissioning Equipment. ............................................................... 44
Table 3.10  Categories of Waste Generated During Construction. .............................................................. 45
Table 3.11  Typical Wastes Generated during the Construction of the Pipeline ......................................... 45
Table 3.12  Construction Waste Inventory. .................................................................................................. 46
Table 4.1  Cultural Heritage Resource Types. ............................................................................................ 52
Table 4.2  Cultural Heritage Site Importance / Quality Criteria. ................................................................ 53
Table 4.3  Summary of European Habitats Crossed by Terpollar Re-route, access track and other footprint elements. .................................................................................................................................. 57
Table 4.4  Quality of Habitats Present along the Terpollar Re-route, access track and temporary camp... 63
Table 4.5  Importance of Species Present along the Terpollar Re-route, access track and temporary camp. ........................................................................................................................................ 65
Table 4.6  Landscape Sensitivity to the Proposed Change ........................................................................... 70
Table 4.7  Key Information about the Municipality of Skrapar ............................................................................... 71
Table 4.8  Summary of Key Cultural Heritage Findings within the corridors. ............................................... 81
Table 4.9  Potential Project Cultural Heritage Impacts .................................................................................. 88
Table 4.10  Cultural Heritage Impact Mitigation Measures ............................................................................. 89
Table 4.11  Environmental Residual Impacts - Terpollar Re-route, access track and temporary camp. 95
Table 4.12  Key Potential Impacts – Landscape and Visual Amenity ............................................................. 102
Table 4.13  Residual Impacts of buried pipeline – Landscape and Visual Amenity – Construction Phase 104
Table 4.14  Residual Impacts of Ridge Modifications - Landscape and Visual Amenity – Construction Phase ........................................................................................................................................... 105
Table 4.15  Residual Impacts – Landscape and Visual Amenity – Operation Phase ................................. 108
Table 4.16  Visual Impacts of Proposed Ridge Modifications at Fixed Viewpoint Locations ... 110
Table 4.17  Socioeconomic Residual Impacts – Terpollar Re-route ................................................................. 117
Table 4.18  Cultural Heritage Residual Impacts – Terpollar Re-route ............................................................. 123
Table 4.19  Environment – Summary of Impacts and Mitigation Measures ................................................ 125
Table 4.20  Socioeconomic - Summary of Impacts and Mitigation Measures ................................................. 131
Table 4.21  Cultural Heritage - Summary of Impacts and Mitigation Measures ............................................. 135

LIST OF FIGURES

Figure 1.1  TAP Overview. ........................................................................................................................ 7
Figure 1.2  Overview of the four proposed Pipeline Re-routes based on the December 2016 field survey. The Terpollar Re-route, presented in this Report, is labeled and marked in green. ..... 9

Restricted Information: This document is property of Contractor. It must not be stored, reproduced or disclosed to others without written authorization from Contractor.
Figure 3.1  Overview of the complete Terpollar Re-route, access track and other temporary facilities. ................................. 16
Figure 3.2  Typical Reduced Pipeline Working Strip in level ground (48" Pipeline). .............................. 20
Figure 3.3  Typical Pipeline Working Strip on steep sidelong ground (48" Pipeline). .............................. 21
Figure 3.4  Use of spider excavators on steep slopes........................................................................ 21
Figure 3.5  Construction of contiguous pile retaining walls – pouring concrete........................................ 22
Figure 3.6  Contiguous pile retaining walls - pile cap inspection.......................................................... 22
Figure 3.7  Installation of Horizontal Drainage.................................................................................... 23
Figure 3.8  Typical cable crane systems on steep slopes...................................................................... 23
Figure 3.9  Summary of Basic Pipeline Construction Teams and Activities........................................... 24
Figure 3.10 Typical Temporary camp Layout..................................................................................... 26
Figure 3.11 Terpollar Re-route, temporary camp, access track and basecase along the Terpollar and Potom valleys*........................................................................................................ 27
Figure 3.12 Terpollar Re-route (photos are organized from East to West and indicate the WP location (refer to Annex 2 for the corresponding map). Where visible the Access track (white line) is also presented. ........................................ 28
Figure 3.13 Temporary access track and other temporary footprint elements....................................... 31
Figure 3.14 Temporary access track and telepheric work site (photos are organized from East to West and indicate the WP location (refer to Annex 2 for corresponding map). ........................................ 32
Figure 3.15 Temporary camp site........................................................................................................ 33
Figure 3.16 Example of a standard Construction Camp (photos correspond with Spiecapag’s camp at Floq). ............................... 37
Figure 3.17 Example of a construction and restoration including typical erosion control structures. ........................................ 48
Figure 4.1  European Habitats mapping along the Terpollar Re-route footprint sites........................................................................... 56
Figure 4.2  Habitat/Flora Photos along the Terpollar pipeline re-route. .................................................. 59
Figure 4.3  Habitat/Flora Photos along the access track and other project footprint elements. .......... 61
Figure 4.4  Fauna Photos of Environmental Survey of the Terpollar Re-route, access track and temporary camp. ................................................................................................................................. 66
Figure 4.5  Baseline Landscape and Visual Amenity.................................................................................. 68
Figure 4.6  Socioeconomic Study Area and Survey Coverage of the Terpollar Re-route. .................. 71
Figure 4.7  View of Terpollar Re-route and grazing infrastructure identified during field survey. ............. 73
Figure 4.8  Shepherd’s huts identified along the Terpollar Re-route....................................................... 74
Figure 4.9  Water Infrastructure identified along the Terpollar Re-route................................................. 75
Figure 4.10 View of access track, temporary camp and infrastructure identified during field survey. ................................................................................................................................. 76
Figure 4.11 Shepherd infrastructure showing huts and corrals located adjacent to access track and within spoil stockpile 1 footprint ................................................................................................................................. 77
Figure 4.12 Basic water infrastructure (arrow shows small plastic piping) on stream crossed by access track and adjacent to spoil stockpile area 1; and territorial marker found over flat resting area within spoil stockpile 2 footprint ................................................................................................................................. 77
Figure 4.13 Representative Land Uses in the Terpollar Re-route................................................................. 78
Figure 4.14  Terpollar Re-route Cultural Heritage Baseline. ................................................................. 80
Figure 4.15  CH-567 Bektashi Order Grave Marker/Monument .......................................................... 82
Figure 4.16  CH-562 Qafa e Martës Memorial Monument and Cemetery ............................................. 83
Figure 4.17  WPC037 Monument to Fatmir Xhezo ........................................................................... 83
Figure 4.18  Pastoralist Infrastructure ................................................................................................. 85
Figure 5.1   Cultural Heritage sites in the vicinity of the Terpollar Re-route ....................................... 120

LIST OF BOXES

Box 5.1   Pipeline Re-route, access track, temporary camp telepheric site and spoil stockpiles – Environmental Key Considerations ........................................................................................................... 90
Box 5.2   Key Considerations for Assessment - Landscape and Visual Amenity ............................... 101
Box 5.3   Pipeline Re-route, Access Track and Temporary camp - Socioeconomic Key Considerations ............................................................................................................................................... 113
Box 5.4   Pipeline Re-route – Cultural Heritage Key Considerations ................................................. 119
1 INTRODUCTION

1.1 PROJECT OVERVIEW

The Trans Adriatic Pipeline (TAP) is the western section of the Southern Gas Corridor; a complex value chain of energy projects that link natural gas supplies from the second development stage of the Shah Deniz field in Azerbaijan to Europe. TAP ("the TAP Project") will connect with the Trans Anatolian Pipeline (TANAP) at the Greek-Turkish border and transport natural gas from the Caspian region via Greece, Albania and across the Adriatic Sea to southern Italy and further to Western Europe (refer to Figure 1.1).

Figure 1.1 TAP Overview.

Source: TAP, 2014

The Albanian onshore section of TAP will start at the border with Greece, near Bilisht Qendër in the Korça region, and run to the Adriatic coast 17 km north-west of Fier. The total length of the onshore section in Albania will be approximately 215 km. In addition, a 37 km length of TAP will run offshore in the Albanian territory of the Adriatic Sea.

1.2 PROJECT ASSESSMENT

TAP AG, with a group of Albanian and international experts, developed a comprehensive Environmental and Social Impact Assessment (ESIA) report for the Albanian onshore and offshore section of TAP ("the Project") in accordance with Albanian law and in compliance with the Environmental and Social Policy of the European Bank for Reconstruction and Development (EBRD).

ESIA is the systematic process of identifying and assessing the potential effects on the biophysical, socioeconomic, and cultural heritage environment as a consequence of a project or development. As a planning tool, the ESIA aims to ensure that environmental, socioeconomic and cultural heritage issues throughout the entire project lifecycle are anticipated and considered by the project proponent, in this case TAP AG. It also serves as a framework for establishing project controls to reduce or prevent adverse impacts.
The TAP ESIA Albania was officially submitted to the National Licensing Centre (NLC) in Albania in January 2013, for review by the Ministry of Environment, Forests and Water Administration – National Environment Agency (NEA). The ESIA was approved in April 2013 and subsequently an Environmental Permit (for Activities Impacting on the Environment) was granted by NEA in May 2013.

TAP AG has disclosed the full ESIA report to affected communities and stakeholders along the pipeline route to enable their views and concerns to be considered during the design and development of the Project.

Since the Environmental Permit for the construction and operation of the Project and its supporting infrastructure was granted, TAP AG has continued with the detailed design and engineering investigations. Through this process, as the design has developed, some areas not previously assessed in the approved ESIA are now being proposed as part of the “new footprint” for the onshore Project. Addendums to the ESIA have been prepared to assess if any such areas of the new footprint that have the potential to cause significant impact to the biophysical, socioeconomic, and cultural heritage environments.

The first ESIA Addendum was prepared during April 2015 in response to the decision by NEA that revisions and modifications to the Project since the approval of the ESIA, and thus not previously assessed and permitted, are subject to a Preliminary Environmental and Social Impact Assessment (PESIA) - as detailed in a letter to the TAP Country Manager (ref. 1170 Prot., dated 03 December 2014). The first ESIA Addendum provided an assessment of one pipeline re-route to avoid a mining concession area L1577 and one new access road (AR444_New) in the Ostrovicë Mountains. These discrete areas were the focus of additional field surveys during 2014 to establish baseline conditions.

A second ESIA Addendum was prepared during October 2015 and provides an assessment of a proposed pipeline re-route in the Potom area located in the Ostrovicë Mountains. A third additional ESIA Addendum for Access Road (AR #460_3) connecting the village of Potom with the village of Backa (Terpollar) in the proximity of KP 83 was also prepared in October 2015. This area was the focus of an additional field survey conducted in July 2015 to establish baseline conditions.

A further two field surveys were conducted during October and November 2015 to investigate and establish baseline conditions for a number of proposed pipeline re-routes and access roads located between the settlements of Qafë and Poliçan (Berat region).

The fourth to the ninth ESIA Addendums were prepared on the basis of these field surveys to focus specifically on the (4) New Route on the Onshore Section of the Pipeline in the Polenë Area,(5) New Route on the Onshore Section of the Pipeline in the Mbrakulla Area , (6) New Route for the avoidance of the Mining Permit No. 1437, located in the Poliçani Area, (7) New Route on the Onshore Section of the Pipeline in the Vërzhchezha Area, (8) Access Road #405_1 (near the settlement of Sinaj) and (9) New Route on the Onshore Section of the Pipeline – Çorovodë Micro-tunnel respectively. Further details about these previous ESIA Addendums is included in Table 1.1.

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During 2016, detailed engineering investigations revealed the existence of some local landslides along the TAP route. Specifically 4 locations were identified for which a more detailed evaluation was needed. A team of engineers and ESIA experts carried a field survey during December 2016 to investigate and establish baseline conditions for environmental, socioeconomic and cultural heritage on the proposed re-routes.

This report, the thirteenth ESIA Addendum (see Table 1.1), has been prepared on the basis of the field survey carried out in December 2016 and April 2017 and focuses specifically on the proposed pipeline re-route in the Mount Faqekuqit area (KP79+870 to KP86+250 on the January 2016 base case in 3-D km chainage, equivalent to KP78+900 to KP84+850 in 2-D chainage) to avoid major landslides in the Terpollar valley, and minor realignments above Terpollar village to maintain the route on the ridge crest and avoid side-long ground (KP86+250 to KP91+400 on the January 2016 base case in 3-D km chainage, equivalent to KP84+850 to KP89+800 in 2-D chainage). This reroute has been named as Terpollar. In addition the addendum considers an access track and a small temporary camp required for the construction of this route section.

**Figure 1.2** Overview of the four proposed Pipeline Re-routes based on the December 2016 field survey. The Terpollar Re-route, presented in this Report, is labeled and marked in green.

*Note: the access road alignment is indicative only.*  
*Source: ERM, 2017*  

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Table 1.1 provides a chronological list of the ESIA related addendums, prepared to date for the TAP Project, detailing the specific Project elements assessed in each one (report name highlighted in ‘bold’ refers to this ESIA Addendum).

<table>
<thead>
<tr>
<th>Preparation Order</th>
<th>Report Name</th>
<th>Project Element(s)</th>
<th>Date Prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>TAP Albania ESIA Report</td>
<td>-</td>
<td>April 2013</td>
</tr>
<tr>
<td>1</td>
<td>TAP Albania ESIA Addendum New Project Footprint</td>
<td>Mining concession pipeline re-route L1577 and new access road 444</td>
<td>April 2015</td>
</tr>
<tr>
<td>2</td>
<td>TAP Albania ESIA Addendum Potom Re-route</td>
<td>Potom area pipeline re-route</td>
<td>October 2015</td>
</tr>
<tr>
<td>3</td>
<td>TAP Albania ESIA Addendum Access Road 460_3</td>
<td>Access road 460_3 in Potom area</td>
<td>October 2015</td>
</tr>
<tr>
<td>4</td>
<td>TAP Albania ESIA Addendum Polenë Re-route</td>
<td>Pipeline re-route to avoid landslide</td>
<td>January 2016</td>
</tr>
<tr>
<td>5</td>
<td>TAP Albania ESIA Addendum Mbrakulla Re-route</td>
<td>Pipeline re-route to avoid landslide</td>
<td>January 2016</td>
</tr>
<tr>
<td>6</td>
<td>TAP Albania ESIA Addendum Mining Concession Area L1437 Re-route</td>
<td>Pipeline re-route to avoid mining concession area L1437</td>
<td>January 2016</td>
</tr>
<tr>
<td>7</td>
<td>TAP Albania ESIA Addendum Vërçhezha Re-route</td>
<td>Pipeline re-route to avoid potential hydraulic hazards and landslides near the Osumi River.</td>
<td>February 2016</td>
</tr>
<tr>
<td>8</td>
<td>TAP Albania ESIA Addendum Access Road 405_1</td>
<td>Access road 405_1 crossing the mining concession area L1437</td>
<td>February 2016</td>
</tr>
<tr>
<td>9</td>
<td>TAP Albania ESIA Addendum Çorovodë Micro tunnel</td>
<td>Tunnel in the Çorovodë area to avoid the Osumi river bed.</td>
<td>February 2016</td>
</tr>
<tr>
<td>10</td>
<td>TAP Albania ESIA Addendum Orizaj Re-route</td>
<td>Pipeline Re-route to a local landslide.</td>
<td>March 2017</td>
</tr>
<tr>
<td>11</td>
<td>TAP Albania ESIA Addendum Osoja Re-route</td>
<td>Pipeline Re-route to avoid a local landslide.</td>
<td>March 2017</td>
</tr>
<tr>
<td>12</td>
<td>TAP Albania ESIA Addendum Sqepuri Re-route</td>
<td>Pipeline Re-route to avoid a local landslide.</td>
<td>March 2017</td>
</tr>
<tr>
<td>13</td>
<td>TAP Albania ESIA Addendum Terpollar Re-route (this document)</td>
<td>Pipeline Re-route to avoid a local landslide.</td>
<td>May 2017</td>
</tr>
</tbody>
</table>

Source: ERM, 2017
This ESIA Addendum has been prepared based on the centerline (re-route alignment) available at the moment of the field survey (December 2016). As per the best ESIA practice the field team surveyed the complete centerline length and investigated the surrounding areas as well (through the field survey, satellite imagery and desktop information). Thus, the baseline chapter and field findings included in the Addendum are not limited to the alignment presented in the figures and maps but actually cover a wider corridor that allows a better understanding of the baseline conditions (and impact evaluations).

As part of the standard international practice, subsequent to this ESIA Addendum, TAP may include minor changes to the route alignment (if deemed necessary). Typically, these potential changes are the result of the Post-ESIA detailed work (engineering planning phase; constructive design) and/or the implementation of the ESIA preventive and mitigation measures (e.g. avoidance of sensitive receptors identified in the ESIA).

These potential minor changes would not involve an increase of the impacts presented in the ESIA Addendum because the alignment will follow the corridor already evaluated and any change to the alignment will be subject to the standard preventive and mitigation measures and Environmental and Social Management Plans (ESMP) set for the overall TAP Project.

1.3 This Report

As previously mentioned, this report forms an addendum to the TAP ESIA Albania approved by NEA in 2013 and provides an assessment of the potential impacts of the new Project footprint on the biophysical, socioeconomic, and cultural heritage environments.

This report has been prepared in response to the formal direction from NEA that revisions and modifications to the TAP (“the Project”) since the approval of the ESIA, and thus not previously assessed and permitted, are subject to a Preliminary Environmental and Social Impact Assessment (PESIA). The requirement is “pursuant to the Annex II ‘The project that are subject of the preliminary process of the Environmental Impact Assessment’ of the [Albanian] Law No. 10 440, dated 07 July 2011, ‘On the Environmental Impact Assessment’, as amended with the Law No. 12/2015, dated 07.07.2015 “On the Environmental Impact Assessment“, which defines the Re-routes of TAP Pipeline under the code 10. (Manufacture infrastructure) f) (oil and gas pipeline installations (Projects not included in Annex I) and gas transportation pipelines carbon dioxide, so the injection and storage in geological formations under the ground).

The Project revisions and modifications are the result of further detailed engineering analysis and engagement of the authorities and local communities to ensure the Project is technically feasible and avoids as many impacts to the biophysical, socioeconomic, and cultural heritage environments as possible.

In addition, this report has been prepared pursuant the Decision of Council of Ministers No. 686, dated 29.07.2015 “On the Approval of the Rules, Responsibilities, and Timelines for the Development of the Environmental Impact Assessment Procedures (EIA) and the Transferring Procedures of the Environmental Declaration” and the Decision of Council of Ministers No. 912, Dated 111.11.2015 “On the approval of the National Methodology of the ESIA Process”. Additional legislation taken into account in preparing this report is listed in Section 2 below.
Consistent with previous ESIA addendums, the report is structured as follows:

- **Section 1** Introduction.
- **Section 2** Legal Framework.
- **Section 3** Project Description: details the new footprint features.
- **Section 4** Baseline Conditions: establishes the existing environmental, social and cultural heritage conditions in the new footprint areas.
- **Section 5** Assessment of Impacts: details the assessment of the significance of potential impacts of the new footprint features on the existing environmental, social and cultural heritage conditions.
- **Section 6** Environmental, Social and Cultural Heritage Management and Monitoring: summarises mitigation and management measures to address any residual impacts of the new footprint features.

Additional supporting information is provided in the following annexes:

- **Annex 1** Baseline Feature Maps.
- **Annex 2** Field Survey Summary Datasheets.
- **Annex 3** Field Survey Notes.
- **Annex 4** Landscape

In recognition of the requirements of Decision of Council of Ministers No 686 dated 29.07.2015 “On Approval of the Rules, Responsibilities, and Timelines for the Development of the Environmental Impact Assessment Procedures (EIA) and the Transferring Procedures of the Environmental Declarations” a number of requirements have been integrated into this report. These requirements and the sections of this report where these have been addressed are presented in Table 1.2 below.

### Table 1.2 ESIA Addendum requirements based on the Decision of Council of Ministers No 686 dated 29.07.2015.

<table>
<thead>
<tr>
<th>No.</th>
<th>Requirement</th>
<th>ESIA Addendum approach</th>
<th>Report Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Description of the vegetation in the Project area.</strong></td>
<td>Description of vegetation and land uses found along the corridor including photos and maps are integrated in several sections and Annexes.</td>
<td>Section 4.2.1&lt;br&gt;Annex 1&lt;br&gt;Annex 2</td>
</tr>
<tr>
<td>2</td>
<td><strong>Information regarding water resources in the Project area and its vicinity.</strong></td>
<td>Water resources are described on the basis of surface waters (rivers &amp; streams) as well as on the presence (confirmed or expected) of water infrastructures such as irrigation channels, water wells, etc.). In addition, water requirements for the project are also evaluated.</td>
<td>Section 4.2.1&lt;br&gt;Section 4.2.2&lt;br&gt;Section 4.2.3&lt;br&gt;Annex 1</td>
</tr>
<tr>
<td>No.</td>
<td>Requirement</td>
<td>ESIA Addendum approach</td>
<td>Report Section</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>3</td>
<td>Identification of potential negative impacts on the environment including impacts on biodiversity, water, soil and air.</td>
<td>The ESIA Addendum includes a tailored selection of the impacts. The impacts have been provided based on the specificities of the proposed Re-route and the nature of the baseline features identified along the areas being evaluated. Biodiversity is evaluated through a number of different impacts (e.g. habitat degradation, fragmentation, species loss...). Air and noise impact assessments have been incorporated as standard impacts under the environmental impacts Section. Impacts on soils and water are covered under the socioeconomics section where the implications of the Re-route on the land uses and agriculture are presented.</td>
<td>Section 5.2.1 Section 5.2.2</td>
</tr>
<tr>
<td>4</td>
<td>Description of potential emissions (i.e. polluted waters, gases, dust, noise, vibrations) and waste generation.</td>
<td>A general description on the wastes and effluents is presented in the Project Description as well as along the Impact assessment chapter to describe the magnitude of operations.</td>
<td>Section 3 Section 5.2</td>
</tr>
<tr>
<td>5</td>
<td>Information about the potential duration of the expected impacts on environment.</td>
<td>A general description on timings expected is presented as part of the Project Description. Similarly along the Impact assessment chapter, where needed, considerations on the time requirements are also included (e.g. months/weeks needed for construction, time required for revegetation and reinstatement, etc.).</td>
<td>Section 3 Section 5.2</td>
</tr>
<tr>
<td>6</td>
<td>Potential spatial extent of negative environmental impacts, i.e. the physical distance between the Project Area and impacted parameters.</td>
<td>Within the Project Description and the Impact Assessment Chapters descriptions on temporary and permanent occupations are presented. Similarly, where appropriate, indications related to distances are included.</td>
<td>Section 3 Section 5.2</td>
</tr>
<tr>
<td>7</td>
<td>Rehabilitation plans for the impacted Project area and evaluation of the reinstatement, including respective cost estimates.</td>
<td>Specific preventive and mitigation measures, plans and procedures are presented within the Impact Assessment chapter as well as within the ESCHMM Chapter. These are based on the same principles set in the TAP ESIA 2013. In addition, in some cases post-ESIA management plans and procedures are also included. The lifetime of the pipeline may extend beyond 50 years. Therefore it cannot be foreseen today the cost to which decommissioning approaches will be taken at the time, however, TAP AG is committed that this will be state-of-the-art at the time when it occurs. Refer to Section 4.11 Decommissioning Phase of the TAP Albania ESIA for further details about decommissioning.</td>
<td>Section 5.2 Section 6</td>
</tr>
<tr>
<td>8</td>
<td>Management and implementation plans for the mitigation of negative environmental impacts.</td>
<td>Specific preventive and mitigation measures, plans and procedures are presented within the Impact Assessment chapter as well as within the ESCHMM Chapter. These are based on the same principles set in the TAP ESIA 2013. In addition, in some cases post-ESIA management plans and procedures are also included.</td>
<td>Section 5.2 Section 6</td>
</tr>
<tr>
<td>9</td>
<td>Possible cross border negative impacts.</td>
<td>Not applicable. Distances to the closes border are sufficient, so no transboundary impacts will be raised.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
2 LEGAL FRAMEWORK

To enhance consistency and uniformity across the TAP Project in Greece, Albania and Italy, all potentially significant effects of the pipeline on the biophysical, socioeconomic, and cultural heritage environment have been assessed against national legislation or the European Union (EU) regulatory impact assessment and environmental framework (whichever is more stringent). As best practice, TAP AG will use the EU framework as a benchmark in Albania, even though it is not currently a part of the EU.

Section 3 Legal Framework (ref: AAL00-ERM-641-Y-TAE-1005) of the TAP ESIA Albania discusses the legal framework within which the Project will be conducted and the environmental regulatory requirements that will apply to Project activities. Applicable international requirements, as well as the relevant international agreements to which Albania is a party, are also detailed.

The TAP ESIA Albania, and this ESIA Addendum, have been prepared to comply with Albanian national legislation and international environmental and socioeconomic requirements, with specific regard to the Environmental and Social Policy of the EBRD.

Albanian laws on Environmental Impact Assessment (Law No. 8990 repealed by Law No. 10 440) aim to protect the environment through prevention, minimization and compensation of damages from proposed projects which may cause direct or indirect significant adverse impacts on the environment due to their size, nature or location, before they are approved. Given the nature, extent and location of the Project in Albania, its authorization is subject to the environmental permitting procedure according to Albanian law.

Refer to Section 3 Legal Framework of the TAP ESIA Albania for further information on regulatory requirements and international compliance standards applicable to the Project.

In addition, this ESIA Addendum has been prepared taking into account the indications provided by the Albanian Government through a number of Decisions of the Council of Ministers. These Decisions are listed below and are considered relevant for the definition of detailed contents of this ESIA Addendum and the approach to the impact evaluation:

- Law No. 10 431, dated 09.06.2011 “On the Environmental Protection”;
- Decision of Council of Ministers No. 247, dated 30.04.2014 “On establishing the rules, requirements and procedures regarding the public disclosure and involvement in the Environmental decision-making.’
• Decision of Council of Ministers No. 912, Dated 11.11.2015 “On the approval of the National Methodology of the ESIA Process”;
• Decision of Council of Ministers No. 575, dated 24.06.2015 “On the approval of the requests regarding the spoil waste management”; and
• Instruction No. 417, dated 25.06.2014 “On the tariffs of the Environmental Permits”.
3 PROJECT DESCRIPTION

3.1 OVERVIEW

This ESIA Addendum presents the information relevant for the TAP project within the Potom and Terpollar Valleys. Within this area in addition to the pipeline re-route (11.2 km in length) (Figure 3.1) the following other elements are described and evaluated:

(1) a small temporary camp located near KP 79+100;
(2) a 3.9 km access track originating from the Terpollar Re-route (KP 79+870) in the vicinity of Martha’s Pass (Qafa e Martës in local language) that heads towards the west through the southern edge of the mountain;
(3) two construction spoil stockpiles; and
(4) hard standing platform for construction of the telepheric cable crane system.

Figure 3.1 Overview of the complete Terpollar Re-route, access track and other temporary facilities.
This section provides a brief description of the Project components being considered as part of the new footprint in the Terpollar Re-route (KP79+870 to KP91+400 on the January 2016 base case in 3-D km chainage, equivalent to KP78+900 to KP89+800 in 2-D chainage).

The description provided reflects the level of design detail available at this stage of the Project development.

Note that pipeline construction in this section will require special techniques on steep slopes which will also be used in other sections of the TAP Albania route where similar terrain constraints exist. Operation of this section of pipeline will be no different to other areas of the pipeline. Therefore this section of the report provides an overview of the alternative alignment which is based Section 4 Project Description (ref: AAL00-ERM-641-Y-TAE-1006) of the TAP ESIA Albania, which provides a detailed description of all the different components involved in the construction, operation and decommissioning phases of the Project in Albania – Refer to this document for further information. Section 4 Project Description of the TAP ESIA Albania also provides an overview of the Project construction and operation management.

It should be noted that the ESIA, and thus this report, considers the reasonable “worst case” in terms of potential impact on the biophysical, socioeconomic, and cultural heritage environment (i.e. the likely significant effects arising from the largest possible footprint) based on available technical input and engineering design documents provided by TAP AG at the time of conducting the assessment. The Project Description therefore establishes a series of development parameters and principles, from which the ESIA practitioners can form the “basis of assessment”. These parameters and principles enable the ESIA to strike a balance between adequately identifying the likely significant effects of the Project, while at the same time providing a degree of flexibility in design during the Project development and implementation. See Table 3.1 for key Project data considered in this assessment.

The remainder of this chapter is structured as follows:

- **Section 3.2**: provides a summary of relevant TAP Albania pipeline construction data applicable and of interest to the re-route covered by this Addendum.
- **Section 3.3**: provides specific project data of the Terpollar Re-route footprint (pipeline centreline and other footprint elements).
- **Section 3.4**: presents the main activities to be undertaken during the construction phase, schedule, resource consumption and emissions.
- **Sections 3.5 and 3.6**: presents a summary of the re-route clean-up and restoration as well the main activities to be undertaken during the operation and maintenance phase.

The lifetime of the pipeline may extend beyond 50 years. Therefore it cannot be foreseen today which decommissioning approaches will be taken at the time. However, TAP AG is committed that this will be state-of-the-art at the time when it occurs. Refer to **Section 4.11 Decommissioning Phase of the TAP Albania ESIA** for further details about decommissioning.
3.2 Pipeline Construction

3.2.1 Pipeline Re-route construction

A summary of key Project data for the construction of the onshore pipeline in Albania is provided in Table 3.1. A full description of onshore pipeline construction and operation activities is included in Section 4 Project Description of the TAP ESIA Albania.
Table 3.1  Pipeline Construction – Key Project Data from TAP ESIA Albania.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline total length in Albania</td>
<td>215 Km</td>
</tr>
<tr>
<td>Pipeline diameter</td>
<td>48 inch: from the Greek-Albanian border to compressor station CS03 (209 Km) 36 inch: from compressor station CS03 to the landfall at the shore of the Adriatic Sea (6 Km)</td>
</tr>
<tr>
<td>Design pressure of pipeline</td>
<td>95 barg (48”) / 145 barg (36”)</td>
</tr>
<tr>
<td>General minimum depth of pipeline (distance</td>
<td>1 m</td>
</tr>
<tr>
<td>from top of pipe to surface)</td>
<td></td>
</tr>
<tr>
<td>Minimum depth of pipeline at road and railway</td>
<td>1.2 – 1.5 m</td>
</tr>
<tr>
<td>crossings (distance from top of pipe to surface)</td>
<td></td>
</tr>
<tr>
<td>Construction working width (48”)</td>
<td>38 m</td>
</tr>
<tr>
<td>Reduced construction working width (physical</td>
<td>28 m or 22 m</td>
</tr>
<tr>
<td>constraints)</td>
<td></td>
</tr>
<tr>
<td>Reduced construction working width (potential</td>
<td>18 m</td>
</tr>
<tr>
<td>ridge modification)</td>
<td></td>
</tr>
<tr>
<td>Total time of construction</td>
<td>3.5 years</td>
</tr>
<tr>
<td>Permanent PPS (pipeline protection strip)</td>
<td>8 m (4 m from each side of the line)</td>
</tr>
<tr>
<td>Safety zone</td>
<td>40 m (20 m from each side of the line)</td>
</tr>
<tr>
<td>Enlarged Safety zone</td>
<td>400 m (200 m from each side of the line)</td>
</tr>
<tr>
<td>Estimated pipelaying rate</td>
<td>General: 100 – 300 m/day</td>
</tr>
<tr>
<td>Topsoil stockpile</td>
<td>2 m</td>
</tr>
<tr>
<td>Trench width</td>
<td>1.6 – 1.8 m</td>
</tr>
<tr>
<td>Trench depth</td>
<td>2.5 m</td>
</tr>
<tr>
<td>Steel pipe length</td>
<td>12 – 18 m</td>
</tr>
<tr>
<td>Hydrostatic testing sections</td>
<td>200 m – 10 Km</td>
</tr>
<tr>
<td>Hydrostatic testing duration per test section</td>
<td>1 – 4 months</td>
</tr>
<tr>
<td>Pipeline land take by working strip</td>
<td>−7,940,000 m²</td>
</tr>
<tr>
<td>Consumption of aggregate material (trench</td>
<td>−3,000 m³/Km of pipeline</td>
</tr>
<tr>
<td>bedding)</td>
<td></td>
</tr>
<tr>
<td>Consumption of steel</td>
<td>−140,000 t</td>
</tr>
<tr>
<td>Consumption of concrete</td>
<td>−4,000 t</td>
</tr>
<tr>
<td>Consumption of polyethylene tape (coating)</td>
<td>−2,500 t</td>
</tr>
<tr>
<td>Consumption of sand</td>
<td>−230,000 t</td>
</tr>
<tr>
<td>Consumption of diesel</td>
<td>−160,000 m³</td>
</tr>
<tr>
<td>Civil water required</td>
<td>−12 m³/day (60 l/person per day)</td>
</tr>
<tr>
<td>Water required for working strip dust</td>
<td>5-10 m³/day</td>
</tr>
<tr>
<td>suppression</td>
<td></td>
</tr>
<tr>
<td>Hydrostatic testing water required</td>
<td>−245,000 m³</td>
</tr>
<tr>
<td>Water required for slurry mixing in HDD</td>
<td>−3,000 m³</td>
</tr>
<tr>
<td>Noise emission range</td>
<td>60 – 115 dBA, depending on specific equipment</td>
</tr>
</tbody>
</table>

Source: TAP ESIA Albania – Section 4 Project Description (TAP, 2012) – Reviewed and updated by ETG Technical Team February 2015

In addition to the data included in Table 3.1, Figure 3.2 to Figure 3.8 shows the typical pipeline working strips both on level and inclined terrain (sidelong ground) as well as a RoW excavation and support measures. Figure 3.9 provides a summary of the basic pipeline construction teams and activities which will be undertaken.
The Terpollar pipeline re-route construction is a sequential process and comprises a number of distinct operations specific to it. These can be broadly categorized under the following headings:

- Team 1: Establishment of temporary construction camp to support construction of a temporary access track and re-route construction crew.
- Team 2: Construction of temporary access track.
- Team 3: Route surveying, preparation of working strip, top soil stripping and grading.
- Team 4: Pipe bending, stringing and welding.
- Team 5: Trench excavation.
- Team 6: Pipelaying, installation and backfilling.
- Team 7: Pipelaying, installation and backfilling using cable crane method
- Team 8: Installation of permanent specialist RoW support measures. Activities will include:
  - Construction of contiguous pile retaining walls
  - Soil reinforcement and reinforced earth buttresses
  - Installation of horizontal drainage borehole
  - Surface and subsurface drainage
  - Erosion control
- Team 9: Site clean-up and restoration

Figure 3.2 Typical Reduced Pipeline Working Strip in level ground (48” Pipeline).

Source: TAP ESIA Albania (TAP, 2012)
Figure 3.3 Typical Pipeline Working Strip on steep sidelong ground (48” Pipeline).

Source: Spiecapag, 2017

Figure 3.4 Use of spider excavators on steep slopes.

Source: Spiecapag, 2017

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Figure 3.5  Construction of contiguous pile retaining walls – pouring concrete.

Source: Spiecapag, 2017

Figure 3.6  Contiguous pile retaining walls - pile cap inspection.

Source: Spiecapag, 2017

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Figure 3.7  Installation of Horizontal Drainage.

Source: Spiecapag, 2017

Figure 3.8  Typical cable crane systems on steep slopes.

Source: Spiecapag, 2017
Figure 3.9  Summary of Basic Pipeline Construction Teams and Activities.

Team 1 - Route Surveying, Set Out Team, Top Soil Stripping and Grading

Activities: Surveyors will put up flags and stakes to mark the route. Bulldozers and graders will clear away topsoil and stockpile in the working width. The graders and bull dozers will then level the right of way for the trench digging team.

Team 2 - Trench Digging Team

Activities: Excavators will dig out 4 m wide trench for pipe. Trench will be dug to a depth of 2.2 m, allowing min 1 m burial depth from top of pipe. Bulldozers will then push excavated material to form windows and level the bedding in the base of the trench.

Team 3 - Pipe Bending, Stringing and Pipe Welding Team

Activities: Pipe transporters will simultaneously deliver a steady stream of pipe alongside the working strip. If required, pipe sections will be bent at the pipe yards prior to delivery to the working strip. Welding teams will join pipe sections alongside the trench before lowering into the trench [see Team 4 activities]. Larger sections will be welded together in the trench.

Team 4 - Pipe Laying, Installation and Backfilling Team

Activities: Side booms and cranes will lower large pipe sections and manoeuvre them into place. Pipe sections will be welded together in bottom of trench. Hydro test crews will carry out integrity tests using water abstracted from water bodies. Bulldozers will then push excavated material to form windows and level the bedding in the base of the trench. Small backhoes and conveyors will reposition excavated material back into the trench. Handheld wacker plates will compact material under and around the pipe. Vibrating rollers will compact the material above the pipeline.

Team 5 - Clean Up and Restoration Team

Activities: The dozers and graders will spread the reinstated material above the pipeline and blend the material into the natural contours.

Source: TAP ESIA Albania (TAP, 2012)
3.2.2 Access track construction

For the construction of the Terpollar Re-route pipeline section an access track will be required. This will be used for transporting personnel and materials to/from the pipeline working front. The route along the access track will be graded down to hard standing/rock with minor surface filling using locally sourced gravel originating from construction activities to treat any soft spot and steep areas. Specific details on the track characteristics are provided in Section 3.4.4.

Two areas where surplus material from access track construction works have also been identified. In addition, a hard standing for the telepheric working area, from where a temporary cable crane system will be placed, is also identified. Figure 3.8 shows an example of a cable crane system commonly used to transport pipeline sections towards higher areas.

3.2.3 Temporary camp construction

A small temporary camp for personnel, construction equipment and material will be located in the vicinity of the Terpollar Re-route, taking into account local infrastructure and good access possibilities.

The camp has been located close to the start of the re-route so it facilitates the logistics during construction and reduces daily traffic requirements to/from the re-route area. The site has been selected considering avoidance of forested areas and flat topography so that construction works and potential nuisances during camp construction and operation are minimized. Finally, it is worth mentioning that site has been located as much to the north as feasible (i.e. just before Martha’s Pass where terrain start climbing towards the high mountains).

The temporary camp will comprise accommodation, offices, restaurant, laundry and a small clinic. It will be fenced along with security services. Domestic sewage will be collected in septic tanks to be later pumped out. Waste will be transported to the PY 2 waste treatment/storage facility. Figure 3.10, below, shows a typical layout as an example. Refer to Section 3.4.4 for additional details and services proposed for the temporary camp.
Figure 3.10  Typical Temporary camp Layout.

Note: Photo shown is for illustrative purposes only. Temporary camp will be significantly smaller (approximately 75% smaller) than the one presented in this picture.  
Source: Spiecapag, 2017

3.3  TERPOLLAR RE-ROUTE

3.3.1  Re-route alignment

Pipeline re-routes are modifications made to the alignment of the base case route during the detailed design of the Project. These are typically made for technical reasons or, where feasible, to avoid sensitive areas or resources (e.g. a site of cultural heritage importance). In this case the Terpollar Re-route is intended to avoid major landslides in the Potom and Terpollar valleys.

References are made to kilometer points (KP) on the 3D January 2016 base case route, which is currently being used for construction and latest technical documentation of the project. In addition the KP in 2D are also referenced in the text because the 2D Km chainage is the one publicly available on the TAP webpage.  
Finally, note that ‘Markers’ in kilometers (also referred as KP) are used to reference particular points along the proposed re-route in 2D starting at KP 0, as shown on Figure 3.1 and Annex 2.
The Terpollar Re-route is located a few kilometres north of the villages of Terpollar and Potom (KP79+870 to KP91+400 on the January 2016 base case in 3-D km chainage, equivalent to KP78+900 to KP89+800 in 2-D chainage). The pipeline route is approximately 6,300 m in length along the first section and traverses around the head of the Terpollar valley by passing over the lower slopes and saddle area between Mounts Faqekuqit and Frengut. The second section of ridge crest optimisation is approximately 4,900 m in length and maintains the ridge alignment along the head of the Terpollar and Potom valleys avoiding sidelong ground above Potom village.

Figure 3.11 provide a general view of the pipeline re-route and basecase route. Figure 3.12 includes a series of photos indicating the approximate pipeline re-route location on the ground and, were possible, the location of the basecase route as well. All photographs were taken during the field survey (December 2016) and the specific locations are presented in Annex 2, where all field waypoints are presented. In addition, Annex 1 (Field Survey Summary Datasheets) provides details of interest along the proposed re-route.

**Figure 3.11** Terpollar Re-route, temporary camp, access track and basecase along the Terpollar and Potom valleys*

*Note that a good portion of the re-route basecase and proposed re-route travel along the same ridge, however alignments are not completely equivalent.

Source: ERM, 2017 (modified Google Earth view)
Figure 3.12 Terpollar Re-route (photos are organized from East to West and indicate the WP location (refer to Annex 2 for the corresponding map). Where visible the Access track (white line) is also presented.
Figure 3.12  Terpollar Re-route (photos are organized from East to West and indicate the WP location (refer to Annex 2 for the corresponding map). Where visible the Access track (white line) is also presented (continuation).
Figure 3.12 Terpollar Re-route (photos are organized from East to West and indicate the WP location (refer to Annex 2 for the corresponding map). Where visible the Access track (white line) is also presented (continuation).

*Note: (1) Re-route alignment is presented for illustration purposes only; (2) The Cuka e Faqekuqit Peaks are also known as Mount Frengut


3.3.2 Access track alignment

The standard access track features are presented in Section 3.2.2. Figure 3.13 provides a general overview of the area of interest showing the access track alignment as well as the location of the stockpile/telepheric work areas, Terpollar Re-route and temporary camp.
Figure 3.13  Temporary access track and other temporary footprint elements.

![Temporary access track and other temporary footprint elements](image)


Figure 3.14, below, presents a number of photos showing the access track alignment on the ground. All photos were taken during the April 2017 field survey and the specific locations/waypoints are presented in the corresponding Map (Annex 2). In addition, Annex 1 (Field Survey Summary Datasheets) provides details of interest along the proposed access track alignment.
Figure 3.14  Temporary access track and telepheric work site (photos are organized from East to West and indicate the WP location (refer to Annex 2 for corresponding map).

*Note: Access track alignment, telepheric working sites and spoil disposal are presented for illustration purposes only.

3.3.3 Temporary small camp location

A standard temporary camp design is presented in Section 3.2.3. Figure 3.11 provide a general overview of the area of interest showing the camp location in the vicinity of the Martha’s Pass as well as the alignments for the proposed re-route and access track. Section 3.4.4 provides a description of the specific characteristics of the camp.

Figure 3.15, below, shows a photo of the site for the proposed temporary camp. Photo was taken during the April 2017 field survey and the specific location/waypoint is presented in the corresponding Map (Annex 2). In addition, Annex 1 (Field Survey SummaryDatasheets) provides details of interest for the site.

Figure 3.15 Temporary camp site.


3.4 Terpollar Re-route Construction

3.4.1 Introduction

The following sections provide a summary of the most relevant aspects for pipeline construction on the Terpollar Re-route and supporting construction activities such as the 8 m wide construction access track and temporary camp.

The information combines general data applicable to the entire TAP pipeline (e.g. construction methods, materials, etc.) as well as some details/estimates for the re-route, access track and
temporary camp where it is possible to disaggregate from the overall pipeline construction to this specific re-route.

The re-route will be constructed as part of the larger TAP project. Therefore the specific details provided (e.g. figures of raw material, effluents, machinery, number of personnel, timings, etc.) need to be understood as an estimate only. These details are presented with the objective to provide the reader details that allow for a better understanding of the type of activities and the magnitude of the operations.

Also note that the principles for the construction and operation of the pipeline re-route are largely equivalent along the entire TAP Albania pipeline. Thus, the expected emissions and wastes produced for the construction of the re-route (e.g. gases, dust, noise, vibrations, contaminated water…) would be equivalent to those expected for any section of the basecase corridor with a similar length. This same principle applies when considering the resources needed for construction (e.g. concrete, coating, steel pipe sections, and water for hydrotesting…) or the type of personnel and machinery.

3.4.2 Construction Duration and Timing

Given the challenges of the mountainous terrain such as steep slopes, inclement weather and rockfall hazard, the Terpollar Re-route can be expected to have a typical construction rate of 15-20 m per crew/day. Based on this estimate the complete reroute would be built within 545-725 days.

The Terpollar re-route activities are expected to start in early 2018 pending on permits and weather conditions. Access track and temporary camp construction will be the first activities to be undertaken, with RoW construction activities extending until late 2019 when hydrotest and reinstatement/restoration activities are expected to be undertaken. It is likely that construction activities will be temporarily suspended during winter months depending on local weather conditions.

Figure 3.9 provides an example of the basic teams and construction activities including route surveying. Detailed information regarding the different construction works can be found in Section 4.4.3 of the TAP Albania ESIA. Table 3.2 provides an estimated on the time required for the various construction steps of the Terpollar Re-route.
### Table 3.2 Detailed Terpollar Re-route construction timings*

<table>
<thead>
<tr>
<th>Construction operations</th>
<th>Duration of works (weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team 1:</td>
<td></td>
</tr>
<tr>
<td>Establishment of temporary construction camp for temporary access track</td>
<td>18 weeks</td>
</tr>
<tr>
<td>construction and re-route construction crews</td>
<td></td>
</tr>
<tr>
<td>Team 2:</td>
<td></td>
</tr>
<tr>
<td>Setting out and construction of temporary access track, including preparation of</td>
<td>26 weeks</td>
</tr>
<tr>
<td>temporary and permanent spoil stockpile sites and pipe storage/hard stand areas for</td>
<td></td>
</tr>
<tr>
<td>telepheric/cable crane activities.</td>
<td></td>
</tr>
<tr>
<td>Team 3:</td>
<td></td>
</tr>
<tr>
<td>Survey and RoW construction, including preparation of working strip, topsoil stripping</td>
<td>60 weeks</td>
</tr>
<tr>
<td>clearing and grading.</td>
<td></td>
</tr>
<tr>
<td>Team 4:</td>
<td></td>
</tr>
<tr>
<td>Survey, stringing, pipe bending and welding.</td>
<td>60 weeks</td>
</tr>
<tr>
<td>Team 5:</td>
<td></td>
</tr>
<tr>
<td>Trench excavation.</td>
<td>60 weeks</td>
</tr>
<tr>
<td>Team 6:</td>
<td></td>
</tr>
<tr>
<td>Pipe laying, installation and backfilling.</td>
<td>60 weeks</td>
</tr>
<tr>
<td>Team 7:</td>
<td></td>
</tr>
<tr>
<td>Pipe laying, installation and backfilling using cable crane methods.</td>
<td>15 weeks</td>
</tr>
<tr>
<td>Team 8:</td>
<td></td>
</tr>
<tr>
<td>Installation of permanent specialist RoW stabilisation and support measures</td>
<td>26 weeks</td>
</tr>
<tr>
<td>Team 9:</td>
<td></td>
</tr>
<tr>
<td>Site clean-up, final reinstatement and bio restoration</td>
<td>26 weeks</td>
</tr>
</tbody>
</table>

* The timings provided for each activity are an estimate only to provide context to the specific re-route. Note that several construction operations will be performed in parallel as the work progresses, with RoW preparation and construction of access track and spoil stockpile sites will harbour all other activities described.

Source: ERM, 2017

### 3.4.3 Machinery, Equipment, Transportation and Traffic

The re-route construction works will require the same equipment and construction techniques as described for the onshore pipeline construction in the TAP Albania ESIA (See Chapter 4 of TAP Albania ESIA). As such, the major items of construction equipment needed are those typical of conventional civil engineering: bulldozers, heavy excavators, dump trucks, large heavy lift cranes, standby generators, excavators, side booms / pipelayers, rock breakers, etc. (refer to Annex 3.6 of the TAP Albania ESIA for further details about the equipment that could be used for the construction of the re-route and photographs). For the Terpollar Re-route, a cable crane system will be used to install the pipeline in sections with very steep slopes sections (>30°). Additional equipment will include support towers, hydraulic winches, spider excavators, overhead buckets and man carriers.

Transportation along the re-route will include: (1) the labor material and equipment, (2) the steel pipelines, and (3) removal of surplus excavated material, if required.

Large earth moving machinery and other special items of equipment will be required to prepare the temporary camp, RoW, temporary access track, temporary telepheric working site with cable

1. Should construction permits be delayed or unfavourable weather conditions arise, the access track would be built at the same time as the as the pipeline RoW is constructed.

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crane, spoil stockpile areas, excavate the pipe trench and lay the pipeline. Construction traffic will use the graded RoW and the temporary access track which will be built across the base of the cliff line, between Mount Faqekuqit and Mount Frengut.

Construction traffic will use the graded RoW and access track, delivering construction materials such as pipe lengths etc. from already established storage yards which will be used to provide materials and services to a large portion of the TAP pipeline (including the entire Terpollar Re-route). A small hard standing area (the telepheric work area) will be required at the base of the cable crane section for winch operation, storage and handling of small quantities of pipe, spoil and backfill handling operations etc. Small hard standing areas will also be required adjacent to those sections of the RoW where contiguous pile walls will be constructed for construction and temporary storage of reinforcement cages, drill strings, casings etc.

It is worth noting that additional pipe yards will not be required for the Terpollar Re-route because pipeyard 2 (Floq) and Pipeyard 3 (Qafa), located respectively approx. 28 km and 4 km from the each end of the pipeline reroute will be used as the main yards and supply for the re-route (9.4 km of pipe to be delivered from Floq and 1.5 km from Qafa). Materials will be transported on heavy goods vehicles from the pipeyards to the construction corridor. Each pipe will be around 12 to 18 m long and weigh between 7 and 12 tons.

Materials for civil construction will be temporarily stored within the construction corridor. Traffic Management Plans will be developed for each municipality to assess measures required to adequately manage traffic movements between pipeyards and Right of Way sites. Traffic related to the Terpollar Re-route will be managed per the agreed Traffic Management Plan for the related pipeyard and Municipality.

Providing an estimate of construction traffic is difficult as this not regular during the construction of the pipe and can change depending on the specific activities being implemented in different locations of the pipeline route as well as on specific needs that may arise during construction. Therefore the estimates provided below should be considered as an estimate only for the purpose of evaluating overall traffic:

- Between 20 and 40 two-way trucks movements per day over 10 days to transport pipe from the pipe yards to the construction working strip (total of 320 truckloads each carrying 2 pipes);
- Between 20 and 40 two-way trucks movements per day over 10 days to transport bedding and replacement material from the pipe yard to the working strip;
- Between 200 and 250 two-way staff transport (light vehicles and buses) and petrol transport per day from temporary camp to the working strip (this assumes all teams are working all at the same time, however it should be taken into account that in reality this is not the case as it is a step-wise process instead).
3.4.4 Construction camp, services, utilities and access track

Given the remote location of this reroute, the lack of existing access roads and the difficulty of access from existing camps due to terrain and weather constraints, the temporary camp will be necessary to minimise travel, enable efficient working and to provide nearby shelter from bad weather.

The temporary camp for personnel, construction equipment and material will be located in the vicinity of the Terpollar Re-route, taking into account local infrastructure and good access possibilities (Figure 3.16). The camp will be set up and operated during construction. It will have its own water and electrical supply as well as facilities for wastewater and solid waste management. Camp staff will provide housekeeping, meal and medical services (Table 3.3). Fresh water will be provided from existing water supplies if available or alternatively from springs in the camp's surroundings. All wastewater will be treated according to national requirements prior to dewatering in a river or leaching.

Topsoil will be removed and stored during the occupation of the land. The surface of all traffic areas will be temporarily covered at least with gravel. Camp will be fenced, lighted and guarded. All installations are of temporary character and will be removed completely after the construction period (during winter months camp will be sealed if activities are suspended due to weather). The entire area will be reinstated after demobilisation of infrastructure.

Figure 3.16 Example of a standard Construction Camp (photos correspond with Spiecapag’s camp at Floq).

Note that the Floq Camp is much larger than the Temporary camp as it accommodates up to 500 employees. The temporary camp in this case will be 80-100 employees.

Source: ERM, 2017
Table 3.3 Number of Employees, Temporary Land Take and Infrastructure of the Construction Camp – Key Project Data.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td>Approximately 80 – 100 persons</td>
</tr>
<tr>
<td>Temporary land take</td>
<td>Approximately 10,000 m² (100 x 100 m), ½ - 1 year</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Offices for TAP AG and its Engineer and the Contractor; Accommodations, staff canteen, leisure room; First aid room, fire fighting equipment, access control; Workshops, storerooms, fuelling station etc.; Stock yards for main equipment; Parking areas; Utilities (electrical power supply, telephone, water supply, wastewater treatment etc.)</td>
</tr>
</tbody>
</table>

Source: TAP ESIA Albania – Section 4 Project Description (TAP, 2012)

A summary of key data for the construction of the access track and associated telepheric work areas is provided in Table 3.4. A full description of the onshore pipeline, supporting infrastructure, and associated construction and operation activities is included in Section 4 Project Description of the TAP ESIA Albania.

Table 3.4 Access Track Construction and Telepheric – Key Project Data.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total time of construction</td>
<td>Approximately 8 weeks, in advance of pipeline construction</td>
</tr>
<tr>
<td>Land take by access track</td>
<td>~31,200 m² for access track (considering 8 m).</td>
</tr>
<tr>
<td>Land take by stockpile areas</td>
<td>~12,310 m² for both stockpile areas</td>
</tr>
<tr>
<td>Land take by telepheric/cable crane site</td>
<td>~2,500 m² for telepheric/cable crane site</td>
</tr>
</tbody>
</table>

Source: Spiecapag, 2017

3.4.5 Pre-construction activities

Before starting any construction work a topographic survey is completed and a pre-construction walkover survey with photographic records will be done to document existing condition of the pipeline route and the access roads. These records will be used as part of the standards against which the quality of the restoration work will be judged when construction work is completed. The extent of the Right of Way will be marked out, as well as the center of the trench line. Obstructions such as walls, fences and paths will be disturbed by the minimum amount necessary for safe working. Wall material will be carefully dismantled and stored for reuse. All obstructions/elements found along the RoW will be either compensated or reinstated depending on the nature of the element as per the standard procedures in place.
Records of buried facilities such as drains and irrigation pipe locations will be prepared and verified with the landowner/user to prevent accidental damage during pipeline construction. Existing third party services will be located, marked, and either safeguarded or diverted. Warning posts will be erected for overhead cables, and temporary crossing points clearly identified. Other pre-construction site activities will include:

- Assessment of construction materials quantities;
- Assessment of specific construction methods; and
- Installation of construction site and worksites.
- Assessment of rockfall hazard and potential mitigation measures;
- Identification of start and end points of sections requiring temporary and permanent special construction/RoW support measures such as rockbolts, pile walls, deeper pipeline burial.
- Identification of start and end point of cable crane section, tower locations, hard stand areas.
- Identification of extra workspace areas for pile wall construction.

3.4.6 Pre-commissioning: Pressure Testing during Construction (Hydrotesting)

Hydrotesting (or hydrostatic testing) will be used to test the integrity of the line pipe and welding, in addition to the integrity testing undertaken during the welding process. The test involves placing water inside the pipeline at a certain pressure to check that there is no pipe damage and that there will be no leaks.

After the pipeline has been filled and pressurised, and all the necessary parameters have been measured, the pipeline is dewatered and dried. A defect is identified comparing the measured pressure in the test section against the theoretical pressure of the tested pipeline section.

A detailed description of hydrotesting activities can be found in Section 4.4.1 of the TAP Albania ESIA.

Water will be extracted from nearby surface water sources with water flow of more than 3m3/sec. Extraction rates will consider the seasonal changes of spring flows and will be subject to required permits. Before any water abstraction commences an Environmental, Social and Cultural Heritage assessment will be carried out on the water source to determine its suitability for abstraction. If suitable water abstraction sources cannot be located in the vicinity of the reroute, hydrotest water will be transferred between test sections.

The duration of hydrotesting depends on elevation, ambient temperature and other factors. A detailed description of hydrotesting activities can be found in Section 4.4.1 of the TAP Albania ESIA. The water used for hydrotesting needs to be free of contaminants and not aggressive (pH between 5 and 8). Additives and chemicals will be used where required, after water sampling results have been received. Discharge will be in accordance with approved procedures and local legislation.
Following successful testing, the used water will be discharged back into a receiving water body within the same catchment after having passed sedimentation pool, through which the water will flow very slowly in order to remove particles and sediment that may have gathered inside the pipe. These pools will be sized to provide a retention time of 5 minutes, which is considered enough time for allowing the solid particles to settle and remain in the bottom of the pond.

The discharge rate after finalisation of hydrotests will follow the same rules as applicable for abstraction. Environmental effects are expected to be minimal or negligible when discharge rates are under 10% of the receiving river flow. The discharged water quality is expected to be basically the same of the abstracted water. Samples of hydrotest discharge water will be taken as a precautionary measure.

Prior to the extraction or disposal of hydrotest water the contractor will obtain written approvals from relevant authorities.

It should also be noted that hydrotest water will be re-used in as many sections as feasible provided the specific circumstances allow (e.g. timings for the hydrotest in the various sections, relatively similar heights between sections, same river watershed).

3.4.7 Road Crossing

There are no road crossings along the Terpollar Re-route.

3.4.8 Construction workforce

At present, the maximum estimated number of personnel who will work on the Terpollar Re-route is of 120 employees. Working hours will be in accordance with local labor law.

The workforce will consist of approximately 70% Albanians, 85% of which will be from the directly affected areas, and 30% expatriates, given the experience required to operate machinery safely in steep mountainous terrain. The make-up of the teams for construction of this re-route will generally be 60% unskilled, 10% semi-skilled and 30% skilled workers.

In addition, approximately 10-20 security personnel from a private security company will be present at the working sites.

Considering the limited capacity of the temporary camp, re-route construction workers and other employees will be accommodated in either the temporary camp as described above, or other temporary construction camps being used for the construction of the pipeline project.

3.4.9 Use of Resources and Environmental Interferences during Construction and Pre-commissioning

The following subsections summarize the data considered relevant to the Terpollar Re-route, for further details refer to Section 4.9 of TAP Albania ESIA.

- Temporary land easement;
- Materials and fuel usage during construction;
• Water consumption;
• Air emissions;
• Noise emissions;
• Liquid and Solid Waste Generation, Handling and Disposal.

3.4.9.1 Temporary and permanent easement

The temporary working strip for pipeline construction will typically vary between 18 to 38 m wide depending on the physical features of the area (e.g. ridge crests vs flatter terrain). However on the steeper slopes and sidelong ground sections where temporary rockfall measures and/or specialist support measures may be required, the temporary working strip will be up to 60 m wide. On the cable crane section, the working strip may have to be up to 50 m wide to enable cable stay anchorage for the support towers.

Additional workspace on the RoW will be required at watercourse crossings, where specialist pile wall support measures are required and on either end of the cable crane section.

Off the RoW additional land will be required for both temporary and permanent spoil stockpiles and for a temporary access track, running across the break of slope below Mounts Faqekuqit and Frengut, and linking the east and west RoW approaches to the mountains.

After construction the working strip will be restored to its original condition were possible. During the operation of the pipeline a number of permanent safety restrictions will apply (see Section 3.6) to the Pipeline Protection Strip (PPS), which is 8 m (4 m either side of the pipe centerline), where farming of annual crops and associated shallow ploughing down to a maximum depth of 30 cm will be allowed but cultivation of deep rooting system plants such as vineyards, fruit trees, or any other bushes or trees will be restricted. Similarly, no houses or construction will be allowed in that area.

Table 3.5 provides a summary of the potential land easement during construction and operation assuming different working strips.

### Table 3.5 Project Land Easement during Construction.

<table>
<thead>
<tr>
<th>Project component</th>
<th>Width</th>
<th>Land easement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular working strip (5.00 km)</td>
<td>38 m</td>
<td>19.0 ha</td>
</tr>
<tr>
<td>Enlarged working strip (2.55 km)</td>
<td>60 m</td>
<td>15.3 ha</td>
</tr>
<tr>
<td>Ridge area working strip (3.35 km)</td>
<td>28 m</td>
<td>9.38 ha</td>
</tr>
<tr>
<td>Temporary land easement Outside the PPS</td>
<td></td>
<td>34.8 ha</td>
</tr>
<tr>
<td>Permanent easement PPS (8 m)</td>
<td></td>
<td>8.72 ha</td>
</tr>
<tr>
<td>Temporary camp footprint 100 m x 100 m</td>
<td></td>
<td>1.0 ha</td>
</tr>
<tr>
<td>Temporary construction access track (3.9 km)</td>
<td>8 m</td>
<td>3.12 ha</td>
</tr>
<tr>
<td>Spoil stockpile areas (combined)</td>
<td>n.a.</td>
<td>1.23 ha</td>
</tr>
<tr>
<td>Telepheric working area</td>
<td>n.a.</td>
<td>0.25 ha</td>
</tr>
</tbody>
</table>

*Estimations provided in this table represents the most plausible operations scenario for land easement. Changes are expected during detailed engineering but these figures provide a good overall estimate and magnitude of operations*

*Source: Spiecapag, 2017*
A safety zone, where the construction of new third party structures along the pipeline, will be restricted to a safety zone of 40 m (i.e. 20 m from each side of the pipe centerline), however, it will be possible to re-build greenhouses in this zone following pipeline construction. Construction of clusters of houses will not be allowed in a strip of 200 m either sides of the pipe centerline (400 m strip).

3.4.9.2 Materials and fuel usage during construction

During construction of the re-route the following raw materials are expected to be used: aggregate, steel, concrete, coating and sand. The following table summarises the materials and fuel usage estimations for the re-route.

Table 3.6 Raw Material Requirements.

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Terpollar Re-route (10.9 km)</th>
<th>Complete route (215 km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate</td>
<td>23,500 t</td>
<td>3,000 m³/km</td>
</tr>
<tr>
<td>Steel</td>
<td>3,900 t</td>
<td>140,000 t</td>
</tr>
<tr>
<td>Concrete</td>
<td>9,500 t</td>
<td>4,000 t</td>
</tr>
</tbody>
</table>

Source: ERM, 2017 (based on TAP ESIA, 2012)

In order to avoid damage to the pipeline coating, the padding material will consist of well graded, aggregate material crushed and sorted through a screener bucket with maximum size of 50 mm, sourced from excavated rock material wherever possible.

Where excavation disturbs topsoil, the first layer of excavated material (topsoil) will be stored separately so that it can be replaced on the surface when the Right of Way is reinstated.

Heavy equipment and motor engine driven equipment in use during the construction phase will be fuelled with diesel. Diesel fuel will be delivered via approved fuel road tankers.

An estimated consumption of 3,500 tonnes of fuel has been estimated for equipment and vehicles.

3.4.9.3 Water consumption

The foreseen water consumption during construction phase is related primarily to the watering of the construction sites to reduce dust emissions due to earthmoving activities and for civilian uses. In the pre-commissioning phase water usage is related to the hydrotesting activities. At the beginning the civil water is typically sourced by the municipality (using tankers). Later on, water is typically sourced through on-site water wells. Water for dust suppression, the temporary camp and hydrotesting will be sourced locally from permitted surface water bodies.

The following table shows the estimated water consumption during the construction activities.
Table 3.7  Water usage.

<table>
<thead>
<tr>
<th>Typology</th>
<th>Quantity</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil water</td>
<td>Max 4.8 m³/day</td>
<td>60 l/person per day and a maximum of 100 people</td>
</tr>
<tr>
<td>Industrial water</td>
<td>(1) 35 m³/day</td>
<td>Working strip humidification (1 tanker/day -35m³)</td>
</tr>
<tr>
<td>Industrial water</td>
<td>(2)</td>
<td>Hydrotesting (refer to Section 3.4.6)</td>
</tr>
</tbody>
</table>

(1) It should be noted that water requirements can be very variable depending on the specific site conditions (season/weather, protection from sun & wind, distance from receptors...). Thus this estimate is provided as a reference.
(2) Hydrotest can be 0 if water can be recycled from previous/adjacent hydrotest section, which is actually the expected scenario in most cases.

Source: ERM, 2017 (based on TAP ESIA, 2012)

3.4.9.4  Air emissions

During construction activities, the air emission will be earth and rock dust particles from soil and rock excavation/movement and pollutants from the exhausts of heavy equipment and vehicles. The earth and rock dust will be produced during the excavation and backfilling activities and the earthworks related to the worksites. Other sources of dust emission will be the traffic movements, on the Working Strip and access track, of trucks, minivans and heavy equipment. Pollutants will be produced by heavy equipment due to the fuel combustion in their engines, and released in the exhausted gas. The main pollutants produced will be NOₓ, CO, dust and SOₓ.

3.4.9.5  Noise emissions

Typical noise emissions generated by heavy construction equipment at the working strip, access track and other worksites are listed in Table 3.8. The reported pressure noise levels at 1 metre from the source are typical for the considered equipment. During construction the main sources of noise are blasting for RoW and trench excavation, ripping and hydraulic hammer excavation of rock using excavators, drilling for blasting and rockbolt installation, and augering/drilling for pile construction.

Table 3.8  Typical Noise Levels for Construction Equipment.

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Power Noise Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic hammer</td>
<td>85 dBA</td>
</tr>
<tr>
<td>Grinding (pipeline)</td>
<td>85 - 109 dBA</td>
</tr>
<tr>
<td>Grit Blasting (pipeline)</td>
<td>96 - 100 dBA</td>
</tr>
<tr>
<td>Rock blasting</td>
<td>95 dBA</td>
</tr>
<tr>
<td>Auger rig</td>
<td>85 dBA</td>
</tr>
<tr>
<td>Rock drill</td>
<td>85 dBA</td>
</tr>
</tbody>
</table>

Source: Spiecapag, 2017

The above activities, including blasting, are standard activities that are needed/planned also in other portions of the pipeline within Albania. The blasting on the Terpollar-re-route is not different to the blasting elsewhere along the pipeline. It is carried out during daytime only and typically there is one blast per day, covering approximately 200-300 m in one blast. In the case of this re-route, blasting is likely to be done over shorter sections. For pipeline construction multiple small charges are used with the objective to fracture the rock and make it excavatable. No blasting will be
required on the access track or camp site. The noise generated generally lasts 15-45 seconds as multiple charges are activated.

During the pre-commissioning phase, the main noise sources are compressors and pumps foreseen for the hydrotecting activities. The typical pressure noise levels at 1 metre from the source are typical for the considered equipment and are shown in the following Table 3.9.

**Table 3.9 Typical Noise Levels for Pre-commissioning Equipment.**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Power Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine driven pump</td>
<td>84 - 99 dBA</td>
</tr>
<tr>
<td>Engine driven compressors</td>
<td>90 - 115 dBA</td>
</tr>
</tbody>
</table>

*Source: ERM, 2017 (based on TAP ESIA, 2012)*

3.4.9.6 **Liquid and Solid Waste Generation, Handling and Disposal**

Waste management will be carried out closely in line with the legal framework and under consideration of international best practice principles. Waste management practices for the re-route will follow the strategy described in the TAP Albania ESIA (refer to Section 4.9.7). As such, companies certified by the relevant authorities (Ministry of Environment Forestry and Water Administration) will be used for transportation, recycling and disposal of waste.

Preliminary calculations indicate that between KP79 to KP90 blasting to form RoW in sidelong ground will be carried out over 1900 m length, involving 154,000 m³. In addition blasting to excavate pipe trench will be carried out over 4500 m length, involving 24,500 m³. Finally the use of excavator-mounted hydraulic hammer to profile trench/prepare cutting faces/break up boulders will be carried out over 10,200 m length.

Much of the excavated soil and rock will be screened and used to backfill the pipeline trench and reinstate the RoW surface. At the base of steep slopes and on steep side slopes, a coarse rockfall protection armour layer (rip rap) will be placed over the pipeline. Any excess spoil will go to permanent stockpiles at described sites. Permanent spoil disposal area will be permitted and agreed with Municipal Authorities, in compliance with Albanian Law and project procedures. The re-route will use both the workers camps established for the larger TAP Albania Project and the additional temporary camp located nearby. A small sewage treatment facility or septic tank will be installed at the temporary camp. Waste water and solid waste generated at the temporary camp will be routinely collected for disposal at the main camp in Korče/PY2 for subsequent processing and disposal.

Waste generated during construction of the re-route is likely to be classified into four categories for disposal as summarised in Table 3.10. Detailed lists of the types of waste are shown in Table 3.11 and Table 3.12.
Table 3.10 Categories of Waste Generated During Construction.

<table>
<thead>
<tr>
<th>Inert</th>
<th>Domestic</th>
<th>Oily and Hazardous</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>These will include: earth (not including excavated material, which is destined to be backfilled when the area is restored), building rubble, unused construction material etc. generated during preparation and restoration of worksites. These wastes pose no risk of pollution, but may be unsightly and need to be disposed of at a controlled disposal site.</td>
<td>The offices and administration buildings associated with the worksites (as well as the workers’ camps) will generate amounts of ‘domestic’ types of waste (i.e., food waste, paper and packaging etc.). This will be transported to a controlled municipal waste disposal site.</td>
<td>These will include: the oily wastes associated with vehicle maintenance (waste oil, material collected from waste water interceptors etc.); unused or waste chemicals, paints and solvents; materials excavated from contaminated sites (if any); and, any other wastes, sludge or debris that are unsuitable for disposal in a municipal type landfill. Such wastes will be segregated for collection and disposal by specialist contractors at sites that are equipped and approved for such wastes.</td>
<td>These will include: Hydrotest water from the pipelines; “Black” and “grey” water from construction and operation camps; Hazardous liquid wastes (ex. oils, solvents etc.); Rainwater runoff from sealed surfaces and roofs; and Tunnelling machines cooling water.</td>
</tr>
</tbody>
</table>

Source: Preliminary Logistics Study Albania – Update APL00-ILF-100-F-TRP-0002. Rev.: 0D (7th December 2011)

Table 3.11 describes typical waste types generated by the construction of the pipeline. The re-route, provided it is a relatively short section (11.2 km), involves only a small amount of waste when compared to the complete pipeline spread of the TAP Project.

At the moment of writing this document the specific plans and procedures for waste management are already in place and are applicable to the wastes generated during the re-route construction. A short summary of management and disposal is summarized within Table 3.11.

Table 3.11 Typical Wastes Generated during the Construction of the Pipeline.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Waste Generation</th>
<th>Disposal Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working width preparation</td>
<td>Hedges, timber, vegetation, fence posts, wire etc.</td>
<td>Reuse during reinstatement of dispose in accordance with applicable legislation</td>
</tr>
<tr>
<td>Pipe-string and bending</td>
<td>Pipe-bands and end caps.</td>
<td>Collect and send to licensed waste disposal or recycling site.</td>
</tr>
<tr>
<td>Welding, testing and coating</td>
<td>Spent welding rods, grinding wheels, visors, shot-blast.</td>
<td>Collect and send to licensed waste disposal site.</td>
</tr>
<tr>
<td>Trenching, lowering and laying of the onshore pipeline</td>
<td>Soil and rock</td>
<td>Set aside to be used in backfilling. Excess quantities reused or disposed in approved natural material disposal sites.</td>
</tr>
<tr>
<td>Trenching of the offshore pipeline</td>
<td>Soil and rock</td>
<td>Set aside to be used in backfilling or send to licensed waste disposal site</td>
</tr>
<tr>
<td>Reinstatement</td>
<td>Temporary stone roads. Temporary fencing, gates, troughs etc.</td>
<td>Re-use elsewhere within landholding. Re-use if possible.</td>
</tr>
<tr>
<td>Trenchless Crossing boring</td>
<td>Spoil and rock cuttings.</td>
<td>Store in pits, then reused or disposed in accordance with approved procedures and/or in approved natural material disposal sites.</td>
</tr>
<tr>
<td>Mess huts, miscellaneous, etc.</td>
<td>Canteen refuse, safety equipment etc.</td>
<td>Incinerate or collect and send to licensed waste disposal site.</td>
</tr>
<tr>
<td>Mobile site toilets</td>
<td>Sewage.</td>
<td>Disposal by appointed waste management contractor.</td>
</tr>
</tbody>
</table>
### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Waste Generation</th>
<th>Disposal Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blasting activities</td>
<td>Consumable materials and Hazardous waste</td>
<td>Collect &amp; dispose of off-site in accordance with approved procedures</td>
</tr>
<tr>
<td>Surplus concrete and grout</td>
<td>Batched concrete &amp; Cementitious/resin grout</td>
<td>Collect &amp; dispose of off-site in accordance with approved procedures</td>
</tr>
</tbody>
</table>

Source: Spiecapag (based on TAP ESIA, 2012), 2017

Table 3.12 describes the Construction Waste Inventory for the Terpollar Re-route. There are no relevant differences in length between the proposed re-route and the TAP pipeline section being re-routed. Therefore the quantities of waste produced for the construction are considered comparable and in all cases small when compared to the total waste produced for the complete TAP project.

Table 3.12  Construction Waste Inventory.

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Waste Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazardous</strong></td>
<td></td>
</tr>
<tr>
<td>NDT waste</td>
<td>Batteries Wet Batteries Dry</td>
</tr>
<tr>
<td>Rags and oil absorbents</td>
<td>Activated carbon</td>
</tr>
<tr>
<td>Pipeline coating chemicals</td>
<td>Cables/copper</td>
</tr>
<tr>
<td>Aerosol cans</td>
<td></td>
</tr>
<tr>
<td>Adhesives</td>
<td>Glycols</td>
</tr>
<tr>
<td>General Chemicals</td>
<td>Solvents</td>
</tr>
<tr>
<td>Freight foam</td>
<td>Hydro test fluids</td>
</tr>
<tr>
<td><strong>Chemicals (Hazardous)</strong></td>
<td></td>
</tr>
<tr>
<td>Diesel, Fuel and Oil Wastes</td>
<td>Light bulbs</td>
</tr>
<tr>
<td>(Hazardous)</td>
<td>Medical</td>
</tr>
<tr>
<td>Diesel generator lube oil</td>
<td>Paint sludge</td>
</tr>
<tr>
<td>Misc. oils (incl. hydraulic)</td>
<td>Paint and cans/brushes</td>
</tr>
<tr>
<td>Vehicle &amp; equip lube oil</td>
<td></td>
</tr>
<tr>
<td>Glycol sludge</td>
<td></td>
</tr>
<tr>
<td><strong>Non Hazardous</strong></td>
<td></td>
</tr>
<tr>
<td>Paper and card</td>
<td>Welding materials</td>
</tr>
<tr>
<td>Pipe-bands and end caps</td>
<td>Wood</td>
</tr>
<tr>
<td>Plastic bottles</td>
<td>Aluminium cans</td>
</tr>
<tr>
<td>Plastic 'epoxy' drums</td>
<td>Electrical/electronic comps</td>
</tr>
<tr>
<td>Polystyrene</td>
<td>Filters (water)</td>
</tr>
<tr>
<td>PPE and clothing</td>
<td>Food</td>
</tr>
<tr>
<td>Steel</td>
<td></td>
</tr>
<tr>
<td><strong>Inert (Non-hazardous)</strong></td>
<td></td>
</tr>
<tr>
<td>Bricks and building materials</td>
<td>Glass</td>
</tr>
<tr>
<td>Concrete/Foundations</td>
<td></td>
</tr>
</tbody>
</table>

Source: Spiecapag (based on TAP ESIA, 2012), 2017
3.5 TERPOLLAR RE-RUTE CLEAN-UP AND RESTORATION

As on other sections of the TAP pipeline, temporary footprint areas of the Terpollar Re-route will be subject to standard clean-up and restoration, including revegetation as required. Key principles for restoration can be summarized as follows:

- The removed top soil will be placed back on the footprint areas (pipeline corridor, temporary track, telepheric and small camp).
- The original contours of the land will be restored as closely as possible to the original topography (see Annex 3.4 – Technical Drawings - Construction Activities of TAP Albania ESIA).
- For steep slope areas, such as those found in some sections of the Terpollar Re-route, erosion control berms, jute matting and potentially seeding with native species to promote growth will be implemented (Figure 3.17).
- Revegetation will be implemented as part of the restoration/reinstatement plan for the entire pipeline in Albania. The various habitats/environments cleared during construction will be reinstated to the extent feasible, using, as appropriate, a combination of plant, bush and tree species as required (with the exception of the PPS where no deep rooted species will be planted). Revegetation will use local species and varieties only.
- As part of the restoration process, all equipment access crossings will be removed. Particular care will be taken to ensure that any land drainage infrastructure or facilities, and vegetation, which were disturbed / moved during construction, will be reinstated to their former state.
- Photographic records will be made of the re-route, where necessary, before and after the works. If required, the final step will be the establishment of access barriers to prevent trespassing on the working strip at appropriate points. All posts and markers will be located to minimise interference with agricultural activities. Cathodic protection system test posts will be installed.
The final stage in the pipeline construction process, once reinstatement is established, is the removal of the temporary fencing where it has been applied.

Note that permanent features such as the spoil stockpiles will be subject to landscaping principles, where a combination of erosion control measures and revegetation will be implemented.

### 3.6 Terpollar Re-route Operation and Maintenance

The re-route constitutes an integral portion of the TAP pipeline and therefore once commissioned the re-route will be subject to the operation and maintenance defined for the entire TAP pipeline.

The re-route does not include any BVS (Block Valve Station) or CS (compressor Station) and therefore operation and maintenance will be limited to (1) the pipeline internal inspection, which will be operated from the CS and (2) the monitoring and maintenance of safety permanent restrictions, which are summarized below:

**Figure 3.17 Example of a construction and restoration including typical erosion control structures.**

*Source: Spiecapag, 2017*
- A permanent **Pipeline Protection Strip** (PPS) with a width of 8 m (i.e. 4 m either side of the centreline). Farming of annual crops and associated shallow ploughing down to a maximum depth of 30 cm will be allowed, but cultivation of deep rooting system plants such as vineyards, fruit trees, or any other bushes or trees will be restricted. Similarly, no houses or construction will be allowed. The PPS will also ensure that access is available for inspection of the pipeline and for pipeline maintenance at any time.

- A **Safety Zone** with a width of 40 m (i.e. a 20 m wide strip each side of the pipe centreline) where the construction of new third party structures along the pipeline will be restricted. However, it will be possible to re-build greenhouses or irrigation pump houses in this zone following pipeline construction.

- An **Enlarged Safety Zone** with a width of 400 m (i.e. a 200 m wide strip both sides of the pipe centreline) where the establishment of new clusters of houses and/or industrial infrastructure will be restricted (i.e. no facilities >100 people and no dwelling clusters >300 people).
4 BASELINE CONDITIONS

4.1 OVERVIEW

4.1.1 Environmental Baseline Overview

The environmental baseline for this report has been prepared based on the information gathered through field survey investigations (December 2016 and April 2014), the review of environmental data collected for the TAP ESIA Albania report (2013) and the additional ecological surveys performed by TAP during the post ESIA investigations. The criteria used to assess the sensitivity and importance of environmental resources and receptors in the ESIA is also used in the ESIA Addendum for consistency.

The environmental study area established for the TAP ESIA Albania consisted of a 500 m corridor along each sides of the 2012 basecase route and a 500 m area from the boundary of all Project components. In addition, the study area was expanded in certain locations where mobile species of concern (e.g. bears, wolves, and certain bird species) are likely to be present, associated with a protected area, or may use other habitat in the wider area which may be directly or indirectly affected by Project activities. Section 6.5 of the TAP ESIA Albania report contains a summary of the environmental baseline data for the entire pipeline route in Albania (at the time of reporting) collected through desktop and field studies. The baseline data focused on habitat types, species present and protected and designated areas. Annex 4.1, 4.2 and 4.3 of the TAP ESIA Albania report contains maps of environmental field survey findings identified during the ESIA baseline study.

In 2015, TAP commissioned a series of surveys focusing on specific flora and fauna taxa along the entire pipeline route. When relevant data from any of these survey reports was found within the study area of the re-route, data was integrated in the baseline. Specifically the following survey reports have been reviewed:

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Document Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic habitat and fish survey: Albania, 2015</td>
<td>AAL00-RSK-641-Y-TRS-0001</td>
</tr>
<tr>
<td>Bat surveys: Albania, 2015</td>
<td>AAL00-RSK-641-Y-TRS-0002</td>
</tr>
<tr>
<td>Migrating and breeding bird surveys: Albania, 2015</td>
<td>AAL00-RSK-641-Y-TRS-0003</td>
</tr>
<tr>
<td>Otter survey: impact assessment and recommended mitigation measures – Albania, 2015</td>
<td>AAL00-RSK-641-Y-TRS-0004</td>
</tr>
<tr>
<td>Albania flora survey report</td>
<td>AAL00-RSK-641-Y-TRS-0005</td>
</tr>
<tr>
<td>Large carnivore surveys: Albania, 2015</td>
<td>AAL00-RSK-641-Y-TRS-0006</td>
</tr>
<tr>
<td>Albania Environmental Method Statement for amphibians and Reptiles</td>
<td>AAL00-RSK-641-Y-TPK-0002</td>
</tr>
</tbody>
</table>

As stated above, for this report two additional field surveys were conducted along (1) the proposed new centerline section and (2) area where the access track, two spoil stockpile sites, a small temporary camp and a telepheric work site will be located. The main objective of the site visits was
to walk / ground-truth the complete proposed re-route and footprint areas and to describe the environmental features of their surroundings (i.e. to confirm if, as expected, these were equivalent to the type of features identified and evaluated in the TAP ESIA Albania). The environmental component of the field surveys were performed by a local Albanian environmental expert under the direction of an ERM field team leader.

A baseline description is provided in Section 4.2.1.1. Large scale maps of the baseline features are provided in Annex 2, accompanying with detailed field survey findings and datasheets given in Annex 1 and field survey notes presented in Annex 3.

The importance of habitats and species are assessed using the criteria developed for the TAP ESIA Albania report which were based on Albanian national law and international standards/agreements (refer to Annex 5.2.3 of the TAP ESIA Albania report for details of criteria used).

A landscape and visual amenity is also presented and described in terms of the key features and overall character for the re-route. As per consistency with the TAP ESIA (2013) methodology, the area has been subdivided into Landscape Character Areas (LCA) or parcels of landscape which share common characteristics. Photographs of the landscapes along the pipeline route are included in Annex 4. The detail of the landscape and visual baseline has been developed by data gathered in the field by environmental specialists which was provided to the project landscape architect in order to complete the project landscape characterisation process.

4.1.2 Socioeconomic Baseline Overview

The socioeconomic baseline for this report has been developed based on a field surveys conducted in December 2016 and April 2017 in the study area and a review of socioeconomic data collected for the TAP ESIA Albania report (2013). The same study parameters and criteria for assessing the sensitivity and importance of socioeconomic resources and human receptors in the TAP ESIA Albania report are also used in this report.

The socioeconomic study area established for the TAP ESIA Albania consisted of a 2 km corridor centered on the 2012 base case route. Section 6.6 of the TAP ESIA Albania report contains a summary of the socioeconomic baseline data for the entire pipeline route collected through desktop and field studies. The baseline data focused on describing the demographics, settlement patterns, economy, livelihoods, land uses, infrastructure, public services and vulnerabilities. Annex 6.3.1 of the TAP ESIA Albania report contains detailed settlement maps of the socioeconomic findings identified during the TAP ESIA Albania report baseline study, as well as the results of the settlement profiling completed during the field surveys.

Information presented in the TAP ESIA Albania was gathered from secondary sources using publicly available information. Data presented for the different elements of socioeconomic study areas was gathered during three visits conducted in June 2011, September 2011 and July 2012. The field work undertaken in June and September 2011 in the study area included a settlement survey, a household survey, key informant interviews and focus group meetings encompassing the settlements within the 2 km corridor along the pipeline route. Subsequent field surveys in July 2012
included an additional settlement survey, key informant interviews, and ground truthing of new settlements that had entered into the study area since the 2011 baseline surveys (see Section 6.6 of the TAP ESIA Albania 2013).

As noted above, for this report two additional field surveys have been carried out along the proposed new centerline section (December 2016 and April 2017). The socioeconomic study area established in this case consists in a 1 km corridor centered on the proposed re-route alignment (500 m on each side of the re-route), and a 250 m corridor/buffer area for the access track and temporary camp respectively. The main objective was to walk/ground-truth the complete proposed re-route, access track and temporary camp and to identify the main sensitivities with regards to socioeconomic features (i.e. to confirm if, as expected, these were equivalent to the type of features identified and evaluated in the TAP ESIA Albania). The socioeconomic components of the survey were performed by an ERM consultant with extensive experience in performing field surveys for the TAP Project in Albania.

A baseline description is provided in Section 4.2.2. Detailed field survey findings and datasheets with the specific waypoints are provided in Annex 1, accompanied with large scale maps of the baseline features in Annex 2 and field survey notes presented in Annex 3.

### 4.1.3 Cultural Heritage Baseline Overview

The cultural heritage study area established for the TAP ESIA Albania consisted of a 2 km wide corridor on the 2012 base case route and a 50 m buffer area around all Project components outside the 2 km corridor along the pipeline. Section 6.7 of the TAP ESIA Report contains a description of the desktop studies and field studies conducted to collect the cultural heritage baseline data and a summary of the baseline data collected for the entire TAP Albania pipeline route. The types of cultural heritage resources considered in the TAP ESIA Albania report and this baseline chapter are presented in Table 4.1.

**Table 4.1 Cultural Heritage Resource Types.**

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archaeological sites</td>
<td>The physical remains of ancient or historic human activity or occupation, most often including subsurface resources, and often indicated by the presence of surface artefacts or structural remains. These include ancient cist or tumulus graves, ancient settlements, and surface ceramic scatters, among others.</td>
</tr>
<tr>
<td>Monuments</td>
<td>Above-ground structures of public interest and/or historical significance such as historic churches, bridges, war memorials, and WWII era military facilities, among others</td>
</tr>
<tr>
<td>Intangible Cultural Heritage (ICH) Sites</td>
<td>Defined as sites that form part of the spiritual or cultural lives of modern populations such as roadside shrines, places of worship, and modern cemeteries, among others. Intangible cultural heritage (ICH) refers to customs, traditions and beliefs that make a people or a region distinctive and socially cohesive. Sites with ICH value often include the traditional forms of cultural heritage such as historic monuments, archaeological sites, and historic landscapes, but they may also include natural features such as flora, fauna and particular ecological zones.</td>
</tr>
</tbody>
</table>

Source: ERM, 2016

Albania is an archaeologically and historically rich country, with vestiges of both prehistoric indigenous cultures as well foreign imperial influences including the Greek, Roman, Byzantine, Ottoman and Austro-Hungarian empires. The cultural heritage baseline conducted for the TAP ESIA Albania identified cultural heritage sites within the study area dating from the Paleolithic
Period through the twentieth century. An extensive review of Albania’s prehistory and history can be found in Annex 6.4 of the TAP ESIA Albania report. This review contains definitions and defining characteristics of the prehistoric and historic periods referenced in this report.

In addition to these types of cultural heritage resources, the TAP ESIA Albania desktop and field surveys identified a number of Areas of High Archaeological Potential (AHAPs). These consisted of areas around known cultural heritage resources likely to contain associated, but as yet undiscovered, resources. The Albanian archaeologists also identified AHAPs in areas that were likely to contain undiscovered archaeological resources based on a combination of geographic features (topography, proximity to water, etc.) and professional judgement. Annex 4.6 contains maps depicting the location of the cultural heritage resources and AHAPs identified during the TAP ESIA Albania report baseline study.

In order to assess the significance of impacts to cultural heritage resources for the TAP ESIA Albania, criteria were established for assessing the importance of the cultural heritage resources identified in the study area. Importance ratings were developed for each type of cultural heritage resource based on Albanian national law and international standards (Table 4.2).

<table>
<thead>
<tr>
<th>Cultural Heritage Site Importance / Quality Criteria.</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archaeological Site</td>
<td>Limited informational value and/or cultural significance based on content and condition of site.</td>
<td>Moderate informational value and/or cultural significance based on content and condition of site.</td>
<td>High informational value and/or cultural significance based on content and condition of site.</td>
</tr>
<tr>
<td>Historic Monument</td>
<td>Limited visual, commemorative or art historical interest based on architectural style or degree of preservation.</td>
<td>Moderate visual, commemorative or art historical interest based on architectural style or degree of preservation.</td>
<td>High visual, commemorative or art historical interest based on architectural style or degree of preservation.</td>
</tr>
<tr>
<td>Intangible Heritage Sites</td>
<td>Limited cultural or religious significance to site users based on user criteria.</td>
<td>Moderate cultural or religious significance to site users based on user criteria.</td>
<td>High cultural or religious significance to site users based on user criteria.</td>
</tr>
</tbody>
</table>

Source: ERM, 2011

The cultural heritage baseline for this report was developed through a couple of field surveys conducted in December 2016 and April 2017 in the new Project footprint area and through a review of cultural heritage resource data collected for the TAP ESIA Albania report. The surveys consisted of rapid site investigations of the proposed Project footprint cultural heritage elements and their immediate vicinity, and was conducted to ground truth or amend desktop findings. The investigations of cultural heritage components were performed by a local Albanian archaeologist under the direction of an ERM field team leader.

In order to maintain a consistent approach to baseline data collection and assessing potential impacts to cultural heritage resources, the same study area parameters and criteria for assessing the importance of cultural heritage resources used in the TAP ESIA Albania report are also used in this report.
4.2 TERPOLLLAR RE-ROUTE

4.2.1 Environmental Baseline

4.2.1.1 Habitats, fauna and Flora

The Korça/Skrapar area is predominantly rural in nature and relatively undeveloped, where local livelihoods are mostly related to agriculture, rearing of livestock and firewood. Considering the Alpine mountain nature of the re-route, the airshed in this area is thus considered not being degraded as this is a mountain area without significant sources of air pollution. The 2013 ESIA modelled air quality data from the EEA Interpolation dataset (Section 6.4.1.4 of the ESIA), having noted that low levels of expected NOx and SO2 concentrations are directly related to the absence of air pollution sources in these mountain areas. The same applies to existing noise levels (Section 6.4.2 of the ESIA), where these are not intense due to the nature of the area and the activities conducted wherein; with an increase of background noise levels due to farm livestock grazing activities.

Figure 4.1 shows the habitat mapping along the various footprint elements investigated together with the kilometer chainage as a reference. The Environmental Waypoints (WPE) taken during the field survey and observations are presented in Annex 2 and Annex 3 respectively.

The baseline survey undertaken for the pipeline re-route (approximately 11.2 km in length) found that the new alignment starts at a ridge location called Martha’s Pass in the Ostrovicë mountain range and specifically along the Cuka e Faqekuqit Peaks, through Mountain hay meadows (EU 6520) habitat. While approaching Cuka e Faqekuqit Peaks, at KP1.4 the re-route turns in a W direction and continues on the steep slopes in a SW direction where Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) habitat type is found (EU 8120) adjacent to the centerline section. At KP 2.0 it changes direction towards W and at KP 2.2 the re-route heads towards the NW going uphill on steep slopes covered with mountain hay meadows and Calcareous and calcshist, to reach the mountain ridge (KP 2.95), continuing along the mountain ridge heading SW. At KP 3.75 it changes direction towards the NW and while approaching the mountain peak of very steep cliffs (KP 4.1), it changes direction towards the SW again, continuing downhill on the steep slopes and mountain scree until KP 5.4; where it later turns south over steep slopes covered with mountain hay meadows and low-lying and scarce scrubby vegetation composed of scattered wild fruit tress such as common juniper (Juniperus communis), almond-leaved pear (Pyrus amygdaliformes), Prunus spp., dog rose (Rosa canina) and common bracken (Pteridium aquilinum). At KP 5.9-5.95 and KP 6.15-6.35 the re-route comes across patches of Luzulo-Fagetum beech forests habitat type (EU 9110) as harvested beech forest (coppice). At KP 6.8 the re-route intersects a mountain creek that is important breeding habitat for aquatic life, including toads, frogs and newts.

The re-route section spanning KP 6.3-11.2 continues in a generally SW direction from the top of the sharp mountain ridge above Backa-Terpollare village and continues along the mountain ridge for about 4.9 km. NW facing slopes of the first 2.6 km are covered with harvested Luzulo-Fagetum.
beech forest habitat (EU 9110); alternating with mountain hay meadows (EU 6520) up to KP 8.9, after which (KP 8.9-10.9) is a mosaic of calcareous rocky slopes with chasmophytic vegetation (EU8210), Galio-Carpinetum oak-hornbeam forests (EU 9170) and Mediterranean arborescent matorral with Juniperus spp. (EU5210). Finally from KP 10.9 onwards there is Galio-Carpinetum oak-hornbeam forests (EU 9170) on both slopes corresponding to degraded transitional woodland/shrubs in the lower section, dominated by Carpinus orientalis, Juniperus oxycedrus and Quercus cerris. Patches of agricultural land, covered with scattered shrubs are situated close to the baseline on the gentle north facing slopes. Most of the re-route section is heavily degraded by overgrazing and overcutting.

The survey undertaken for the access track found that is largely located within Mountain hay meadows (EU 6520) habitat, with some short sections (KP 2.0-2.1 and KP 2.7 and KP 3.7) within calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) habitat type (EU 8120). The spoil stockpiles located within flat areas adjacent to the access track are located within mountain hay meadows (stockpile area 1) and a small patch of degraded beech forest (coppice; stockpile area 2). The telepheric working area is located at the bottom slope of a rocky scree area. The small temporary camp is located entirely within a plateau of Mountain hay meadows (EU 6520) habitat which is surrounded by 9110 Luzulo-Fagetum beech forests (EU 9110).
Figure 4.1  European Habitats mapping along the Terpollar Re-route footprint sites.

Source: ERM, 2017
### Table 4.3 Summary of European Habitats Crossed by Terpollar Re-route, access track and other footprint elements.

<table>
<thead>
<tr>
<th>No.</th>
<th>Habitat Code</th>
<th>Habitat</th>
<th>Re-route and access track Chainage</th>
</tr>
</thead>
</table>
| 1   | 8120         | Calcereous and calcishist screes of the montane to alpine levels *(Thlaspietea rotundifolii)* | • Pipeline: KP1.3-1.85/2.4-2.6/4.4-6.6/4.75-5.0.  
• Access track: KP2.0-2.1; KP2.7 and KP3.7  
• Telepheric working area  
• Pipeline: KP0.0-1.3/1.85-2.4/2.6-4/4.4-6.4-4.75/5.0-5.8/5.9-6.15/6.35-6.6  
• Access track KP0.0-2.0 KP2.1-2.6; KP2.8-3.6; KP3.8-3.9 Temporary camp  
• Stockpile area 1 |
| 2   | 6520         | Mountain hay meadows | • Pipeline: KP9.15-9.6/9.4-10.4/10.85-11.2  
• Pipeline: KP5.9-5.95/6.15-6.35/8.22/8.6-8.75  
• Stockpile area 2 |
| 3   | 9170         | Galio-Carpinetum oak-hornbeam forests | • Pipeline: KP6.6-7.9 |
| 4   | 9110         | Luzulo-Fagetum beech forests | |
| 5   | 5130         | Juniperus communis formations on heaths or calcareous grasslands | |

Source: ERM, 2017

The Terpollar Re-route area is characterized by open terrains, with scrubby vegetation and sparsely distributed trees (i.e. degraded transitional woodland/shrubs corresponding to *Galio-Carpinetum* oak-hornbeam forests that is in an advanced degradation stage), are used extensively as grazing grounds for sheep and goats, but may attract a variety of wild fauna species and therefore the ecological value of this type of habitat is considered in general as medium, though depending on site specific conditions it may be low (due to being heavily grazed/degraded). Similarly, open terrains comprising extensive hay meadows, abandoned agricultural land, with scrubby vegetation and scattered trees are used extensively as grazing grounds for sheep and goats (mainly sheep in the Terpollar and Potom valley) and therefore the ecological value of this type of habitat is in general considered as medium, nonetheless it may be also low depending on site conditions. The beech forest (*Fagus sylvatica*) along the pipeline re-routing is mainly found in small patches and is characterized as (coppice) thick young forest thus generally of medium ecological interest depending on the site specific conditions, but as in the case of other habitat types may be low in some specific sites. Figure 4.2 shows several photos along the proposed alignment for reference (a complete set of photos can be found in Annex 1).
Both the Terpollar access track and temporary camp area are also characterized by open terrains of hay meadows that are used extensively as grazing grounds, thus their ecological value of this type of habitat is generally considered medium. Same applies for stockpile areas where grassland/beech forest habitats have been heavily degraded due to grazing (Figure 4.3). The telepheric working area on the other hand is located within a rocky scree habitat of medium quality. The steep slopes of most of the proposed access track is covered with low-laying herbs and scarce scrubby vegetation composed of common juniper (Juniperus communis nana), almond-leaved pear (Pyrus amygdaliformes), Prunus spp., and dog rose (Rosa canina). Additionally, the access track passes through two high quality mountain creeks (Figure 4.3), with stockpile area 1 being directly adjacent to the east of one of them (creek located at access track KP1.95), creeks are important breeding habitats for aquatic life; the latter being generally considered to play an important role to biodiversity in the area and therefore are considered to be sensitive to change; while the beech forest surrounding the temporary camp (Figure 4.3) is in good ecological conditions and provides suitable habitat for large carnivores and wild boar.

Based on the post-ESIA Flora surveys (2015) along the original basecase route, other Red Data Book/Protected species that may be potentially present along/adjacent to the re-route, access track and temporary camp and telepheric site include: Banewort (Atropa belladonna), Black walnut (Juglans regia), Wild majoram (Origanum vulgare), Albanian lily (Lilium albanicum), Serpentine false-brome (Festucopsis serpentini), Mountain tea (Sideritis raeseri), Male-fern (Dryopteris filix-mas), Woolly foxglove (Digitalis lanata), Common agrimony (Agrimonia eupatoria), Hawthorn (Crataegus heldreichii), Common elder (Sambucus nigra), Maidenhair fern (Adiantum capillusveneris), Hart’s tongue fern (Phyllitis scolopendrium), Winter savoury (Satureja montana)
**Figure 4.2  Habitat/Flora Photos along the Terpollar pipeline re-route.**

- **WPE024:** Re-route at Martha’s Pass; mountain hay meadows. (view N)
- **WPE025:** Re-route heading towards W; mountain hay meadows and calcareous screes. (view W)
- **WPE026:** Water storage for livestock, potential breeding site for amphibians. (view E)
- **WPE025:** Re-route heading towards W; mountain hay meadows and calcareous screes. (view W)
- **WPE030:** Mountain creek intersected by the re-route. (view S)
- **WPE035:** Re-route passing along the ridge: upper beech forest line overgrazed sparsely scrub with presence of *Juniperus communis* and *Rosa canina*. (view N)
- **WPE036:** Intersection of re-route with a mountain creek. (view W)
WPE037: Re-route along the mountain ridge above Backa-Terpollare; Degraded/overgrazed beech forest and eroded land with sparse scrubby vegetation. (view NE)

WPE042: Steep slopes of degraded beech forest (coppice) along the re-route. (view E)

WPE041: Beech forest (coppice) on steep slopes. (view N)

WPE043: Re-route passing on abandoned agricultural land and degraded transitional woodland/shrubs. (view W)

WPE047: Re-route along the ridge with heavily degraded transitional woodland/shrubs (Juniperus oxycedrus and Carpinus orientalis) close to Potom Pass. (view NE)

WPE047: Re-route along the ridge with heavily degraded transitional woodland/shrubs due to overgrazing close to Potom Pass. (view SW)

Source: ERM, 2017
Figure 4.3  Habitat/Flora Photos along the access track and other project footprint elements.

- **WPE051**: Starting of proposed access track at Martha’s pass (KP 0.0) on mountain hey meadows (View N).
- **WPE053**: Mountain creek intersected by proposed access track at KP 0.45 (View S).
- **WPE054**: Wild boar (*Sus scrofa*) tracks on snow covering steep slopes at KP 1.1 (View SE).
- **WPE055**: Mountain creek intersected with proposed access road at KP 1.95 (View S).
- **WPE057**: Small patch of beech forest (*Fagus sylvatica*) at KP 3.0 where the permanent stockpile is projected (View E).

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In general terms, most of the habitats described above, present along the pipeline re-route, access track and temporary camp are considered to be of medium sensitivity except for the high mountain creeks, which are of high sensitivity (Table 4.4).
Table 4.4  Quality of Habitats Present along the Terpollar Re-route, access track and temporary camp.

<table>
<thead>
<tr>
<th>Re-route and access track Chainage</th>
<th>Habitat Type</th>
<th>Relevant Habitat Quality Criteria</th>
<th>Habitat Quality Assessment (Sensitivity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline: KP1.3-1.85/2.4-2.6/4.4-4.6/4.75-5.0</td>
<td>Calcareous and calcshist screes of the montane to alpine levels <em>(Thlaspietea rotundifoli)</em></td>
<td>M H L M M M L</td>
<td>Medium</td>
</tr>
<tr>
<td>Access track: KP2.0-2.1; KP2.7 and KP3.7</td>
<td>Telepheric working area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipeline: KP0.0-1.3/1.85-2.4/2.6-4.4/4.6-4.75/5.0-5.8/5.9-6.15/6.35-6.6</td>
<td>Mountain hay meadows</td>
<td>M M M M M M L</td>
<td>Medium</td>
</tr>
<tr>
<td>Access track: KP0.0-2.0, KP2.1-2.6; KP2.8-3.6; KP3.8-3.9,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary camp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockpile area 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipeline: KP5.9-5.95/6.15-6.35/8.22/8.6-8.75</td>
<td><em>Luzulo-Fagetum</em> beech forests (coppice)</td>
<td>M M M H H M</td>
<td>Medium</td>
</tr>
<tr>
<td>Stockpile area 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipeline: KP6.6-7.9</td>
<td><em>Juniperus communis</em> formations on heaths or calcareous grasslands</td>
<td>M M L M M M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Stockpile area 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipeline: KP6.8</td>
<td><em>Aquatic habitats (mountain creeks)</em></td>
<td>M H H M H M M</td>
<td>High</td>
</tr>
<tr>
<td>Access track: KP0.45 and KP 1.95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: ERM, 2017

Fauna species expected to be present in the area remain the same as the TAP ESIA Albania (detailed lists and evaluation criteria can be found in Annex 6.2.1.2). Key species of conservation concern identified for the area include: Brown bear (*Ursus arctos*), wolf (*Canis lupus*; whose presence was confirmed both in the upper section of the pipeline re-route (WPE039) and lower section (WPE046), start of access track (WPE051) and in the vicinity of the temporary camp (WP048) - Figure 4.4)), Yellow-bellied toad (*Bombina variegata*) and Greek stream frog (*Rana*).

---

2 Refer to Section 8.5.1 in Annex 8.1 of the TAP Albania ESIA report - Habitat assessment criteria (as per EBRD criteria) - : (1) Protection status; (2) Naturalness; (3) Fragility; (4) Representativeness; (5) Structure and function; (6) Species association – reliance; (7) Diversity.; (L: Low, M:Medium, H: High).

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In addition, the Large carnivores’ survey performed in 2015 found highly suitable foraging/commuting/denning areas for bears/wolves within 5 km to the south from the start of the re-route area, as well as less than 300 m south of the temporary camp where dense beech forests exist. The original TAP Albania ESIA also mentions that Northern chamois (*Rupicapra rupicapra balcanica*) may be present in the area, especially towards the northwest of the re-route.

The area provides some temporary/seasonal food sources for bear, wolf and fox, whilst cliffs provide shelter and breeding ground for birds of prey such as golden eagle (*Aquila chrysaetos*). Mountain hay meadows provide breeding and feeding grounds for larks, thrushes (*Monticola saxatilis, Monticola solitarius*), rock partridge (*Alectoris graeca*), shrikes (*Lanius collurio*), and other passerines such as skylark (*Alauda arvensis*), woodlark (*Lullula arborea*), wheat ear (*Oenanthe oenanthe*), rock bunting (*Emberiza cia*) as well as hares (*Lepus europaeus*). They host an abundant population of voles (*Microtus spp.*) and moles (*Talpa caeca, T. stankovici*) in places of deep and moist soils.

Several reptile species were reported in the area as part of previous ESIA and TAP rerouting surveys, such as Erhard’s wall lizard (*Podarcis erhardii*), common wall lizard (*P. muralis*; observed during April 2017 survey), vipers (*Vipera ammodytes*; observed during April 2017 survey, *V. berus*), and smooth snake (*Coronella austriaca*).

Mountain creeks and adjacent areas provide suitable habitats for aquatic life, such as insects, frogs, toads (Greek stream frog (*Rana graeca*), yellow-bellied toad (*Bombina variegata*), common toad (*Bufo bufo*)) and newts (*Lissotriton vulgaris*).

Other relatively common fauna include small mammals, birds and reptiles. An assessment of their importance, following the ESIA importance / sensitivity criteria is presented in Table 4.5 below.
### Table 4.5 Importance of Species Present along the Terpollar Re-route, access track and temporary camp

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>Relevant Species Importance Criteria</th>
<th>Species Quality Assessment (Importance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wolf</td>
<td>Canis lupus</td>
<td>H H H H</td>
<td>High</td>
</tr>
<tr>
<td>Bear</td>
<td>Ursus arctos</td>
<td>H H H H</td>
<td>High</td>
</tr>
<tr>
<td>Wild boar</td>
<td>Sus scrofa</td>
<td>L L L M</td>
<td>Low</td>
</tr>
<tr>
<td>Weasel</td>
<td>Mustela nivalis</td>
<td>M L L M</td>
<td>Low</td>
</tr>
<tr>
<td>Beech marten</td>
<td>Martes foina</td>
<td>M H M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Red fox</td>
<td>Vulpes vulpes</td>
<td>L L L M</td>
<td>Low</td>
</tr>
<tr>
<td>Thomas’ pine vole</td>
<td>Microtus thomasi</td>
<td>M L L M</td>
<td>Medium</td>
</tr>
<tr>
<td>Moles</td>
<td>Talpa spp.</td>
<td>M L L M</td>
<td>Low</td>
</tr>
<tr>
<td>Hare</td>
<td>Lepus europaeus</td>
<td>M L L L</td>
<td>Low</td>
</tr>
<tr>
<td>Golden eagle</td>
<td>Aquila chrysaetos</td>
<td>H H M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Common buzzard</td>
<td>Buteo buteo</td>
<td>H H L M</td>
<td>Medium</td>
</tr>
<tr>
<td>Passerine birds</td>
<td>Order: Passeriformes</td>
<td>L L L M</td>
<td>Low</td>
</tr>
<tr>
<td>European Green Lizard</td>
<td>Lacerta viridis,</td>
<td>H M L M</td>
<td>Medium</td>
</tr>
<tr>
<td>Common Wall Lizard</td>
<td>Podarcis spp.</td>
<td>H L L M</td>
<td>Medium</td>
</tr>
<tr>
<td>Vipers/snakes</td>
<td>Vipera spp. Coronella austriaca</td>
<td>H M L L</td>
<td>Low</td>
</tr>
<tr>
<td>Yellow-bellied toad</td>
<td>Bombina variegata</td>
<td>H L M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Greek stream frog</td>
<td>Rana graeca</td>
<td>H L M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Balkan frog</td>
<td>Pelophylax kurtmueller</td>
<td>M L M M</td>
<td>Medium</td>
</tr>
<tr>
<td>Smooth newt</td>
<td>Lissotriton vulgaris</td>
<td>M L L L</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Source:** ERM, 2017

---

3 Species listed are indicative based on desktop reviews and field survey observations. Other species may also be present in the area.

4 Refer to Section 5.2.3.2 in Annex 5 of TAP Albania ESIA Report for details on the Species Importance Criteria used in this assessment: (1) Protection status; (2) Conservation status; (3) Genetic diversity; (4) Ecosystem functioning / services; ; (L: Low, M:Medium, H: High).

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Figure 4.4  Fauna Photos of Environmental Survey of the Terpollar Re-route, access track and temporary camp.

WPE025: Signs of mole presence (*Talpa* sp.).

WPE039: Wolf (*Canis lupus*) scats.

WPE040: Red fox (*Vulpes vulpes*) scats.

WPE043: Beech marten (*Martes foina*) footprint.

WPE043: Red fox (*Vulpes vulpes*) footprints.

WPE046: Wolf (*Canis lupus*) scats.
WPE051: Bear (*Ursus arctos*) fresh tracks on muddy grounds at the starting point of the proposed access track.

WPE048: Fresh tracks of wolf (*Canis lupus*) on snow at KP 79, in the vicinity of the camp site.

WPE049: Presence signs of voles (*Microtus levis*) on the ground in the vicinity of camp site.

WPE049: Presence signs of moles (*Talpa sp.*) in the vicinity of camp site (app. KP 79)—mountain hay meadows impacted by grazing.

Source: ERM, 2017
4.2.1.2 Landscape

The boundaries of the landscape character areas (LCAs) are identified with reference to the pipeline chainage in the tables below, together with descriptive information. Photographs of the landscapes along the pipeline route together with photomontages to illustrate the visual effects are included in Annex 4 and the locations of these photos are illustrated in Figure 4.5.

Figure 4.5 Baseline Landscape and Visual Amenity

Source: ERM, 2017

The sensitivities of the LCAs along the pipeline are presented in tabular format. The sensitivities tables summarize the key data in each LCA, including the key elements of the project that are likely to be sources of landscape and visual impact. Designated landscapes present in each landscape character area are also tabulated, and finally an evaluation of sensitivity to the proposed...
change is presented. The sensitivity of the landscape and the viewers contained within is defined based on 2 main factors:

- The scale, nature and duration of the proposed change.
- The receiving landscape including presence of designated landscapes or landscape elements, the quality of the landscape and the visual openness of the landscape.

Viewers located close to the site with clear uninterrupted views of the site for the proposed change will be considered to have the same visual sensitivity to the proposed change as the landscape character area in which they are located.

**LCA 1 – Mountain hay meadows Kp 0 – 6.5**
- **Land cover and Protected Landscapes**: This specific section is covered with mountain hay meadows along its entire length. No designated or protected landscapes are included within the section.
- **Description**: This is a mountain landscape with elevations that rise to around 2000 m. The larger mountain range of the Ostrovicë Mountains is visible far from the west but local hills enclose this area from the east. It presents some rock outcrops and the mountain hay meadows and some small patches of harvested beech forest. The ridge is wide and the open terrains, with scrubby vegetation and sparsely distributed trees, are used extensively as grazing grounds for sheep and goats.

**LCA 2 – Calcareous grassland Kp 6.5 – 8.0**
- **Land cover and Protected Landscapes**: This specific section is mainly covered with shrubby vegetation, sparse beech forest and grasslands. No designated or protected landscapes are included within this section.
- **Description**: This is an elevated landscape exceeding over 1000 m. The mountain presents steep grassy slopes in the southern side and very steep cliffs low-laying and scarce scrubby vegetation. The landscape comprises a mixture of beech forests and harvested (coppice) in the North West facing slopes, while the South East facing slopes are steeper and covered with sparse vegetation dominated by *Juniperus communis* and *Juniperus oxycedrus*. This landscape is visible from the west and it is hidden by Ostrovicë Mountain from the east.

**LCA 3 – Potom valley Kp 8.0 – 11.2**
- **Land cover and Protected Landscapes**: This specific section is covered with degraded transitional woodland/shrubs, oak-hornbeam forests, *Juniperus spp* and calcareous rocky slopes. No designated or protected landscapes are included within this section.
- **Description**: The Potom Valley constitutes a transition between the Ostrovicë Mountain and the hilly landscape that follows to the west. This landscape commands wide panoramic
views of the surrounding mountain slopes, some of which are very steep and mostly covered by forest. The lower altitude areas of the valley feature natural grasslands used for pasture. The mountain ridge is covered with degraded transitional woodland/shrubs mainly. The south facing slopes continue to be steeper than the north facing slopes and are covered by more degraded scrubby vegetation and exposed soil and mineral materials. In the last portion of the re-route is present a *Galio-carpinetum* Oak Hornbeam forest. Most of the re-route vegetation is heavily degraded by overgrazing and overcutting.

Table 4.6 presents the sensitivity summary to the proposed change.

<table>
<thead>
<tr>
<th>Landscape Character Area</th>
<th>Planned TAP Elements</th>
<th>Sensitive landscape elements</th>
<th>Sensitivity Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA 1 - Mountain hay meadows Kp 0 – 6.5</td>
<td>Pipeline Located on steep terrains. Temporary camp and access track during the construction phase.</td>
<td>No protected landscapes</td>
<td>Low</td>
</tr>
<tr>
<td>LCA 2 - Calcareous grassland Kp 6.5 – 8.0</td>
<td>Pipeline Pipeline requiring ridge modification works</td>
<td>No protected landscapes</td>
<td>Medium</td>
</tr>
<tr>
<td>LCA 3 - Potom Valley Kp 8.0 – 11.2</td>
<td>Pipeline Pipeline requiring ridge modification works.</td>
<td>No protected landscapes</td>
<td>Medium</td>
</tr>
</tbody>
</table>

*Source: ERM, 2017*

4.2.2 Socioeconomic Baseline

4.2.2.1 Study area and field survey coverage

As described in Section 3.3, the Terpollar Re-route is located in the central western section of the pipeline route (between KP79+870 and KP91+400 on the 3D January 2016 base case route in 3D, equivalent to KP78+900 – KP89+900 in 2D chainage) in a rather remote and mountainous area some 10 km east of Çorovodë in Skrapar Municipality (Berat Region) (see Figure 1.2).
The pipeline re-route and the access track are approximately 11.2 km and 3.9 km in length respectively. Figure 4.6 shows the project footprint and corridors of interest along the pipeline centerline and access track. Annex 1 provides the field findings for the various footprint elements as well as the Social Waypoints (WPS) taken during the field surveys (refer to Annex 3 for the corresponding field survey notes and Annex 2 for a complete map with WPS locations).

Figure 4.6  Socioeconomic Study Area and Survey Coverage of the Terpollar Re-route.

Source: ERM, 2017

4.2.2.2  Municipal Overview

The study area is located in the region of Berat and in the municipality of Skrapar (see Section 1.1), as per the July 2015 local government reform (which divided Albania in a total of 61 municipalities). Table 4.7 summarizes some information about the municipality.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Municipality of Skrapar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (source: INSTAT, 2011)</td>
<td>12,403</td>
</tr>
<tr>
<td>Surface (source: Administrative Territorial Reform)</td>
<td>831.44 km²</td>
</tr>
<tr>
<td>Population Density</td>
<td>15 / km² (National Average: 105 /Km² )</td>
</tr>
</tbody>
</table>

Source: INSTAT (2011); Reforma Administrative Territoriale (2015)

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Since the end of the communist system in the 1990s, the population in the Municipality of Skrapar has decreased. This is a result of the withdrawal of government agricultural subsidies and the subsequent migration of people from rural to urban areas seeking new employment opportunities. The population decrease in the region is estimated to be about 50%. The largest population losses can be seen in mountainous areas with poorly accessed isolated settlements like the ones found in the relative vicinity of the re-route and access track (i.e. Terpollar and Potom mainly).

The decrease in population has resulted in the land being worked less intensively, reduced irrigation, and an increase in pasture / meadows which require less effort to maintain. It is estimated that about 50% of the agricultural land worked during the communist period has now been turned into pasture / meadows. Although recently even some of these areas have been abandoned as the local population has decreased further.

The region is characterized by hilly / mountainous terrain, with forested areas being common on the steep slopes and in the more remote parts. In most of the cases, the forested areas are characterized by the Mediterranean maccia and by a mixed forest of oak and Carpinus orientalis. Both types of formations are associated with a degradation process, resulting from overgrazing, too much logging or natural degradation, such as fires. Since 2000, forested areas have been afforded some protection through regulatory measures. As a result of these geographic factors, including whether the settlement is located in a mountainous or lowland area, accessibility and distance from a larger population centre, the municipality of Skrapar is primarily composed of small settlements with the exception of larger population centers such as Çorovodë.

Land use in the municipality of Skrapar is therefore characterized by mainly grassland for pasture, small areas of seasonal crops close to the settlements and some small areas of perennial crops mainly vineyards and olive trees. The pasture / meadows are used for grazing livestock (sheep and goats); a practice that has increased so much in certain areas that overgrazing has occurred. Livestock associated products, such as cheese (feta and caccaval), are important for the local economy.

Mixed crop production is the main economic activity in the municipality followed by animal husbandry. Currently, agriculture activity in the municipality of Skrapar is characterized by the most profitable crops: fruit trees (vineyards, cherry, apple, etc.) that have a high commercial value, followed by crops produced for self-consumption and fodder, such as alfalfa, corn, wheat, and vegetables. Raki, a traditional alcoholic drink, is commonly produced in these areas.

Due to the high elevation and rugged terrain, livelihood activities in the area are limited to substance agriculture associated to settlements and seasonal occupations by pastoralists and their herds of livestock (mainly sheep).

### 4.2.2.3 Infrastructures and Settlements

#### 4.2.2.3.1 Terpollar Re-route

The closest settlements to the re-route are Terpollar (Backa) and Potom, located 900-1500 m east of the re-route. In addition, as stated above, the pipeline re-route is located at about 10 km east of the city of Çorovodë. All these settlements belong to the municipality of Skrapar (since the local
government reform in July 2015). The socioeconomic characteristics of the area through which the re-route and route track passes are typical for the region (as reported in the TAP ESIA Albania): ageing population, declining birth rates and high migration, resulting in an overall decrease in population numbers. In the isolated settlements of Terpollar (Backa) and Potom, elderly residents account for 30% of the population.

With a population of 425 and 447 inhabitants (INSTAT 2008) respectively, Terpollar (Backa) and Potom consist of a small number of scattered farms and auxiliary buildings. The villages are located in areas at the bottom of the valley and are surrounded by agricultural land. No residential buildings belonging to these settlements were found in the vicinity of the re-route.

As shown in Figure 4.7 below, the re-route centerline runs along a mountainous area at an altitude between 2,000 and 1,200 m above sea level. Due to the remoteness and inaccessibility of the area no settlements or infrastructures such as roads or electric lines are found within the 1 km study area. However, a series of grazing infrastructure elements were identified between re-route where herding activity is undertaken. These are associated to summer pasture activity by Terpollar herders.

Figure 4.7 View of Terpollar Re-route and grazing infrastructure identified during field survey.

Source: ERM, 2017 (modified Google Earth view)

Note: the red line represents the January 2016 base case. The blue line shows the proposed re-route.
A summary of the grazing infrastructure observed nearby the pipeline re-route is provided below:

- Small paths used for accessing grazing areas
- 2 shepherd huts with goat/sheep pens (located about 120 m from the centerline and 290 m from the proposed re-route)
- Remains of a hut/structure on a site where evidence of logging and grazing were identified (located about 34 m north of the proposed re-route);
- A basic water collection system (located 1 km NW of the centerline and 140 m NW of the proposed re-route distance)
- A man made spring (280 from the proposed re-route, KP2.7).
- Several territorial markers were found along the ridges of the mountains surveyed and some small mounds of rocks were also found within an area that was possibly cultivated years ago but is now only used as pasture.

A more detailed account on some of these features which are of heritage significance (i.e. territorial markers) is provided in Section 4.2.3 below.

Figure 4.8 below provides a general view of the shepherd hut and pen for keeping livestock located 290 m from the proposed reroute (KP2.5) and the second shepherd hut and fencing for keeping livestock located 120 m east of the proposed re-route (KP5.9).

**Figure 4.8  Shepherd’s huts identified along the Terpollare Re-route.**

![Shepherd’s huts identified along the Terpollare Re-route.](source: ERM, 2017. (Left: WPS026; Right: WPS036))

Figure 4.9 shows a man-made spring located at the bottom of Cuka e Frengut Mountain 280 m from the proposed alignment (KP2.7). The photo on the right (WPS022) shows the small water collector located 140 m NW of the proposed re-route (KP1.7).
4.2.2.3.1 Access Track and Temporary camp
Terpollar (Backa) is the closest settlement in proximity of the access track and Temporary camp (located 1.7 and 3.5 km to the southwest respectively) consisting of a small number of scattered farms (20) and ancillary buildings. Land along the proposed alignment of the access track and temporary camp is predominantly used for grazing livestock or agriculture where feasible.

The access track is characterised by going through a remote area, resulting in a general lack of infrastructures. As shown in Figure 4.10 below, the access track runs through an area of subsistence livestock rearing and low pastures used by local residents throughout the year. The temporary camp is located within a relatively flat grassland plateau at the edge of pipeline centerline KP79, bordered by beech forests; no infrastructure has been identified in the vicinity of it (Figure 4.10). Other Project features of interest include two spoil stockpile areas and a telepheric working site which will be located adjacent to the access track (Figure 4.10)
Figure 4.10 View of access track, temporary camp and infrastructure identified during field survey.


A summary of the infrastructure observed within/adjacent to the access track is provided below:

- Isolated shepherds buildings (shacks) with or without associated goat/sheep corrals.
- Basic water transport piping from streams in the higher areas to nearby agricultural fields or small shacks further downhill.
- Small paths along the southern slope of the mountain, some of which broadly follow the same alignment as the proposed access track. They are used by the locals to travel with livestock herds through to mountain towards the grassland areas. In most of the cases, they are not accessible for vehicles, so they are used by foot and by animals used for transportation.
- Territorial markers / rock mounds

A more detailed account on some of these features which are of heritage significance (i.e. territorial markers) is provided in Section 4.2.3 below. Figure 4.11 below provides a general view of the basic infrastructure found along the access track.
Figure 4.11 Shepherd infrastructure showing huts and corrals located adjacent to access track and within spoil stockpile 1 footprint.

Source: ERM, 2017. (Left: WPS062; Right: WPS063)

Figure 4.12 Basic water infrastructure (arrow shows small plastic piping) on stream crossed by access track and adjacent to spoil stockpile area 1; and territorial marker found over flat resting area within spoil stockpile 2 footprint.

Source: ERM, 2017. (Left: WPS062; Right: WPS072)

4.2.2.4 Land and Livelihoods

4.2.2.4.1 Terpollar Re-route
The re-route runs for the entire 11.2 km on mountainous terrain occupied by alpine grasslands (KP 0 to KP 6.0) and areas of presence of beech forests (mainly on the North and West slopes) shrublands and some scattered agricultural areas (currently abandoned and being used as grazing areas only) (KP P 6.0 to KP 11.2). Figure 4.13 shows the representative land use found along the Terpollar Re-route. The closest active agricultural land belonging to Terpollare (Backa) is located over 500 m from the centerline.
As indicated above, due to the altitude no arable lands or crops are found in the vicinity of any of the alignments. Even on the lowest portions of the re-route, no arable lands are found. The use of the lands near the alignment is limited to grazing with livestock which is by far the most important livelihood found in the area. Logging in the beech forest was also confirmed along the re-route.

During the surveys, grazing along the re-route was only observed near Potom but it is known to be a widespread activity. Due to climatic conditions no grazing activities occur in the upper sections of the proposed re-route (e.g. above Martha’s pass) during the cold months. However it is an important activity in the high areas during the rest of the months (i.e. from spring to late autumn). In general, the lower the altitude the more intense grazing (all year round activity).

Herdsmen from Potom, Terpollar, and possibly Helmesi, use the area throughout the year. Evidence of such activity was found in many locations along the re-route (see Section 4.2.2.3) where huts, small enclosures, springs, territorial markers and water collectors were identified. It is also anticipated that in the lower areas (between KP 8 and KP 11.2 approximately) close to Potom and Terpollar grazing is conducted throughout the year.

Sheep are the predominantly herds found in the area. It is estimated that approximately 600-700 sheep and an unknown but small number of goats belonging to Terpollar herd during spring and autumn along the re-route (between KP 2 and KP 6 approximately). Herds access the high lands in June and remain there until end of October. During winter months they herd close to the settlement. Sheep are milked daily and the produce is transported down to the valley with the help of horses. It was also reported that each family in Terpollar owns 1-2 cows on average which are also taken to the pastures during summer months.

Terpollar herdsmen use the southern slope of the mountain for herding while the northern slope is used by transhumant herdsmen from Vlora that rent pasture land from communities located to the north of the re-route.
The population has low levels of land ownership and reliance on subsistence farming. Pasture areas adjacent to settlements are used for grazing animals, also on a subsistence basis. The main findings from the survey are presented in Section 4.2.2.3.1.

### 4.2.2.4.2 Access Track and Temporary camp

The grasslands and shrublands are the dominant land uses along the entire access track, temporary camp area and other project footprint elements (i.e. spoil stockpiles and telepheric working site). The access track having short sections of rocky scree areas.

Agricultural areas are found further downhill from the access track location, being located in the bottom of the Terpollar valley, where the soils are characterised by higher levels of nutrients, and therefore are valid for agricultural purposes. Pasture areas located in the access track/temporary camp and adjacent to settlements are used for grazing animals, also on a subsistence basis. Agricultural lands are found in the vicinity of Terpollar only, thus far from project footprint areas, and are primarily characterised by seasonal crops, but also minor areas with permanent crops. Seasonal crops observed included corn, alfalfa, cereals, and some vegetables as for example, onions and chards;

With regards to water resources (Figure 4.9), no relevant groundwater resources are found in the access track/temporary camp or adjacent areas, but two high mountain streams are being crossed by the access track alignment at KP 0.45 and KP 1.95. These mountain creeks, and other temporary streams, are an important for the shepherds and livestock.

Livelihoods in the area along the access track alignment, spoil stockpile areas and temporary camp are based on a combination of:

- Grazing, in the grasslands and shrublands. Main livestock observed were sheep, but also goats may be observed. Over the steep slopes where the access track is found there are small flat areas which are commonly used as resting sites. Spoil stockpile 2 is located within one of these flat areas where a small patch of beech forest (coppice) is also found.
- Logging, the areas surrounding the temporary camp and start of the access track have a well developed forest canopy where logging activities have been observed.
4.2.3 Cultural Heritage Baseline

The cultural heritage desktop and in-field baseline surveys identified 23 cultural heritage resources within the 1 km and 500 m corridor area for the re-route and access track respectively (and also including temporary camp area, permanent stockpile areas, and telepheric area; see Table 4.8 and Figure 4.14). Four of the resources (CH-557(WPC032), CH-562 (WPC035), CH-563 (WPC033), and CH-567 (WPC038)) were identified during baseline surveys in the Potom area in 2014 and 2015 and were revisited during the December 2016 and April 2017 fieldwork. The remaining 19 resources (WPC013, WPC015, WPC016, WPC017, WPC019, WPC020, WPC022, WPC025, WPC027, WPC028, WPC029, WPC030, WPC037, WPC039, WPC040, WPC042, WPC044, WPC045, and WPC046) were identified during the in-field baseline surveys conducted for the Terpollar re-route, access track, temporary camp area, permanent stockpile areas, and telepheric area in 2016 and 2017.

Figure 4.14 Terpollar Re-route Cultural Heritage Baseline.

Source: ERM, 2017

5 Figure 4.14 shows sites with CH resources only. For the complete map with Cultural Heritage Waypoints and field notes refer to Annex 2 and Annex 3 respectively.
### Table 4.8 Summary of Key Cultural Heritage Findings within the corridors

<table>
<thead>
<tr>
<th>CH-#</th>
<th>Resource Type</th>
<th>Description</th>
<th>Nearest Project Component and KP</th>
<th>Distance to Project Component (m) (*)</th>
<th>Site Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH-557</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Terpollar Re-route: KP 10.4</td>
<td>18</td>
<td>Low</td>
</tr>
<tr>
<td>CH-562</td>
<td>Monument/ICH</td>
<td>Qafa e Martës Memorial Monument and Cemetery</td>
<td>Terpollar Re-route: KP 0.0</td>
<td>95</td>
<td>High</td>
</tr>
<tr>
<td>CH-563</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Terpollar Re-route: KP 10.4</td>
<td>10</td>
<td>Low</td>
</tr>
<tr>
<td>CH-567</td>
<td>Monument/ICH</td>
<td>Bektashi Grave Monument ca. 1941</td>
<td>Access Track: KP 1.8</td>
<td>22</td>
<td>Moderate</td>
</tr>
<tr>
<td>WPC013</td>
<td>ICH</td>
<td>Seasonal shepherd Camp/hut</td>
<td>Terpollar Re-route: KP 1.0</td>
<td>35</td>
<td>Low</td>
</tr>
<tr>
<td>WPC015</td>
<td>ICH</td>
<td>Water storage cistern</td>
<td>Terpollar Re-route: KP 1.8</td>
<td>140</td>
<td>Low</td>
</tr>
<tr>
<td>WPC016</td>
<td>ICH</td>
<td>Livestock corral</td>
<td>Terpollar Re-route: KP 2.4</td>
<td>246</td>
<td>Low</td>
</tr>
<tr>
<td>WPC017</td>
<td>ICH</td>
<td>Fountain built around natural spring</td>
<td>Terpollar Re-route: KP 2.7</td>
<td>280</td>
<td>Low</td>
</tr>
<tr>
<td>WPC019</td>
<td>Monument/ICH</td>
<td>Stacked stone fountain</td>
<td>Terpollar Re-route: KP 3.0</td>
<td>14</td>
<td>Low</td>
</tr>
<tr>
<td>WPC020</td>
<td>ICH/Archaeological Site</td>
<td>Remains of stone shepherd’s structure/corral</td>
<td>Terpollar Re-route: KP 3.33:1</td>
<td>79</td>
<td>Low</td>
</tr>
<tr>
<td>WPC022</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Terpollar Re-route: KP 4.2</td>
<td>109</td>
<td>Low</td>
</tr>
<tr>
<td>WPC025</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Terpollar Re-route: KP 5.8</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>WPC027</td>
<td>ICH</td>
<td>Shepherd installation</td>
<td>Terpollar Re-route: KP 7.2</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>WPC028</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Terpollar Re-route: KP 8.4</td>
<td>10</td>
<td>Low</td>
</tr>
<tr>
<td>WPC029</td>
<td>ICH</td>
<td>Shepherd’s hut and seasonal station</td>
<td>Terpollar Re-route: KP 8.6</td>
<td>49</td>
<td>Low</td>
</tr>
<tr>
<td>WPC030</td>
<td>Monument/ICH</td>
<td>Seasonal station and piles of stones</td>
<td>Terpollar Re-route: KP 8.9</td>
<td>40</td>
<td>Low</td>
</tr>
<tr>
<td>WPC037</td>
<td>Monument/ICH</td>
<td>Monument to Fatmir Xhezo</td>
<td>Access Track: KP 0.8</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>WPC039</td>
<td>ICH</td>
<td>Livestock Corral</td>
<td>Permanent Stockpile Area</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td>WPC040</td>
<td>ICH</td>
<td>Livestock Corral</td>
<td>Access Track: KP 2.0</td>
<td>20</td>
<td>Low</td>
</tr>
<tr>
<td>WPC042</td>
<td>ICH</td>
<td>Livestock Corral</td>
<td>Access Track: KP 2.6</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td>WPC044</td>
<td>Monument/ICH</td>
<td>Stacked stone territorial marker</td>
<td>Permanent Stockpile Area</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td>WPC045</td>
<td>ICH</td>
<td>Livestock Corral</td>
<td>Access Track: KP 3.15</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td>WPC046</td>
<td>ICH</td>
<td>Livestock Corral</td>
<td>Access Track: KP 3.3</td>
<td>0</td>
<td>Low</td>
</tr>
</tbody>
</table>

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Cultural resource CH-567 (WPC038) is a single Bektashi Order grave marker/monument erected in A.D. 1941 and restored in 2007. The region around Potom contains a number of Bektashi Order sites, including a well-known tekke or “monastery” approximately 6.7 km south of the pipeline route, between the villages of Backë and Helmë Staraveckë. Due to its local/regional significance this resource has been assessed as cultural resource of moderate importance.

**Figure 4.15  CH-567 Bektashi Order Grave Marker/Monument**

CH-562 (WPC035) is the Qafa e Martës Memorial Monument and Cemetery (Figure 4.16). The monument and cemetery are dedicated to Albanian soldiers/partisan who died fighting for Albanian independence during the First Balkan War and its immediate aftermath from 1912-1913. The monument consists of two carved, white stone, half columns on a stone platform. The adjacent cemetery is defined by a rectangular depression outlined by a low earth and field stone berm measuring approximately 3 x 6 m. Two gravestone-like stone slabs stand at the center of the rectangular depression. The Qafa e Martës Memorial Monument and Cemetery is considered a cultural heritage resource of high importance due to its local, regional, and national significance as a monument to the fight for Albanian independence.
In addition to the Bektashi Order cemetery and monument and the Qafa e Martës Memorial Monument, the cultural heritage survey along the proposed access track identified a small monument dedicated to a local individual named Fatmir Xhezo (WPC037). The monument is a small, white stone obelisk with a dedicatory plaque. Fatmir Xhezo appears to have been a member of the local community killed by a lightning strike. These types of small monuments are often found along roadways in Albania and are dedicated to victims of traffic accidents. Due to its association with a local individual, the monument has been assessed as a cultural heritage resource of low significance.
The cultural heritage baseline surveys conducted in the area in 2014, 2015, and the most recent surveys in 2016 and 2017 identified a number of resources associated with modern, and possibly historic, pastoralists in the area (Figure 4.18). Identified resources include dry laid, stacked stone territorial or waypoint markers (CH-557 (WPC032), CH-563 (WPC033), WPC022, WPC025, WPC028 and WPC029 and WPC030); wooden frame and stone slabs from short term shepherds' camps (WPC013 and WPC027); a wooden fence and stone livestock corrals (WPC016, WPC039, WPC040, WPC042, WPC045, WPC046); a stacked stone fountain around a natural spring (WPC017 and WPC019); a dry laid stone cistern/small water storage pond (WPC015); and a dry laid, stacked stone structure interpreted as the foundation of a seasonally occupied shepherd’s hut or camp (WPC020). Based on the cultural heritage resource importance criteria established for the TAP Albania ESIA each of these resources have been assessed as cultural heritage resources of low importance.

These resources and similar features assumed to be present across the regional landscape are, however, part of a cultural landscape associated with a traditional, pastoralist lifeway. The stacked stone features (fountain, territorial markers, and seasonal shepherd camp foundation) are permanent and re-used physical manifestations of traditional social, economic, and cultural practices. Many aspects of this traditional lifeway, such as traditional technologies/knowledge such as milk processing and storing, animal husbandry, and flock management are important aspects of traditional culture in the area and represent important intangible cultural heritage. In addition, the areas around these permanent features have a high potential to contain subsurface, archaeological features associated with the historic or modern pastoralists that constructed the visible cultural heritage resources. As a result, collectively the resources in this cultural landscape are considered a cultural heritage resource of moderate importance.
Figure 4.18  Pastoralist Infrastructure

WPC017 Fountain

WPC025 Stacked Stone Marker

WPC020 Stone Foundation

WPC016 Livestock Corral

5 ASSESSMENT OF IMPACTS

5.1 OVERVIEW

5.1.1 Environmental Impact Assessment Overview

In order to maintain a consistent approach to assess impact significance, the methodology used in this ESIA Addendum to assess the potential impact of the new footprint is the same as that used in the TAP ESIA Albania. A detailed description of the impact assessment methodology for environmental aspects can be found in Section 5 Baseline and Impact Assessment Methodology (ref: AAL00-ERM-641-Y-TAE-1007) of the ESIA report and supporting documents.

The assessment criteria used are also the same for habitat and species sensitivity, as detailed in Annex 5, Table 5.2-18 and Table 5.2-20 of the ESIA respectively, as well as the magnitude of impacts for habitats and species as listed in Annex 5, Box 5.2-2 and Box 5.2-3 of the ESIA respectively. In addition, the overall impact assessment matrix is the same for habitats and species as listed in Annex 5, Table 5.2-19 of the ESIA.

This methodology was developed following international standards and tailored specifically to this Project. The methodology is valid for the ESIA Addendum report.

The assessment of impacts of the TAP on landscape and visual amenity has been undertaken in accordance with the methodology implemented for the ESIA TAP (2013), which is aligned with standard good practices and takes into account the general principles for landscape protection set out in the European Landscape Convention. Some principles governing the landscape and visual impact assessment process are presented below. Impact significance for landscape and visual amenity is generally arrived at on the basis of the following main factors:

- The quality/importance of the landscape/visual amenity as a resource/function that is potentially affected;
- The sensitivity of the landscape/visual amenity towards Project activities;
- The magnitude of change to the receiving landscape and visual amenity as a result of the Project.

The assessment of the TAP Project impact on landscape and visual amenity is based upon professional judgement and experience regarding Project activities.

5.1.2 Socioeconomic Impact Assessment Overview

Potential socioeconomic impacts may arise from any changes related to the Project that affect what is referred to as the livelihoods framework of individuals, households, communities or societies.

In order to maintain a consistent approach to assess impact significance, the methodology used in this ESIA Addendum to assess the potential impact of the new footprint is the same as that used in
the TAP ESIA Albania (2013). A detailed description of the impact assessment methodology for socioeconomic aspects can be found in Section 5 Baseline and Impact Assessment Methodology (ref: AAL00-ERM-641-Y-TAE-1007) of the TAP ESIA (2013) report and supporting documents. The criteria for assessing (1) sensitivity of receptors, resources and vulnerability and (2) the magnitude of socioeconomic impacts is consistent with the approach defined in TAP ESIA (2013) and specifically presented in its Annex 5, Table 5.2.23, as well as Annex 5, Box 5.2.2.

Similarly to the environmental impact assessment methodology, the socioeconomic methodology was developed following international standards and was tailored specifically to this Project and is valid for the ESIA Addendum report.

5.1.3 Cultural Heritage Impact Assessment Overview

In order to maintain a consistent approach to assess impact significance, the methodology used in this ESIA Addendum to assess the potential impact of the new footprint is the same as that used in the TAP ESIA Albania. A detailed description of the impact assessment methodology for cultural heritage can be found in Section 5 Baseline and Impact Assessment Methodology (ref: AAL00-ERM-641-Y-TAE-1007) of the ESIA report and supporting documents.

The TAP ESIA Albania identified key potential impacts to cultural heritage for the construction, operation, and decommissioning phases of the TAP Albania Project. This report assesses impacts to cultural heritage resources from the proposed new footprint. The following potential construction phase impacts, which were identified during the TAP ESIA Albania, have been determined to be applicable to this assessment:

- Permanent direct physical impacts to cultural heritage resources within the pipeline working strip. The width of the working strip varies based on local topography:
  - Ridge tops and relatively flat terrain: 38 m wide regular or 28 m reduced pipeline working strip;
  - Steeper slopes and sidelong ground sections: 60m wide regular working strip; and
  - Cable crane sections: up to 50 m wide regular working strip.
- Permanent direct physical impacts to cultural heritage resources within the access track or temporary camp footprint;
- Degradation or damage to cultural heritage resources within 50 m of the pipeline (construction) or access track (construction and operation) centrelines due to vibration and/or pollution.
- Temporary restrictions on user access to cultural heritage sites due to pipeline, access track, stockpile area, and telepheric area construction and operation.

6 In order to apply the cautionary principle, it is assumed that any resources within 26 m of the pipeline centerline will be within the regular working strip and resources within 18 m of the centerline will be within the reduced working strip.
- Temporary negative effects on the setting or ambiance of cultural heritage resources during pipeline construction.
- Temporary negative effects on the setting or ambiance of cultural heritage resources during the use of the access track, stockpile areas, telepheric area, and temporary camp.

Section 8.20.2 of the TAP ESIA Albania contains a detailed description of each potential impact source. Summary information of the potential sources and aerial extent of these impacts are provided below, in Table 5.1.

### Table 5.1 Potential Project Cultural Heritage Impacts

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Description</th>
<th>TAP ESIA Albania Impact Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct physical disturbance of or damage</td>
<td>Ground disturbing construction activities such as topsoil stripping, grading, and trench excavation.</td>
<td>Regular Pipeline Corridor: 38 m wide regular working strip or 22 - 28 m wide reduced working strip on ridge crests and flatter terrain. Steep slope and sidelong ground Pipeline Corridor: 50-60 m wide working strip. Access Track: 8 m width of access road land-take.</td>
</tr>
<tr>
<td>Degradation of or damage to cultural heritage sites due to pollution or vibration</td>
<td>Vibration related damage to cultural heritage resources from blasting, pile driving, hammering, and vehicle traffic. Pollution related damage due to dust, soot, vehicle exhaust.</td>
<td>50 m area around all Project components.</td>
</tr>
<tr>
<td>Blockage of user access to cultural heritage sites</td>
<td>Temporarily or permanently blocking or restricting stakeholder access to cultural heritage resources due to construction zones, road closures, etc.</td>
<td>Varies based on the specific Project component location, associated no-go areas, and the type and location of the cultural heritage resource.</td>
</tr>
<tr>
<td>Negative effects on the setting or ambiance of cultural heritage sites</td>
<td>Temporary or permanent changes to the setting or ambiance of a cultural heritage site such as noise pollution, increased vehicle traffic, or permanent infrastructure that change to resource setting or modify the surrounding landscape.</td>
<td>Varies based on the specific Project component location and the type and location of the cultural heritage resource.</td>
</tr>
</tbody>
</table>

Source: ERM, 2017

The significance of these potential impacts to individual cultural heritage resources is assessed through an analysis of the magnitude of the potential impact and the sensitivity of the cultural heritage resource. A detailed description of this analytical method can be found in Section 8.20.2 of the TAP ESIA Albania, including the matrix to determine the significance of impacts (Table 8.20-2).

The TAP ESIA Albania presents a number of mitigation measures to reduce potential Project impacts to cultural heritage resources. Table 5.2 provides a list of the recommended mitigation measures for each of the potential types of Project impacts to cultural heritage resources. A more detailed description of each potential mitigation measure is given in Section 8.20.3 of the TAP ESIA Albania. In all instances the preferred method for mitigating impacts to cultural heritage resources is avoidance.
Table 5.2 Cultural Heritage Impact Mitigation Measures

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Cultural Heritage Resource</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct physical disturbance of or damage</td>
<td>Archaeological Sites</td>
<td>Avoidance; site evaluations; site marking/protection with barriers; Chance Finds Procedure; instructions in worker’s Code of Conduct; archaeological rescue excavations; and reduced working strip.</td>
</tr>
<tr>
<td></td>
<td>Historic Monuments Intangible Heritage Sites</td>
<td>Avoidance; relocation, replacement, or compensation; Site marking/protection with barriers; instructions in worker’s Code of Conduct; and reduced working strip.</td>
</tr>
<tr>
<td>Degradation of or damage to cultural heritage sites due to pollution or vibration</td>
<td>Archaeological Sites, Historic Monuments, and Intangible Heritage Sites</td>
<td>Avoidance; conditions and structural integrity assessments; pollution prevention plans/physical protection; structural reinforcement for vulnerable resources; condition and structural integrity monitoring; use of low impact construction methods; vibration minimizing techniques for road traffic; restricting work in wet conditions; and structure repair/conservation.</td>
</tr>
<tr>
<td>Blockage of user access to cultural heritage sites</td>
<td>Archaeological Sites, Historic Monuments, and Intangible Heritage Sites</td>
<td>Avoidance; stakeholder engagement to identify timing of site use; construction scheduling to avoid restricting access during peak periods of use; and providing alternative access routes.</td>
</tr>
<tr>
<td>Negative effects on the setting or ambiance of cultural heritage sites</td>
<td>Archaeological Sites, Historic Monuments, and Intangible Heritage Sites</td>
<td>Avoidance; stakeholder engagement to identify timing of site use; construction scheduling to avoid impacts to site ambiance/setting during site use; noise monitoring; and instructions in worker’s Code of Conduct.</td>
</tr>
</tbody>
</table>

Source: ERM, 2017

The significance of potential impacts is determined based on the criteria in the impact significance matrix (Table 8.20-2 of the TAP ESIA Albania report). It was estimated that residual impacts for non-avoidance mitigation decrease by one level from the original impact significance rating. For example, a medium importance archaeological site within the Project footprint (large magnitude impacts) would sustain an unmitigated impact of major significance. If the impact on the site was mitigated through archaeological rescue, however, a portion of the site’s scientific information could be recorded, reducing the impact rating from major to a moderate residual impact.

5.2 TERPOLLAR RE-route

5.2.1 Environmental Impact Assessment

The potential impacts stated in the TAP ESIA Albania report are applicable for this proposed pipeline re-route as well as adjacent access track, temporary camp, telepheric area and the two spoil stockpiles. Box 5.1 presents the key considerations applicable for the assessment conducted in this addendum report. The key impacts of the Project pipeline re-route on terrestrial ecology remain the same as those presented in Table 8.11-1 of the TAP ESIA Albania report.
Box 5.1 Pipeline Re-route, access track, temporary camp telepheric site and spoil stockpiles – Environmental Key Considerations

Sources of Impacts
- Construction phase: Construction of access track and other temporary footprint elements such as a small camp, a telepheric site; creation of 2 small spoil stockpiles; Preparation of the working strip; Blasting and Trench excavation and temporary storage of excavated material; Movements of vehicles, equipment and personnel; Use of water and raw materials; Management of surface water run-off, Waste management.
- Operation and maintenance phase: Movements of vehicles, equipment and personnel; Waste management; Maintenance of access track and 8 m Protection Strip.
- Decommissioning phase: Construction of temporary decommissioning facilities; Movements of vehicles, equipment and personnel; Waste management.

Potentially Impacted Receptors

Particular Baseline Conditions that are Potentially Influencing Impacts
- Relatively remote areas with no access or very limited access.

Project Factors that are Potentially Influencing Impacts
- Waste management, traffic management, access track corridor, temporary camp and telepheric site area, working width for the pipeline corridor, timing of works, level of physical disturbance (i.e. noise, light, visual, vibration, water quality).

References
- Baseline is found in Section 4.2. Impact Assessment Criteria is defined in the Annex 5.2.3 of the TAP ESIA Albania report. Monitoring measures are described in Section 6.1.

Source: ERM, 2017

A general description of each impact is provided in Section 8.11.2 of the TAP ESIA Albania report.

5.2.1.1 Potential Impacts

5.2.1.1.1 Air Quality Impacts

Localised and temporary impacts on local air quality are expected due to atmospheric emissions during construction and decommissioning phases. The two main sources of atmospheric emissions that have the potential to adversely affect air quality during the re-route, access track and other footprint elements construction are the dust emissions from civil works and exhaust emissions from vehicles and equipment involved.

Civil works generating dust include:
- Earth movement and excavation related to re-route working strip, and access tracks, temporary camp, telepheric site and RoW preparation.
- Dust resuspension due to wind action on exposed surfaced and vehicle transit on unpaved roads.

Exhaust emissions include:
• Exhaust emissions from engine-driven equipment associated with clearance, trenching and diesel fuelled generators during the hydrotesting of the new pipeline section. Typical equipment used include: bulldozers, heavy excavators, dump trucks, large heavy lift cranes, standby generators, excavators, side booms / pipelayers, rock breakers, etc. (Section 3.4.3)

• Exhaust emissions from vehicles and equipment involved in the transport of material, personnel, sub-contractors and suppliers.

The pollutants generated from these emission sources include Particulate matter (PM), Carbon monoxide (CO), Nitrogen oxides (NOX) and Sulphur dioxide (SO2).

Dust emissions are expected to occur on a discontinuous basis during the whole length of the re-route, access track and other footprint elements construction. Construction activities include excavation and civil works and access track construction activities. Dust emissions will result from activities such as pulverization and abrasion of surfaces, caused by trucks carrying soil and materials, mobilization of dust particles caused by wind erosion of unpaved surfaces, mechanical action on incoherent materials and works with excavators, bulldozers, etc.

Construction is expected to last for 545-725 days approximately for the re-route, access track and other footprint elements combined (a standard construction rate of 15-20 m per crew/day for the re-route can be assumed, while also taking into account the standby time from inclement weather); Therefore, any impacts arising from dust emissions related to civil works will be temporary and of short duration.

With regard to the spatial extent of the impacts, dust emissions will be mostly released in the proximity of the construction areas. Dust emissions will be released low to the ground and are characterised by a minimum buoyancy and low dispersion; moreover, considering that they will only be emitted discontinuously during daytime, they are unlikely to cause significant adverse impacts at the closest human receptors.

As for exhaust gas emissions, a similar situation is expected where the construction traffic in the area of influence of the project footprint will be limited to the duration of the activities. Minor exhaust emissions will be released from mobile vehicles involved in the preparation and construction activities and their emissions typically do not reach distances greater than 100 m from the source of emission. Therefore in the absence of close receptors they are unlikely to cause any noticeable adverse impacts.

5.2.1.2 Noise Impacts and Vibration

Noise impacts as in the case for air quality are expected to be localised and temporary, considering the impact sources are the same, such as the preparation of the construction areas (including blasting), and the use of vehicles and traffic. Hence, temporary noise emissions from earthworks, backfilling and reinstatement, movements of vehicles, equipment and personnel during the almost 545-725 days of construction phase will be the main sources of impact, which will prevalently affect the area adjacent to the construction/work site. Potential receptors in the area consist mainly of the Potom and Terpollar settlements, the latter which is located close to the
TAP base case route but relatively far from the proposed re-route (some 900 m from the closest residential buildings, and in case of the access track some 1.7 km) and fauna. Noise sources in this phase will not be continuous, and will depend on the amount of blasting operations and on the number and types of machinery used for each activity. The typical noise levels from rock blasting and machinery at 1 m from the source are summarized in Table 3.8. Blasting operations will involve up to a single blasting event per day (estimated less than 10 seconds of noise derived from blasting) using small multiple charges on short segments of the re-route. It should be noted that this type of blasting is occurring in several other sections of the pipeline and activities blasting along the re-route will not be different. In addition, this type of blasting is not comparable to a quarry blasting. For pipeline construction multiple small charges are used with the objective to fracture the rock and allow the substrate to be excavated. During pre-commissioning, the main noise sources are compressors and pumps foreseen for the hydrotecting activities as well as the air blown out of the pipe at the drying stage, which will also be a source of noise (Table 3.9). The nature of the impacts is thoroughly described in Section 8.5.3.1 of the 2013 ESIA.

5.2.1.3 Impacts on soils and geomorphology

Earthworks and excavation activities required for pipeline re-route construction, preparation of access track, spoil stockpile areas, telepheric working site and temporary construction camp will lead to local disturbance of the soil profile and may result in degradation of the soil value or function; especially in areas where topsoil will be stripped. If not managed properly, these activities may result in soil erosion from rain/snow runoff as well as soil compaction depending on the soil type encountered along the re-route and the other construction footprint areas. On the other hand, the potential occurrence of spills derived from machinery use may alter soil properties. The nature of the impacts is thoroughly described in Section 8.5.5.2 of the 2013 ESIA.

5.2.1.4 Habitat Loss / Habitat Degradation

The Terpollar re-route, access track and temporary camp and other footprint elements will take place in high mountain areas characterized by a combination of relatively inaccessible terrain and relevant sections with steep terrain and narrow ridges. Thus construction activities of the pipeline alignment will vary between: (1) normal pipeline construction conditions where a 38 m working strip will be used (approximately 5 km), (2) steep slopes with enlarged RoW (60 m; approximately 2.55 km) as well as (3) ridge section construction activities where 18-28 m working strip is used (approximately 3.35 km).

As a reasonable estimation of land take for the prospective operations scenario, a full 38 m pipeline strip is assumed to be used throughout the entire re-route; and (2) the width of access track of 8 m (which may be slightly enlarged only on very specific locations depending on the topographical conditions). The temporary camp is estimated to occupy 1.0 ha; the 2 stockpile areas together 1.23 ha and the telepheric working site 0.25 ha.

Thus the total size of the area affected by construction activities will be approximately 50 ha but a large proportion will correspond with temporary occupations (see Table 3.5). From this total, the
estimated land take of natural habitats identified throughout the re-route, access track (and complementary features) and temporary camp lost from the preparation of the work areas are:

- 8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*): 4.66 ha
- 6520 Mountain hay meadows: 19.7 ha.
- 9170 *Galio-Carpinetum* oak-hornbeam forests: 1.38 ha
- 9110 *Luzulo-Fagetum* beech forests: 3.8 ha
- 5130 *Juniperus communis* formations on heaths or calcareous grasslands: 3.59 ha
- Habitat Mosaic comprising 8210_Calcareous rocky slopes with chasmophytic vegetation; 9170_Galio-Carpinetum oak-hornbeam forests; 5210_Mediterranean arborescent matorral, Arborescent matorral with *Juniperus* spp: 8.52 ha

In areas where vegetation previously existed, natural vegetation will be encouraged to re-establish within the working areas post-construction, nonetheless along the re-route an 8 m pipeline protection strip will remain where no deep rooted vegetation will be allowed to grow in order to allow for the regular surveillance and maintenance of the pipeline strip. As such, only the losses and modification of habitat in the pipeline protection strip are considered to be permanent (approximately 8.96 ha) and only where woody vegetation is present.

5.2.1.5 Habitat Fragmentation

Habitats that may be particularly susceptible to fragmentation and edge effects include significant expanses of mountain hay meadows, calcareous and calcshist screes; along with limited patches of beech forest during the last 5 km of the pipeline re-route area. Considering that the pipeline is conducted over a ridge area towards its western end, NW/SE slopes covered with beech and oak-hornbeam/*Juniperus communis* formation may have limited effects due to the natural fragmentation provided by the specific orography of the area. The final 400 m of the re-route crosses through a dense area of oak-hornbeam forest which may by susceptible to fragmentation. Aquatic habitats in the form of high mountain creeks will equally be susceptible to fragmentation, considering these would be affected on both their headwater zones and along the access track.

5.2.1.6 Direct Species Loss

Species loss will mainly affect flora species from vegetation removal during the preparation of the working areas for the pipeline strip, access track and other footprint elements. Fauna species loss is likely only to be limited to those resulting from accidental strikes with vehicles and some from earth moving for species present in the soil and leaf litter.

Habitat loss and fragmentation will cause associated impacts such as reduction in habitat viability and quality, prey availability, and increased competition for food and space. These impacts are likely to be of higher significance along the beech and oak-hornbeam forest habitats of medium quality that harbor a wider diversity of fauna and where current disturbance levels are relatively low. Fauna and flora species loss may occur due to impacts associated with construction activities.
(i.e. habitat clearance) and affecting the habitat quality to sustain these life processes for the affected species. Nonetheless, it is considered that any habitat-related impacts will be of minimal influence to species loss.

5.2.1.1.7 Disturbance and Displacement of Species

It is anticipated that Project activities will cause disturbance to fauna species along the footprint and adjacent areas, especially in areas covered with dense forest types. Considering the project footprint forested areas are scarce. The most relevant forest areas are located south of Martha’s Pass where large area with dense and well developed beech forest is found. The small temporary camp is located within an open grassland plateau on the northernmost portion of this forest (i.e. outside the forest core area and avoiding the forest). Along the re-route some patches of coppiced beech forests are also found but in most cases route is located right on the edge and forest along the mountain ridge.

Many of the fauna species identified are expected to avoid the area or keep a certain distance from the footprint areas due to noise sources and human presence. However this will be a temporary situation and will be limited to the construction period (545-725 days). Once construction has ceased and the footprint areas reinstated species are expected to be re-established. On the contrary some opportunistic species are expected to be attracted by the operations in search of food or other resources.

As per the descriptions in 3.4.9.5 blasting noise levels will be limited as blasting is typically planned only once a day and would last only few seconds. In addition noise levels comparable to other construction activities such as grinding or the hydraulic hammering. In addition noise generated generally lasts 15-45 seconds as multiple charges are activated.

5.2.1.1.8 Disturbance to the Surface Water Quality / Aquatic Flora and Fauna

The potential interferences with the aquatic habitats are limited to (1) the crossing of small/temporary creeks in the uplands, (2) the potential modification of the natural surface run-off pattern on the south face of the mountain and (3) potential spills.

Both the Terpollar re-route and the access track cross two mountain creeks (though at different elevations). In addition, the location of one of the prospective spoil stockpile areas raises the risk of potential spills from machinery to one of these creeks (at access track KP1.95).

In addition, the erosive processes on steep terrain derived from earthworks raises the risk off modifying the natural runoff and/or silting of streams that feed the larger streams in the valley. This risk of erosive processes is linked to the potentially high runoff from rain/snow in sloped areas; whereas the risk of spills is associated to the use of hazardous materials (e.g.: diesel for vehicles and machinery) and the generation of various types of wastes. The accidental events that can affect the surface water quality can be summarized as follows:
Accidental spills of raw materials and wastes from the storage areas located near a watercourse. The probability of this type of events is typically very low and is the result from an accidental situation. A number of mitigation measures were defined in the TAP Albania ESIA (2013) to cover the accidental situations (see Section 8.8.2.2.5).

Inappropriate management during the construction activities (e.g. inappropriate refueling procedures, oil leaks from machinery, inappropriate erosion control measures, etc.). Accidental spill events are associated to small volumes and are derived from inappropriate implementation of the management tools. Generally they are not expected to significantly affect the water quality. Sections 8.8.2.2.5 and 8.12.2.2.1 of the TAP Albania ESIA (2013) provides mitigation measures to cover these types of situations.

5.2.1.2 Mitigation Measures and Residual Impacts

Table 5.3 provides a number of further measures specifically applicable to this re-route. These are aligned with the mitigation measures presented within the TAP ESIA Albania report, which are still applicable to this re-route. As a consequence a good proportion of the measures presented in this report are equivalent to those presented in the TAP ESIA Albania report, although specific details to the particular re-route are included where needed for clarity.

Table 5.3 Environmental Residual Impacts - Terpollar Re-route, access track and temporary camp.

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Significance of Residual Impact/ Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>o Proper vehicle maintenance</td>
<td>Not significant to Minor</td>
</tr>
<tr>
<td></td>
<td>o Traffic Management Plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Emissions sources monitoring;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Dust suppression techniques;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Vehicle speed limits;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Truck bed covering/sheeting</td>
<td></td>
</tr>
</tbody>
</table>

Construction traffic and machinery gaseous emissions are similar to existing traffic on countryside roads. Impact should be negligible with the anticipated mitigation measures in place.

Maximum concentrations of particulate pollutants are expected to remain below Albanian/European/IFC limits and within 0.7 km from construction locations, away from inhabited areas.
<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Significance of Residual Impact/ Risk</th>
</tr>
</thead>
</table>
| Noise and Vibration| o Blasting to be minimized and performed in accordance with existing procedures (e.g. daytime only).  
o Switch off equipment when not in use;  
o Whenever feasible, schedule different noisy activities to occur concurrently;  
o Locate stationary equipment (e.g. compressors) as far as practicable from nearby receptors).                                                                                                                                                                                                                                                                                                           | Minor  
Temporary disturbance is expected near relatively sensitive habitats. Human receptors sufficiently distant from work areas.                                                                                                                                                                                                                                                                                                                                                                           |
### Impact / Risk Measures to Address the Impact / Risk Significance of Residual Impact/ Risk

<table>
<thead>
<tr>
<th>Habitat Loss / Degradation &amp; Habitat Fragmentation</th>
<th>Establishment of working strips to restrict area of impacts to within working corridor of the pipeline re-route and access track.</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Habitat clearance and access track / temporary camp footprint minimization. This will be especially relevant on the small camp where high value forests are located in the vicinity.</td>
<td>Impacts from habitat loss, degradation and fragmentation to the pipeline re-route, access track and temporary camp in the Terpollar area are not expected to be significant, since the specific portions of habitats directly impacted are considered:</td>
</tr>
<tr>
<td></td>
<td>Reinstatement of habitats after construction activities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Of low to moderate quality and avoiding areas of key interest (e.g. mature beech forests)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All areas are heavily influenced by traditional human activities (grazing and forest cutting).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not located within or near any Protected Areas.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restoration is feasible and planned for all habitats cleared and a large portion of the footprint is located on grassland and open terrains where vegetation will be re-established near to its original state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impacts will be limited to localized areas (footprint) and although works will take up to 2 years to be completed, restoration will allow the impact to be temporary in nature.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>With the specific mitigation measures embedded in the reinstatement plan and proven effective, it is expected that the impacts of habitat loss / fragmentation in these areas will be minor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>However, in-line with the EBRD standards the Project is aiming to meet, &quot;no net loss&quot; to biodiversity. Therefore, compensation will be required for any loss of natural habitat and areas of habitat importance through biodiversity offset and habitat restoration.</td>
<td></td>
</tr>
</tbody>
</table>
### Impact / Risk

<table>
<thead>
<tr>
<th>Species loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Restriction on access to forested areas during and following construction.</td>
</tr>
<tr>
<td>o Reduction of vehicle speed limits to avoid strikes with fauna.</td>
</tr>
<tr>
<td>o Fauna species should not be caught or killed during construction of any of the re-route features.</td>
</tr>
<tr>
<td>o Accessibility to this area from the access track should be closely monitored and track completely dismantled/reinstated as planned.</td>
</tr>
<tr>
<td>o Incorporation of specific measures for Large Carnivores across the entire re-route area (from BAP).</td>
</tr>
<tr>
<td>o Waste and raw materials to be stored and managed considering risks on fauna (i.e. avoiding risk of accidental poisoning or attracting fauna due to food availability).</td>
</tr>
</tbody>
</table>

### Measures to Address the Impact / Risk

### Significance of Residual Impact / Risk

**Not Significant**

With mitigation measures implemented for species loss (along with those for disturbance/displacement) and proven effective, it is expected that the impacts in these areas derived from the Terpollar Re-route will be significantly reduced and considered as not significant.

Despite of the above it is worth indicating that the most relevant risk for species loss is not related with the proposed re-route but with the access of the basecase route from Vithkuq to Martha’s Pass. This increased accessibility, if not properly managed, could significantly increase current human pressure (i.e. hunting and forest clearance) and have an important impact on large mammal species, mature beech forest and the fauna and flora species associated to these type of forest.
### Impact / Risk

<table>
<thead>
<tr>
<th>Species Disturbance and Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Activities will take into consideration the known presence of bears and wolves and in general other fauna (e.g. bats, small carnivores, etc.) that may be using the high sensitivity beech forest located in the vicinity of the camp (core forest areas are located further south though)</td>
</tr>
<tr>
<td>o Due to potential for bear hibernation or denning sites works close to the core areas identified should be avoided between December-March. In those areas with known presence of bear and wolf but not defined as high suitability habitat for hibernation/denning, restrictions for March-July would apply (to minimize interference with feeding grounds).</td>
</tr>
<tr>
<td>o Implementation of Bear/Large Mammal Interaction Plan including staff training, waste management and noise abatement.</td>
</tr>
<tr>
<td>o Avoid night-time construction work wherever possible, to avoid interaction with and disturbance to bears and other nocturnal fauna.</td>
</tr>
<tr>
<td>o Pre-vegetation clearance surveys to be undertaken to reduce disturbance to birds during breeding season (April – July).</td>
</tr>
<tr>
<td>o Development of a Biodiversity Action Plan (as part of the larger TAP Project) and Biodiversity offset where corresponds.</td>
</tr>
<tr>
<td>o Monitor usage of access track and completed sections of pipeline corridor in the area by hunters.</td>
</tr>
</tbody>
</table>

### Measures to Address the Impact / Risk

### Significance of Residual Impact / Risk

**Minor to Moderate**

Residual impacts for this area are expected to range between minor to moderate due to relatively high quality and sensitivity of the area and the presence of key species of conservation concern. Mitigation measures implemented will reduce impacts, nonetheless indirect impacts, from activities derived from road traffic, and increased hunting may be significant.

Site selection for the small camp allowed maximization of distances with the core mature forest areas which are located south of the start of the re-route.
<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Significance of Residual Impact/ Risk</th>
</tr>
</thead>
</table>
| Surface Water Quality / Aquatic Flora and Fauna | o Minimisation of physical impacts to stream morphology and water quality.  
| | o Implementation of control measures to avoid modification of natural water run-off patterns. Use of sediment ponds where needed to avoid potential silting of streams located below the working corridors.  
| | o Implement controls on construction works areas within the vicinity of mountain creeks  
| | o Flooding and erosion control measures to be implemented and closely monitored during construction as well as during reinstatement.  
| | o Continuity of streams/creeks should be kept during construction activities, in order to avoid the impact on aquatic life, especially to insect and amphibian larvae  
| | o Where amphibian species present all possible efforts to remove amphibians should be made. | Minor  
| | | With mitigation measures implemented and proven effective, it is expected that no affection to the water quality will occur as a result of surface runoff, nearby erosive processes (either natural or originated from construction activities) and accidental spills of hazardous materials or wastes.  
| | | In addition, the application of the mitigation measures will reduce significantly the impact on the fauna and flora of the high mountain creeks. |

Source: ERM, 2017
5.2.1.3 Landscape Impact Assessment

The Landscape and Visual Impact Assessment (LVIA) included in the 2013 TAP ESIA Albania report assessed the range of Landscape and Visual Impacts that might be brought about by the entire TAP Project. This section will utilise the accepted assessment methodology adopted in the ESIA to assess the landscape and visual impacts of the proposed Terpollar Re-route. This will include describing the anticipated sources of impacts, sensitive visual receptors, visual impacts and mitigation measures.

The main contributing factors to landscape and visual impact arising from the proposed TAP re-route are presented in the Box 5.2

### Box 5.2 Key Considerations for Assessment - Landscape and Visual Amenity

#### Sources of Impacts
- Construction Phase: Site preparation (including vegetation clearance and ridge modification); Topsoil storage and replacement, Earthworks and related dust emissions; Presence and movement of plant and machinery together with the construction activities; Construction lighting, Construction/Workforce Camp.
- Operational Phase: Pipeline protection strip (8m width) cleared of woody vegetation; Presence and visibility of permanent changes to topography arising from ridge modifications,

#### Potentially Impacted Receptors
- Nearby settlements
- Isolated Dwellings
- Road users; and
- Landscape character and resources.

#### Particular Baseline Conditions that are Potentially Influencing Impacts
- Elevation and visually distinct landscape of the proposed PPS
- Degree of openness of farmland from which activities will be visible;
- Vegetation areas where physical losses could arise;
- Extent and distribution of visual receptors around the site.

#### Project Factors that are Potentially Influencing Impacts
- Permanent modifications to elevated ridgelines
- Removal of vegetation particularly trees
- Scale or size of the permanent aboveground elements of the Project.
- Residual above ground project infrastructure.

#### References
- Baseline is found in Section 4.2.1.1, Impact Assessment Criteria is defined in Annex 5.1.1.1 Monitoring Measures are described in Table 6.1

Source: ERM, 2017

A detailed assessment of the anticipated landscape and visual impacts that might be expected as a result of the construction and operation of the proposed Terpollar Re-route are discussed further in this section. Table 5.4 presents a summary of the key impacts of the Re-route. The impacts are separated into construction, operation and decommissioning phases.
Table 5.4 Key Potential Impacts – Landscape and Visual Amenity

<table>
<thead>
<tr>
<th>Construction Phase</th>
<th>Operation Phase</th>
<th>Decommissioning Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Impacts to landscape and visual amenity from buried pipeline construction activities.</td>
<td>• Presence of PPS (8 m wide) in the landscape, especially sections cleared of woody vegetation for this purpose.</td>
<td>No residual impacts on landscape and visual amenity provided the landscape is restored/revegetated to its original character or a character that reflects the landscape of the area at the end of operation.</td>
</tr>
<tr>
<td>• Impacts to landscape and visual amenity from ridge modification construction works, especially earthworks.</td>
<td>• Proposed alterations to elevated ridgelines.</td>
<td></td>
</tr>
<tr>
<td>• Impacts to landscape and visual amenity arising from the presence of construction camps and access track for the duration of construction works.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: ERM, 2017

The following section will describe the potential impacts sources that may contribute to landscape and visual impacts of the proposed Terpollar Re-route. These will be described in the three phases summarised in Table 5.4. Where relevant mitigation measures will also be discussed.

5.2.1.3.1 Construction Phase

5.2.1.3.1.1 Buried Pipeline

This section of the assessment addresses the construction impacts of the proposed pipeline works and related elements on landscape and visual amenity along the length of the pipeline route.

During construction, factors contributing to visual impacts will include the following:

- Modification to scenic quality or physical changes to landscape elements arising from the construction of the pipeline. These include loss of vegetation, changes to ground surface cover and vegetation patterns, loss of vegetation and severance of streams. These direct changes will apply to the pipeline corridor (measuring 38 m in width throughout most of its length, 18-28 m on ridgelines and up to 60 m on steep side slopes and ground sections);
- The introduction of temporary structures and facilities to enable the construction works to take place. These include construction of the temporary camp and lighting;
- Spoil stockpiles, telepheric working area and access track; and
- The presence of stationery or moving plant, machinery and vehicles associated with construction.

5.2.1.3.1.2 Ridge Modifications

Alterations to the ridgeline will be required in several locations to facilitate the construction of the pipeline re-route in mountainous areas. Ridgeline modifications will be limited several locations as described in Section 3. Construction may require alterations to peaks or crests where affected sections will be partly removed or re-profiled in order to allow pipe laying works to take place.
These sections will establish a flat working strip measuring between approximately 18 m to 28 m in widths and varying in length.

5.2.1.3.1.2.1 Mitigation Measures for buried pipeline and ridge modification

There are no landscape techniques (such as screening) that can be employed to mitigate the visual impacts associated with the construction activities. However construction management practices can be implemented to minimise visual impacts associated with construction works. Other additional site specific mitigation measures for construction are detailed below:

- The pipeline re-route construction works will take place in phases;
- Night-time lighting will be of a directional type minimising light spill to the surrounding area. Lighting will be restricted to that required only for security outside normal hours of working for construction works. After dark, any necessary lighting will be directed to minimise light spill to the surrounding area;
- Existing vegetation to be retained will be protected where feasible;
- All sites will be maintained in tidy condition. Construction areas will be watered to damp down dust and minimise visibility of the same;
- The working strip will be minimized as much as feasible in those areas where revegetation/reinstitution will be more difficult (e.g. steep slopes, high altitude areas);
- Spoil material will be disposed permanently away from the pipeline. The material will preferably be transported to dedicated spoil stockpile sites, where visual impacts can be minimised. Any disposal will be carried out on stable ground, compacted and re-naturalized (e.g. covered with local topsoil and start-up aid for habitat-suitable growth of vegetation) in order to avoid any later landslides or excessive erosion on the deposit. The shape of the spoil deposit will be profiled and landscaped (along with any other hard standing areas) in order to minimise any impact on visual amenity, in a way which is sympathetic with local topography. For the ridge modification areas (currently estimated to be conducted at KP6.3 to KP10.3), the use of a reduced working strip of 16 m plus 1 m on either side (totalling 18 m width) will be investigated;
- Landscapes will be reinstated following completion of construction works. At the end of the construction phase (beginning of pre commissioning phase), the pipeline will be buried, the topsoil will be reinstated and reseeding of crop or pasture will have taken place. The access track and temporary camp location will also be reinstated to their original state as much as feasible;
- Where ever practicable (ridgelines) contours and landforms should be organic or natural in appearance to minimise / reduce visual impacts;
Clean up and reinstatement measures are applied to the PPS, access track and temporary camp. Generally clean up and reinstatement involves removal of foreign material (e.g. construction material and waste), surface contouring, re-spreading topsoil, re-spreading vegetation and reseeding (typically with native grass or other approved species). No vegetation shall be removed from the PPS but rather it is re-spread over the PPS to assist in stabilising the ground and re-establishing vegetation regrowth.

To promote vegetation regrowth ensure that:

- Land is returned as close as possible to its previous productivity;
- Stable landforms are re-established to original topographic contours;
- Natural drainage patterns are reinstated;
- Erosion control measures (e.g. contour banks, filter strips) are installed in erosion prone areas.

### 5.2.1.3.1.2 Residual Impacts

The residual construction impacts that will arise to landscape and visual amenity are presented in Table 5.5. and Table 5.6. This takes account of the above mitigation measures.

#### Table 5.5 Residual Impacts of buried pipeline – Landscape and Visual Amenity – Construction Phase

<table>
<thead>
<tr>
<th>Impact / Risk – Pipeline Construction works</th>
<th>Measure to Address the Impact / Risk</th>
<th>Significance of Residual Impact / Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA 1 - Mountain hay meadows Kp 0 – 6.5</td>
<td>The landscape will be reinstated following completion of the pipeline construction works.</td>
<td>A not significant impact will arise and this is attributed to the temporary nature of the construction works.</td>
</tr>
<tr>
<td>LCA 2 – Calcareous grassland Kp 6.5 – 8.0</td>
<td>The landscape will be reinstated following completion of the pipeline construction works.</td>
<td>Minor</td>
</tr>
<tr>
<td>LCA 3 – Potom valley Kp 8.0 – 11.2</td>
<td>The landscape will be reinstated following completion of the pipeline construction works.</td>
<td>Minor</td>
</tr>
</tbody>
</table>

Source: ERM, 2017
Table 5.6 Residual Impacts of Ridge Modifications - Landscape and Visual Amenity – Construction Phase

|-----------------------------------------------------|-------------------------------------|--------------------------------------|
| Ridge modifications proposed at Kp 6.3 – 7.9 LCA 2 Calcareous grassland | • Mitigation measures already applied to impacts from the proposed buried pipeline  
• Development and implementation of an Aggregate Management Plan and Erosion and Sediments Control Plan  
• Monitoring restrictions of working strip width limits  
• Preparation of a reinstatement and revegetation plan with special attention to erosion control measures and long-term establishment of vegetation cover | Minor  
The construction activities will result in temporary impacts on landscape and visual amenity. Vegetation losses and changes to topography will begin to occur during construction, though its effects will not be fully appreciated until operations phase. |
| Direct construction impacts measuring 1.6 km in length will arise, resulting in a disruption of the landscape character area during construction works, changes in colours (bare soils, vegetation loss) and presence of debris and excavated material). | | |

Ridge modifications proposed at Kp 7.9 – 10.3 LCA 3 – Potom valley

Direct construction impacts measuring 2.4 km in length will arise resulting in a disruption of the landscape character area during construction works, changes in colours (bare soils, vegetation loss) and presence of debris and excavated material).

Same as above

Minor  
The construction activities will result in temporary impacts on landscape and visual amenity. Vegetation losses and changes to topography will begin to occur during construction, though its effects will not be fully appreciated until operations phase.

Source: ERM, 2017

5.2.1.3.2 Operation and Maintenance Phase

Following constructions activities that landscape rehabilitation activates will be implemented and the projects areas restored wherever practicable. The visual impact of the operational areas is therefore limited to the potential for permanent changes or visual alterations to the landscape when viewed from sensitive receptors.

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The LVIA included with the ESIA assessed identified sensitive visual receptors and assesses the visual impacts of the project from these locations. Sensitive visual receptors included residential areas and dwellings located along the length of the project. Views from these locations where assessed in order to understand the potential change in landscape and visual impacts that might be brought about by the project during operation and maintenance.

Annex 4 shows the entire project pipeline, proposed Terpollar Re-route area, nearby communities and areas with visibility of the project.

5.2.1.3.2.1 Buried Pipeline

Once constructed, the proposed TAP pipeline will be buried underground and with time as the vegetation cover is recovered, should no longer be a source of landscape and visual impact throughout most of the pipeline corridor corresponding to areas currently covered by hay meadows (LCA 1 within KP 0-6.5). Along those patches currently covered by rocky outcrop or dominated by stony ground, once buried, the pipeline will remain finally covered again by stones as a result of reinstatement resulting in the absence of significant impacts apart from those resulting of the potential ground levelling.

The working corridor, typically measuring up to 38 m width extending to 60 m in steeper sections and reduced to 18-28 m along the crests, will present visually as a bare top soiled surface immediately following completion of construction. The working corridor will be a source of landscape and visual impact, until vegetation is fully established and the land recovers to become indistinguishable from the adjacent land cover along most of the pipeline route. A permanent visual impact will occur only where permanent removal of deep rooting plants, including trees, will be evident as a result of the 8 m wide PPS. The impact on these areas will in any case depend on the point of observation as some of the tree vegetated areas crossed by the proposed re-route are located in ridge areas being the tree vegetation limited to one slope, as is the case of the section between KP 6.1 and 7.6 of the rerouting, and therefore limiting the impact to a slight reduction in tree coverage rather than introducing a observable line within a tree forest that would result in a much visible effect. This effect will be more clear, however, along certain parts of the LCA 3, where the pipeline corridor will cross bushy areas similarly vegetated at both sides. This is expected to occur within the areas dominated by mix vegetation of degraded transitional woodland/shrubs, oak-hornbeam forests and *Juniperus spp*.

5.2.1.3.2.1 Mitigation Measures

The mitigation measures that will apply throughout the length of the route will include the reinstatement/maintenance of land cover to that originally removed where feasible.

Proposed woodland and shrubland planting will be reinstated after construction to replace that lost during construction. These reinstatement works will apply to most of the temporary working strip (of
variable width between 18 and 60 m). No woody vegetation or woody crops will be reinstated along the 8 m PPS.

To favor a natural aspect of the vegetation it will adopt random implant schemes, avoiding the formation of geometric shapes. Species used for restoration will be native, typical of the area and monitoring will also be carried out in order to check:

- Flora abundance and presence of typical species of the vegetation community (as presented in the baseline);
- The correct statement of the revegetated species;
- The potential spread of invasive species.

For steep slope areas, where original land cover cannot be reinstated, erosion control measures shall be implemented. Slope and inclination are the two factors that directly affect erosion; hence erosion control berms will be installed to interval with slope face. In order to mitigate visual impact jute matting and seeding with native species to promote growth will be implemented.

Particular care will be taken to ensure that any land drainage infrastructure or facilities, and vegetation, which were disturbed / moved during construction, will be reinstated to their former state. Photographic records will be made of the re-route, where necessary, before and after the works.

### 5.2.1.3.2.1 Residual Impacts

The long term residual impacts of the pipeline on landscape and visual amenity will be either not significant or of minor significance only during operation of the pipeline for the majority of the landscape character areas. The majority of the footprint will be restored with similar vegetation types and only those sections visible from the surrounding valleys and/or upper areas where woody vegetation was removed and cannot be reinstated will present visual impacts in the form of a narrow line that traverses the vegetation. This impact is no different from the one generated by “firewalls” though of much less extent given its limited width.

Thus, in the case of pipeline operation, most of the landscape will be largely equivalent, or very similar to its former condition, with little long term or residual impacts. Residual impacts (impacts following mitigation) will only be apparent in the PPS 8 m strip, where routine maintenance will be required during operation, and only in locations where woodland or shrub are currently present. These long term impacts will also be present along steep slope areas due to the installation of erosion control berms, though they will contribute to avoid erosion and the development of new growth vegetation.

Table 5.7 presents a summary of the residual impacts associated with the pipeline on landscape and visual amenity. Site specific mitigation measures are presented and these will apply in addition to the mitigation measures detailed above. The table below focuses on selected landscape
character areas where the residual impacts are of a minor significance or greater. Annex 4 presents a series of photomontages to illustrate the areas potentially affected.

### Table 5.7 Residual Impacts – Landscape and Visual Amenity – Operation Phase

<table>
<thead>
<tr>
<th>Impact / Risk – Pipeline Operation and Maintenance</th>
<th>Measures to address the Impact / Risk</th>
<th>Magnitude of Impact</th>
<th>Significance of Residual Impacts/Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LCA 1 – Mountain hay meadows. Kp 0-6.5</strong></td>
<td>Temporary impacts at the beginning of pipeline operation (a result of the pipeline construction works).</td>
<td>The landscape will be reinstated following completion of the pipeline construction works. Refer to mitigation measures for construction.</td>
<td>Small Minor changes in views, at short distances only due to the lack of relevant tree/shrub along the route (limited and sparse).</td>
</tr>
<tr>
<td><strong>LCA 2 – Calcareous grassland. Kp 6.5 – 8.0</strong></td>
<td>Temporary impacts at the beginning of pipeline operation (a result of the pipeline construction works).</td>
<td>The landscape will be reinstated following completion of the pipeline construction works. Refer to mitigation measures for construction.</td>
<td>Small Minor changes in views due to maintenance of cleared PPS as pre-operational vegetation cover includes relevant portions of woody vegetation. Changes will be visible at short distances and from topographically elevated areas only.</td>
</tr>
<tr>
<td><strong>LCA 3 - Potom valley. Kp 8.0 – 11.2</strong></td>
<td>Temporary impacts during at the beginning of pipeline operation (a result of the pipeline construction works). Permanent impacts limited to the PPS and only where significant woody vegetation is present.</td>
<td>The landscape will be reinstated following completion of the pipeline construction works. Refer to mitigation measures for construction.</td>
<td>Small Minor changes in views due to maintenance of cleared PPS as pre-operational vegetation cover includes relevant portions of woody vegetation. Changes will be visible at short distances and from topographically elevated areas only.</td>
</tr>
</tbody>
</table>

*Source: ERM, 2017*
5.2.1.3.2.2 Ridge Modifications

Operational impacts will arise as a result of permanent vegetation losses as already outlined in Table 5.6 above for the pipeline. Impacts will arise also from permanent modifications to existing topography arising from the proposed ridge modifications.

As a result of the topography modifications of the ridge in the sections where it is deemed necessary the visual identity of the area will change resulting in a more rounded and homogeneous landscape where sharp elements along the specific pipeline route will have disappeared. The visual effects will be however very limited to occasional viewers from the surrounding valleys, as from the distance the affected ridges already appear relatively rounded and the colours will change due to the generation of rock outcrops and the remaining extracted material. The presence of more relevant visual features, as the major peaks in the area will contribute to maintain the global heterogeneity of the visual amenity.

The impact will be more evident for viewers located directly on the ridges affected and surrounding areas. Vegetation clearance along the ridge modification areas will not result in great modifications for external viewers apart from the potential change in colours derived from rock outcrops and loss of vegetation, given that current vegetation cover is mostly small sized trees/shrubs. During winter none of these effects will be appreciated due to the expected presence of snow along the affected ridge.

5.2.1.3.2.2.1 Mitigation Measures and Residual Impacts

During the operational lifetime of the TAP, restoration earthworks performed at the temporary working strip (16 + 2 m) area will reinstate topsoil and, where possible, vegetation cover to the permanently modified ridgelines. Reinstatement will take place in a way that vegetation (e.g. grass) can grow at the PPS (8 m). Whilst mitigation planting is proposed to be reinstated in this area, this may establish and grow very slowly during the operational phase, and in some areas it may not establish at all. This is as a result of the high elevations, thin soil cover and the steep sided slopes associated with these mountainous landscapes. Mitigation planting is likely to grow and provide visual screening at lower elevations and on gentler slopes. For Residual Impacts refer to Table 5.6.

5.2.1.3.2.2 Long Term Residual Impacts on Landscape, Landscape Character and Visual Amenity

Indirect impacts on the character of the surrounding landscape will arise as a result of the visibility of the Project activities, namely the changes to topography and permanent vegetation losses. In all locations, the scale of the change will be small relative to the large scale mountainous landscape in which these changes will occur.

The zones of theoretical visibility (ZTV) illustrated in Annex 4 indicate that the ridge modifications will be theoretically visible from certain locations up to a distance of 28 km away.
The visual impact of these will be experienced by viewers such as residents of dwellings, road users and visitors living or visiting the area. The visual impact of the proposal has been assessed at four fixed viewpoint locations. All these sites are located south and west of the proposed re-route as these are the areas where the closest villages and more visible areas are found (see Annex 4). Photomontages of the general landscape have been prepared from viewpoints L-1 to L-4 and these are illustrated in Annex 4.

### Table 5.8 Visual Impacts of Proposed Ridge Modifications at Fixed Viewpoint Locations

<table>
<thead>
<tr>
<th>Location and viewer type</th>
<th>Sensitivity of viewpoint</th>
<th>Magnitude of change in view</th>
<th>Visual impact significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-1 – WP50 (see photomontage in Annex 4)</td>
<td>Medium</td>
<td>Imperceptible</td>
<td>Not Significant</td>
</tr>
<tr>
<td>L-2 – From Monastery (WP52 see photomontage in Annex 4)</td>
<td>High</td>
<td>Small</td>
<td>Minor</td>
</tr>
<tr>
<td>L-3 – From Terpollar (WP53 see photomontage in Annex 4)</td>
<td>High</td>
<td>Small</td>
<td>Minor</td>
</tr>
<tr>
<td>L-4 – From Potom (WP54 see photomontage in Annex 4)</td>
<td>High</td>
<td>Small</td>
<td>Minor</td>
</tr>
</tbody>
</table>

Source: ERM, 2017

These viewpoints provide an assessment of a range of viewing opportunities and landscape settings for views towards the proposed TAP Re-route.

- **Viewpoint L1**: is located near to the township of Helmes-Staravecke. This location is approximately 3.9 km to the south east from the nearest point of the re-routed pipeline alignment. The nearest point of the original approved pipeline route would be approximately 2.8 km to the north. As shown in Annex 4, it is clear that the PPS would not be discernible from this location. Once landscape mitigation and restoration has advanced, this would be further enhanced.

- **Viewpoint L2**: is located near to the township of Helmes. This location is approximately 3.3 km to the south east from the nearest point of the re-routed pipeline alignment. The nearest point of the original approved pipeline route would be approximately 2.3 km to the north. Similar to Viewpoint L1 above. As shown in Annex 4, it is clear that the PPS would not be discernible from this location. Once landscape mitigation and restoration has advanced, this would be further enhanced.

- **Viewpoint L3**: is located near to the township of Terpollar. This location is approximately 1.0 km to the south east from the nearest point of the re-routed pipeline alignment. This point is where the proposed Terpollar Re-route and the base case alignment join. As shown in Annex 4, visual changes brought about by the proposed re-rout of the PPS would not be discernible from this location. Once landscape mitigation and restoration has advanced, this would be further enhanced.

- **Viewpoint L4**: is located near to the township of Potom. This location is approximately 3.6 km to the south west from the nearest point of the re-route pipeline alignment. This
This viewpoint assessment demonstrates that once the PPS is constructed, the proposed Terpollar re-route will be buried underground and with time, as the vegetation cover is recovered, no longer be a source of landscape and visual impact throughout most of the re-route corridor corresponding to areas currently covered by Mountain hay meadows (LCA 1 within Kp 0-6.5). Along those patches currently covered by rocky outcrop or dominated by stony ground, once buried, the pipeline will remain finally covered again by stones as a result of reinstatement resulting in the absence of significant impacts apart from those resulting of the potential ground levelling.

The working corridor, typically measuring up to 38 m width extending to 60 m in steeper sections and reduced to 18-28 m along the crests, will present visually as a “bare top” soiled surface immediately following completion of construction activities. The working corridor will be a source of landscape and visual impact, until vegetation is fully established and the land recovers to become indistinguishable from the adjacent land cover along most of the pipeline re-route. A permanent visual impact will occur only where permanent removal of deep rooting plants, including trees, will be evident as a result of the 8 m wide PPS. The impact on these areas will in any case depend on the point of observation as some of the tree vegetated areas crossed by the proposed reroute are located in ridge areas being the tree vegetation limited to one slope, as is the case of the section between KP 6.1 and 7.6 of the re-routing, and therefore limiting the impact to a slight reduction in tree coverage rather than introducing a observable line within a tree forest that would result in a much visible effect,

This effect will be clearer, however, along certain parts of the LCA 3, where the pipeline corridor will cross bushy areas similarly vegetated at both sides. This is expected to occur within the areas dominated by mixed vegetation of degraded transitional woodland/shrubs, oak-hornbeam forests and Juniperus spp.

5.2.1.3.3 Summary - Impacts on Landscape and Visual Amenity
The 11.2 km long re-route pipeline will be, as the entire pipeline, buried in the ground and will therefore, as a feature itself, not be visible. Construction activities, especially the working strip and activities will be visible during construction. Typically, years after site restoration and planting works the pipeline route will be integrated into the landscape. There will be no residual visual impacts where the PPS passes through rocky areas or areas with little to no existing vegetation and where the PPS passes through hay meadows and pasture grasses, the visual impact will be temporary and only until grasses and vegetation cover is re-established. Still the pipeline route will remain visible in the landscape as a narrow corridor where it crosses woody vegetation, as the pipeline protection strip of 8 m width must be keep free from such vegetation. This corridor would mainly be visible from a distance in particular where the pipeline route is running perpendicular on wooded slopes.
The Project sections across the remote Ostrovicë Mountain ridge will result in changes to the ridge topography. The section of ridge line, totalling up to approximately 4 km (subject to further engineering planning), will be modified to the west of Ostrovicë Mountain. Where the route runs on the ridgeline, modification will provide a construction platform a minimum of 16 m (plus 1 m on either side totalling 18 m width). Cut material will be deposited at suitable slopes and landscaped. Viewshed analysis and photomontages confirm that visual impacts from these ridge modifications will be not significant for viewers from settlements in the vicinity, since the viewpoints are all below the modified areas. Further, a reduction of ridgeline height by a few metres is visually irrelevant when compared to the height of the ridges as topographic features, thus will not be visible from surrounding settlements. From higher elevations such as from the roads and tracks the Ostrovicë Mountain area, occasional local users will however see the ridge modifications. The modified ridge lines will likely remain bare rock, as due to the topographic and climatic conditions full reinstatement/revegetation for landscape mitigation will be challenging. However, the area is only sparsely populated, thus the number of affected viewers is likely to be limited.

5.2.2 Socioeconomic Impact Assessment

Box 5.3 presents the key considerations for the assessment conducted in this report. The potential impacts of the Project pipeline re-routing, access track (along with complementary features) and temporary camp on sensitive receptors remains largely the same as those presented in Sections 8.13 to Section 8.19 of the TAP ESIA Albania report.
Box 5.3 Pipeline Re-route, Access Track and Temporary camp- Socioeconomic Key Considerations

Sources of Impacts
- Temporary and permanent land easement for pipeline, access track, spoil stockpiles, telepheric working area and temporary camp construction and operation respectively.
- Permanent land restrictions along the 8 m right of way (RoW), including prohibition of planting trees and building structures of any kind.
- Presence of the construction workforce.
- Movements of vehicles, equipment and personnel.
- Waste management.
- Special crossing including crossing of mountain paths, springs/streams and irrigation systems
- Use of contractors and subcontractors.
- Changes to the environment due to increased noise (e.g. blasting), decreased air quality and changes to the visual environment as a result of the Project may affect health and wellbeing.

Potentially Impacted Receptors
- Herders and herding infrastructures (structures and water provision)
- Local irrigation management systems
- Sources of fuel (trees and woody vegetation such as beech forest and shrubland areas)
- Business and workforce in the study area.
- Road users.
- Settlements and isolated houses near construction sites and/or along access track

Particular Baseline Conditions that are Potentially Influencing Impacts
- Remote and inaccessible area. Communities using the re-route area are dependent on subsistence herding.
- There is a lack of institutional capacity at local level to respond to demands for additional resources and services (electricity, water, solid waste and wastewater disposal).
- Very limited access to health care, with hospitals located in cities.
- Very limited access to medical personnel.
- Additional livelihood activities including logging

Vulnerable Groups
- Households on a low income, including subsistence farmers and herders.
- Elderly.

References
- Baseline is found in Section 6.6.5 of the TAP ESIA Albania report and Section 4.2 of this report. Impact Assessment Criteria is defined in Annex 5.2.4 of the TAP ESIA Albania report. Monitoring Measures are described in Section 9.4 of the TAP ESIA Albania report.

Source: ERM, 2017

A general description of each impact is provided in Section 8.13 to Section 8.19 of the TAP ESIA Albania report. In the following sections, each of the impacts outlined in these sections have been summarized, giving information on how receptors along the section of the pipeline re-route are likely to be impacted.

5.2.2.1 Potential Impacts

5.2.2.1.1 Economy and Employment
Most of the economic and employment impacts can be expected to occur during the pre-construction and construction phases of the pipeline including construction of access track and temporary camp. It is during this period that the Project will need to hire workers and purchase
goods and services, potentially resulting in positive impacts on the local economy. Temporary employment during the construction phase includes people directly employed by the primary contractor for the construction of the pipeline and other project components to be located in the area of the pipeline re-route. It also includes jobs supplying the goods and services needed to support the construction process, including food and transport services and support staff in construction camps. Due to remoteness of the settlements close to the Project area and the demographic profile of the local population the economic and employment impacts on the area are expected to be limited.

5.2.2.1.2 Land and Livelihoods
The potential impact to existing livelihoods as a result of Project related activities in the area where the new re-route, access track and temporary camp will be implemented are just equivalent to those stated in the TAP ESIA Albania report.

Generally, the most sensitive resource in this region, in terms of land and livelihoods, are the high land areas of fertile grasslands used for grazing livestock and the areas of cultivation near Terpollar (Backa). The loss of access to grazing land has the potential to affect the livelihoods of Potom and Terpollar (Backa) communities overall since herding, together with subsistence crop production is the main livelihood in these communities. Shrubland and forested areas have a high level of sensitivity for local residents since these land uses are used for the collection of firewood by the local population which is the main source of fuel for cooking and heating.

The Terpollar Re-route crosses over 5 km of grazing areas and 1.2 km of terrain primarily composed of beech forest. The access track will cross approximately 3.1 km of grazing areas. The spoil stockpile site 2 is to be placed within a small flat area of degraded beech forest (coppice) whilst the temporary camp will be placed over a grassland plateau.

The access track construction will generate disturbance to the local livelihoods in the study area (e.g. animal grazing activities, firewood collection activities). Potential interference to grazing and logging activities should be taken into account during construction. In addition, interference to basic water infrastructure observed should be avoided, in order not to affect the water supply.

5.2.2.1.3 Infrastructure and Utilities
Impacts relating to the construction of the pipeline re-route (including access track construction, stockpile sites and telepheric area) and establishment of the temporary camp) will mostly imply temporary disruptions to the observed local infrastructure along the alignments during the approximately 18-24 months construction period.

The field survey identified a series of grazing infrastructures along the pipeline route, access track and spoil disposal sites, including water infrastructures (see Section 4.2.2.3) between pipeline KP 1.7 and KP 5.9 and adjacent to spoil disposal site 1 (at access track KP 1.95). These are very important for local livelihoods and require special protection measures. This is particularly relevant for water related infrastructure found at the re-route alignment. The presence of other small herding and water infrastructures associated to herding activities (e.g. water collectors, springs) cannot be discarded as these are key for undertaking of herding in the area.
With regards to the water usage no interferes with the local uses are expected because water sourcing will be managed through the plans established for the larger TAP project which already considers evaluating the sources to avoid competition with local communities. Specifically for the hydrotest water will be either recycled from other sections of the pipe (to minimize water abstraction) or taken from the Osumi river. Section 3.4.6 and Section 3.4.9 provide details on the hydrotest and sourcing of water for the construction. As per the established methodology water will be treated before being discharged back to the river therefore maintaining a desirable water quality.

5.2.2.1.4 Community Health and Safety
The presence of the Project could affect the health, safety and security of the communities in the area as a result of worker-community interactions. However, considering the number of crew member (maximum of 120 people) and the long duration of construction activities (about 545-725 days) interaction could be significant. There is also likely to be an increased risk of injury posed to the communities associated with construction activities. Any community concerns or perceptions with regard to reduced health and physical safety by the community also need to be addressed. There is a potential risk of site trespass at work fronts for the duration of construction by herders and animals. Work fronts at the pipeline and access track routes will not be fenced (whereas the temporary camp will be) although signage will be erected. The risk of trespass is highest when work fronts are located closest to isolated shacks near the pipeline and access track construction sites. However it is expected that animals might graze in areas nearby and site trespassing could still result in accidents leading to injuries or even fatalities especially due to the presence of large pieces of machinery and open trenches.

5.2.2.1.5 Traffic and Transportation
During the development of the overall pipeline route, the Project has sought to avoid, minimise and mitigate impacts resulting from traffic movements (in line with EBRD PR4, IFC PS4 and IFC General EHS Guidelines 3 & 4) through route option appraisals (and selection), route-refinement and detailed impact assessments. TAP AG has identified appropriate routes for Project traffic, upgrade or construct new roads required to provide sufficient road capacity, and facilitate the safe movement of Project vehicles. As such the road between Çorovoda and Potom has already been upgraded and plans are being made to consider additional road upgrades to access the remote construction sites. In the case of the traffic related to the re-route and access track construction, the delivery of materials such as pipeline and bedding/replacement material will comprise some 40 to 80 two-way trucks movements over a 10 day period, whilst there will be daily (i.e. throughout the entire construction period) of traffic to/from the temporary camp towards the construction work areas in both the pipeline re-route and access track.

5.2.2.1.6 Workers Management
Workers’ rights, including occupational health and safety, need to be considered to avoid accidents and injuries, loss of man-hours, labour abuses, and to ensure fair treatment, remuneration and working or living conditions. These issues should be considered not only for those who are directly employed by TAP AG but also its contractors (including sub-contractors) and throughout the Project supply chain.
5.2.2.2 Mitigation Measures and Residual Impacts

The impact categories and mitigation measures specified within the TAP ESIA Albania report are applicable to the Terpollar Re-route and other Project features. Table 5.9 provides an overview of the specific impacts associated with the Terpollar Re-route. Mitigation stated in the TAP Albania ESIA is valid for the proposed re-route and other features; and should be considered together with the detailed plans, procedures and mitigation measures that have been detailed during the Post-ESIA works (i.e. combining general TAP ESIA measures and plans with the site specific measures already in place and being implemented elsewhere along the TAP pipeline in Albania).
### Table 5.9 Socioeconomic Residual Impacts – Terpollar Re-route

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Significance of Residual Impact / Risk</th>
</tr>
</thead>
</table>
| **Economy and employment**    | Mitigation and enhancement measures stated within TAP ESIA Albania (2013) report are considered sufficient and no additional measures are required. Applicable measures from TAP’s Local Content Plan and Employment Strategy include:  
  - Optimizing contract opportunities to Albanian companies;  
  - Fair and transparent recruitment process for all openings; and  
  - Job announcement through community engagement to ensure local accessibility as applicable. | Minor Positive  
  - Construction jobs on the Project will be mid-term (18-24 months).  
  - Mitigation measures will help to increase local impacts of employment opportunities, particularly for unskilled labour positions. It is expected that these impacts will be experienced in larger urban centres where the labour force is usually concentrated or in areas near construction camps and sites.  
  - Local purchasing by employees expected to be relatively minor. |
| **Land and livelihoods**      | Mitigation measures stated within TAP ESIA Albania report are considered sufficient and no additional measures are required. However, the following specific mitigation measures are recommended:  
  - When possible, implement a reduced working strip in areas of pastures to a minimum of 22 – 28 m.  
  - Herding Management Plan aimed at assessing, mitigating and managing losses associated with construction and operation activities (loss of access to grazing areas and water resources, loss/damage to structures, etc.).  
  - Stakeholder Engagement Plan addressing approach to disclosure of information, ongoing engagement with affected communities. | Moderate  
  - The construction of pipeline, access track, temporary camp and other features will be undertaken in alpine areas of where local communities herd their sheep, goats and cows during summer months.  
  - Areas where livestock rearing activities occur (e.g. shepherd huts and corrals) lie within or are adjacent to re-route/access track/spoil disposal footprint and thus their associated activities disrupted  
  - Affected individuals dependent on herding  
  - Stakeholders have a high level of concern regarding loss of access to grazing land and the impact this will have on their livelihood in the short, medium and long term. |
| **Infrastructure and utilities** | Mitigation measures stated within TAP ESIA Albania report are considered sufficient. However, the following specific mitigation measures from the TAP Infrastructure and Utilities Management Plan are recommended:  
  - Relocation and replacement (or compensation) of grazing infrastructures (structures and water infrastructure’s, territorial markers, etc.) | Minor  
  - Replacement or compensation of grazing infrastructures.  
  - Mitigation measures should ensure disruption to infrastructure is minimised.  
  - If issues arise there is the opportunity for communities to address these through the Project grievance mechanism. |
<table>
<thead>
<tr>
<th>Community Health and Safety</th>
<th>Mitigation measures stated within TAP ESIA Albania report are considered sufficient and no additional measures are required. Applicable measures include:</th>
<th>Moderate</th>
</tr>
</thead>
</table>
| • Site trespass and injuries. | • Install appropriate signage to alert of trespass risks  
• Establish a specific traffic management plan and engagement with local stakeholders.                                                                                          |          |
| Traffic accidents |                                                                                                                                  |          |

<table>
<thead>
<tr>
<th>Traffic and transportation</th>
<th>Mitigation measures stated within TAP ESIA Albania report are considered sufficient and no additional measures are required. However, the following specific mitigation measure is recommended:</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Disruption to existing road users on local roads.</td>
<td>• Establish a specific traffic management plan and engagement with local stakeholders</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Workers management</th>
<th>Mitigation measures stated within TAP ESIA Albania report are considered sufficient and no additional measures are required, in particular measures included in TAP’s Health and Safety Management Plan and TAP’s Workers Management Plan.</th>
<th>Moderate</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Workers accidents and injuries.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: ERM, 2017*
5.2.3 Cultural Heritage Impact Assessment

As aforementioned in Section 5.1, the potential impacts stated in the TAP ESIA Albania report are still applicable for this pipeline re-route. Box 5.4 presents the key considerations for the assessment conducted in this ESIA Addendum report.

Box 5.4 Pipeline Re-route – Cultural Heritage Key Considerations

<table>
<thead>
<tr>
<th>Sources of Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Construction Phase: Ground-disturbing activities, including land-clearing and site preparation activities associated with Project facilities, excavation of the pipe trench, construction or upgrade of roads; Pollution and vibration; Movement of vehicles, equipment and personnel.</td>
</tr>
<tr>
<td>• Operation Phase: Pollution and vibration; Movement of vehicles, equipment and personnel. Excavation activities for maintenance and repair.</td>
</tr>
<tr>
<td>• Decommissioning Phase: Pollution and vibration; Movement of vehicles, equipment and personnel.</td>
</tr>
</tbody>
</table>

**Potentially Impacted Receptors**

- Archaeological sites, Monuments, and Sites with ICH value.

**Potential Baseline Conditions that are Potentially Influencing Impacts**

- Location and quality of cultural heritage sites identified within study area. Undiscovered cultural heritage.

**Project Factors that are Potentially Influencing Impacts**

- Prior re-routing studies and Project design to avoid cultural heritage sites, ESIA investigations to produce maps and information on cultural heritage sites in the study area, Cultural Heritage Management Plan, and the cultural heritage mitigation measures presented in this section.

**References**

- Baseline is found in Section 4.2.3 of this report. Impact Assessment Criteria is defined in Annex 5.2.5 of the TAP ESIA Albania report. Monitoring Measures are described in Section 9.4 of the TAP ESIA Albania report.

Source: ERM, 2016

5.2.3.1 Potential Impacts

The construction of the pipeline along the proposed re-route and the construction and operation of the access track and stockpile areas could result in the following impacts to cultural heritage resources:

- Permanent direct physical impacts to:
  - CH-557 (WPC032), CH-563 (WPC033), and WPC019, WPC025, WPC027, and WPC028 during pipeline construction;
  - WPC037, WPC042, WPC045, and WPC046 during access track construction
  - WPC039 and WPC044 during stockpile area construction.

- Degradation or damage due to vibration and/or pollution to:
  - WPC013, WPC029, and WPC030 during pipeline construction; and
  - CH-567 (WPC038) during access track construction and operation.
- Possible temporary restrictions on user access to:
  - WPC013, WPC020, WPC025 during pipeline construction; and
  - CH-567 (WPC038), WP039, and WPC040 during access track and stockpile construction and operation

- Temporary negative effects on the setting or ambiance of:
  - CH-562 (WPC035) during pipeline construction;
  - CH-567 (WPC038) during construction and operation of the access track and stockpile area; and
  - WPC037 during construction and operation of the access track.

**Figure 5.1 Cultural Heritage sites in the vicinity of the Terpollar Re-route**

Source: ERM, 2017
Cultural heritage resources CH-557 (WPC032), CH-563 (WPC033), WPC019, WPC025, WPC027, WPC028 and WPC029 are all located within 18 m of the proposed re-route pipeline centreline. Due to their proximity to the centreline, even if a reduced working strip is used at these locations all of these resources will likely be destroyed during topsoil stripping and trenching along the pipeline right-of-way. Cultural heritage resources WPC039, WPC042, WPC044, WPC045, and WPC046 are located within the proposed footprints of the access track and stockpile areas and would be completely destroyed during the construction of these Project elements.

Based on the cultural heritage resources importance criteria established for the TAP Albania ESIA, resources CH-557 (WPC032), CH-563 (WPC033), WPC019, WPC025, WPC027, WPC037, WPC039, WPC042, WPC044, WPC045, and WPC046 have all been individually assessed as resources of low importance. However, as previously discussed, the resources along with other pastoralist installations across the region collectively create a cultural landscape of moderate cultural heritage importance. As it is currently unknown how many similar installations are present in the area, it is assumed that the removal of these twelve resources would result in the removal of a significant portion of the cultural landscape resulting in Project impacts of medium magnitude. This would result in unmitigated cultural heritage impacts of moderate significance to the cultural landscape resource.

Features located outside the footprint of the working strip but located within 50 m of the pipeline centreline and may be subject to short term impacts from construction vibrations and, more significantly, dust and vehicle pollution (i.e. WPC012, WPC029, WPC030 and CH-567 [WPC038]). These temporary impacts would be of small magnitude resulting in Project impacts of negligible significance.

The establishment of the pipeline right-of-way through the area and the creation of construction exclusion zones during topsoil stripping, pipe stringing and welding, trenching, pipe laying and other construction activities could temporarily restrict stakeholder access to the WPC013, WPC020, WPC025 pastoralist installations/features. Construction and operation of the access track could temporarily restrict stakeholder access to resources CH-567 (WPC032), WP039, and WPC040. These restrictions could temporarily disrupt the practice of the traditional pastoralist lifeway in the region and religious pilgrimages/ceremonies at resource CH-567, resulting in small magnitude Project impacts to intangible cultural heritage. These small magnitude impacts to the moderate importance cultural practices and landscape would result in temporary unmitigated impacts of minor significance.

The Qafa e Martës Memorial Monument and Cemetery (CH-562 (WPC035)) is located approximately 95 m from the proposed pipeline centreline. The distance between the pipeline and the resources is sufficient to prevent direct physical impacts from construction of the Terpollar Re-route. The resource is, however, within 16 m of the basecase pipeline centreline (for an assessment of potential impacts from basecase construction see 2015 TAP ESIA Addendum for Potom re-route). Construction of the Terpollar re-route will result in temporary impacts to the setting of the Qafa e Martës Memorial Monument and Cemetery due to construction noise and modifications to the natural landscape. Due to the temporary nature of these impacts they have
been assessed as being small magnitude impacts resulting in Project impacts of moderate significance to the high importance CH-562 (WPC035) resource.

5.2.3.2 Mitigation Measures and Residual Impacts

A number of the cultural heritage mitigation measures presented in the TAP Albania ESIA report should be implemented along the pipeline re-route to avoid, reduce, or compensate for Project impacts to the identified resources. Table 5.10 provides a summary of the potential impacts to cultural heritage resources from construction of the Terpollar Re-route, recommended mitigation measures to reduce the significance of these impacts; and an assessment of the significance of post-mitigation residual impacts. Recommended mitigations include:

- Avoid or temporarily relocated resources CH-557 (WPC032), CH-563 (WPC033), WPC019, WPC025, WPC027, WPC028, WPC037, WPC039, WPC042, WPC045, WPC044 and WPC046. If the resources cannot be avoided or temporarily relocated the Project should engage local pastoralists and attempt to compensate them for the loss of these installations through their permanent relocation to a suitable area or the construction of new installations.
- Mark resources CH-567 (WPC038), WPC013, WPC029, and WPC030 for avoidance.
- Monitor potential vibration and pollution impacts to resources CH-567 (WPC038), WPC013, WPC029, WPC030, and WPC037. The conditions and structural integrity of the resources should be assessed prior to construction. Information collected during the assessment will be utilized to establish the baseline conditions of the monuments and to develop vibration and pollution thresholds to be used during construction phase vibration and pollution monitoring at the site.
- Engage local pastoralists/stakeholders to determine when resources are typically used or visited and schedule construction activities near the resources after engagement of local stakeholders and the development of an access plan to allow stakeholders to use resources (CH-557 [WPC032], CH-562 [WP035], CH-567 [WPC038], WPC013, WPC015, WPC016, WPC017, WPC019, WPC020, WPC025, WPC027, WPC029, WPC030, WPC037, WPC039, WPC040, WPC042, WPC045, WPC046.
- Assess the condition and structural integrity of CH-562 (WPC035) to establish the baseline conditions of the monuments and to develop vibration and pollution thresholds to be used during construction phase vibration and pollution monitoring at the site. Engage with local stakeholders to determine the frequency and timing of stakeholder use/visits to the monument and avoid scheduling construction activities during these periods.
### Table 5.10  Cultural Heritage Residual Impacts – Terpollar Re-route

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to address the Impact / Risk</th>
<th>Significance of Residual Impact / Risk</th>
</tr>
</thead>
</table>
| **Direct physical disturbance.**  
Loss of the entire resource due to working strip construction.  
Site(s) affected: CH-557 (WPC032), CH-563 (WPC033), WPC019, WPC025, WPC027, WPC028, WPC037, WPC039, WPC042, WPC045, WPC044 and WPC046. |  
• Avoidance through micro-reroutes.  
• Temporary relocation of resources and post-construction reinstatement.  
• Permanent relocation of resources or compensation/replacement of resources in consultation with stakeholders. | **Minor**  
• Avoidance of these resources will eliminate Project impacts.  
• The implementation of other mitigation measures will reduce the significance of Project impacts from moderate to minor. |
| **Direct physical disturbance.**  
Impacts from vibration and pollution.  
Site(s) affected: CH-567 (WPC038), WPC013, WPC029, and WPC030. |  
• Stakeholder engagement to determine periods of use and putting in place communication channels.  
• Pollution and vibration assessment and monitoring.  
• Project pollution control measures to prevent contamination of livestock drinking water. | **Negligible**  
• Implementation of these mitigation measures could eliminate Project impacts or reduce them from minor significance to negligible. |
| **Temporary restrictions to user access.**  
Construction restrictions preventing user access to resources.  
Site(s) affected: CH-567 (WPC038), WPC013, WPC020, WPC025, WPC039, and WPC040 |  
• Stakeholder engagement and construction scheduling to avoid periods of resource use.  
• Develop plans and protocols to allow stakeholders to access resources during construction activities. | **Negligible**  
• If construction activities can be scheduled to avoid periods when resources are used Project impacts will be eliminated.  
• Developing and implementing a plan to allow user access to resources during construction will result in residual impacts of negligible significance. |
| **Temporary negative impacts on resource setting.**  
Construction activities along the pipeline right-of-way will temporarily alter the setting of the resource due to increased noise and changes to landscape.  
Site(s) affected: CH-562 (WPC035), CH-567 (WPC038), and WPC037. |  
• Stakeholder engagement to avoid construction activities during days and/or periods when the monument is visited by stakeholders.  
• Pollution and vibration assessment and monitoring.  
• Temporary visual or auditory screening | **Minor**  
• Construction scheduling to avoid periods of use would eliminate Project impacts.  
• The implementation of other mitigation measures will reduce the significance of Project impacts from moderate to minor. |

*Source: ERM, 2017*
6 ENVIRONMENTAL, SOCIAL AND CULTURAL HERITAGE MANAGEMENT AND MONITORING

6.1 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 6.1 provides a summary of the environmental impacts and mitigation measures identified in this report. This table should be read in conjunction with Table 9.1-1 of the TAP Albania ESIA where further details of Project mitigation and management measures are presented.
### Table 6.1 Environment – Summary of Impacts and Mitigation Measures

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Implementation / Performance Timeline</th>
<th>Requirement: Legal and / or International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>• Proper vehicle maintenance&lt;br&gt;• Traffic Management Plan&lt;br&gt;• Emissions sources monitoring;&lt;br&gt;• Dust suppression techniques;&lt;br&gt;• Vehicle speed limits;&lt;br&gt;• Truck bed covering/sheeting.</td>
<td>Before and during construction</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania report.</td>
<td>• Best practice HSE clauses in EPC contract to include provision of dust suppression measures.&lt;br&gt;• Notification to local public via TAP AG's Community Liaison efforts prior to dust or other air and noise generating activities.&lt;br&gt;• Records of Grievances.&lt;br&gt;• Confirmation of measure implementation by TAP AG's construction supervision.</td>
</tr>
<tr>
<td><strong>Noise and Vibration</strong></td>
<td>• Blasting to be minimized and performed in accordance with existing procedures (e.g. daytime only);&lt;br&gt;• Switch off equipment when not in use;&lt;br&gt;• Whenever feasible, schedule different noisy activities to occur concurrently;&lt;br&gt;• Locate stationary equipment (e.g. compressors) as far as practicable from nearby receptors.</td>
<td>Before and during construction</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania report.</td>
<td>Results of audits (application of mitigation measures).</td>
</tr>
<tr>
<td><strong>Soils and geomorphology</strong></td>
<td>• Implementation of plans for waste management, chemical management and spill response, developed as part of the Projects ESMP.&lt;br&gt;• In areas where topsoil is present, it will be removed and properly stored/stockpiled so as for it to not lose its properties and be in optimal state for when reinstatement to its original location.&lt;br&gt;• Development of an Erosion and Sediment control plan as part of the Projects ESMP in order to protect soil.</td>
<td>Before and during construction</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania report.</td>
<td>Results of audits (application of mitigation measures).</td>
</tr>
<tr>
<td>Impact / Risk</td>
<td>Measures to Address the Impact / Risk</td>
<td>Implementation Timeline / Performance Milestone</td>
<td>Requirement: Legal and / or International Best Practice</td>
<td>Key Performance Indicator</td>
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</tbody>
</table>
| Erosion from water runoff by installation of temporary/permanent erosion control measures.  
  - Erosion control measures will be implemented as part of the construction and reinstatement. |
| Habitat and Species | Establishment of working strips to restrict area of impacts to within working corridor of the pipeline re-route and access track.  
  - Habitat clearance and access track / temporary camp footprint minimization. This will be especially relevant on the small camp where high value forests are located in the vicinity.  
  - Reinstatement of habitats after construction activities.  
  - Restriction on access to forested areas during and following construction  
  - Reduction of vehicle speed limits to avoid strikes with fauna.  
  - Fauna species should not be caught or killed during construction of any of the re-route features.  
  - Accessibility to this area from the access track should be closely monitored and track completely dismantled/reinstated as planned.  
  - Incorporation of specific measures for Large Carnivores across the entire re-route area (from BAP).  
  - Waste and raw materials to be stored and managed considering risks on fauna (i.e. avoiding risk of accidental poisoning or attracting fauna due to food availability).  
  - Activities will take into consideration the known |
| Habitat loss, degradation and fragmentation, direct species loss, disturbance and displacement. | Before and during construction.  
  - Same as stated in Table 9.1-1 of TAP ESIA Albania report. |
| Recognition of biodiversity offsets in the form of biodiversity offsets is acceptable to MoEFWA.  
  - Records verifying implementation of mitigation measures.  
  - Biodiversity Action Plan. |
<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Implementation Timeline / Performance Milestone</th>
<th>Requirement: Legal and International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>presence of bears and wolves and in general other fauna (e.g. bats) that may be using the high sensitivity beech forest located in the vicinity of the camp (core forest areas are located further south though)</td>
<td>Due to potential for bear hibernation or denning sites, works close to the core areas identified should be avoided between December-March. In those areas with known presence of bear and wolf but not defined as high suitability habitat for hibernation/denning, restrictions for March-July would apply (to minimize interference with feeding grounds).</td>
<td>Implementation of Bear/Large Mammal Interaction Plan including staff training, waste management and noise abatement.</td>
<td>Avoid night-time construction work wherever possible, to avoid interaction with and disturbance to bears and other nocturnal fauna.</td>
<td>Pre-vegetation clearance surveys to be undertaken to reduce disturbance to birds during breeding season (April – July).</td>
</tr>
<tr>
<td></td>
<td>Development of a Biodiversity Action Plan (as part of the larger TAP Project) and Biodiversity offset where corresponds.</td>
<td>Monitor usage of access track and completed sections of pipeline corridor in the area by hunters.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Restricted Information: This document is property of Contractor. It must not be stored, reproduced or disclosed to others without written authorization from Contractor.*
<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Implementation Timeline / Performance Milestone</th>
<th>Requirement: Legal and / or International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
</table>
| Surface Water Quality / Aquatic Flora and Fauna | - Minimisation of physical impacts to stream morphology and water quality.  
- Implementation of control measures to avoid modification of natural water run-off patterns. Use of sediment ponds where needed to avoid potential silting of streams located below the working corridors.  
- Implement controls on construction works areas within the vicinity of mountain creeks  
- Flooding and erosion control measures to be implemented and closely monitored during construction as well as during reinstatement.  
- Continuity of streams/creeks should be kept during construction activities, in order to avoid the impact on aquatic life, especially to insect and amphibian larvae  
- Where amphibian species present all possible efforts to remove amphibians should be made. | Before and during construction. | Same as stated in Table 9.1-1 of TAP ESIA Albania report. | - Micro-siting and compensation in the form of biodiversity offsets is acceptable to MoEFWA.  
- Records verifying implementation of mitigation measures.  
- Biodiversity Action Plan. |
| Landscape Impacts | - Overall Impacts management:  
  o Construction will use a phased approach.  
  o Lighting management.  
  o Vegetation management.  
  o Promotion of vegetation growth measures.  
  o Management of impacts from the proposed buried pipeline | Before and during construction. | Best practice in Guidelines for Landscape and Visual Impact assessment, IEMA 2002. | Site monitoring reports provided by appropriate landscape/ecological site supervisor during construction will verify that restricted working widths have been adhered to. |
<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measures to Address the Impact / Risk</th>
<th>Implementation Timeline / Performance Milestone</th>
<th>Requirement: Legal and / or International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o Development and implementation of an Aggregate Management Plan and Erosion and Sediments Control Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Monitoring restrictions of working strip</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Management of impacts from the proposed Ridge Modification</td>
<td></td>
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<tr>
<td></td>
<td>o Mitigation measures already applied to impacts from the proposed buried pipeline</td>
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</tr>
<tr>
<td></td>
<td>o Development and implementation of an Aggregate Management Plan and Erosion and Sediments Control Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Monitoring restrictions of working strip width limits</td>
<td></td>
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<tr>
<td></td>
<td>o Preparation of a reinstatement and revegetation plan with special attention to erosion control measures and long-term establishment of vegetation cover.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Source: ERM, 2017*
6.2 **Socioeconomic Impacts and Mitigation Measures**

Table 6.2 provides a summary of the socioeconomic impacts and mitigation measures identified in this report. This table should be read in conjunction with *Table 9.1-1* of the TAP Albania ESIA where further details of Project mitigation and management measures are presented.
### Table 6.2 Socioeconomic - Summary of Impacts and Mitigation Measures

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measure to Address Impact / Risk</th>
<th>Implementation Timeline / Performance Milestone</th>
<th>Requirement: Legal and/or International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economy and employment</strong></td>
<td>• TAP local content Plan strategy, objectives, goals and targets including:</td>
<td>Before construction.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• € spent on Albanian goods and services.</td>
</tr>
<tr>
<td></td>
<td>- Capacity building program.</td>
<td></td>
<td></td>
<td>• Percentage of unskilled labour from within the country.</td>
</tr>
<tr>
<td></td>
<td>- Demand and supply side analysis.</td>
<td></td>
<td></td>
<td>• Percentage of contractors trained on socioeconomic policies.</td>
</tr>
<tr>
<td></td>
<td>- Optimise contract opportunities to Albanian companies.</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>• TAP Employment Strategy, including:</td>
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<td></td>
<td>- Fair and transparent recruitment process for all openings.</td>
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<td></td>
<td>- Jobs announcement so that they are locally accessible.</td>
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<tr>
<td></td>
<td>- Include Roma camps and community leaders in engagement activities (if present in area).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land and livelihoods</strong></td>
<td>• Where feasible, reduced working strip in areas of pastures to a minimum of 22 - 28 m.</td>
<td>Before construction and monitoring periodically during construction.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• Presentations and other information disclosure materials available and accessible.</td>
</tr>
<tr>
<td></td>
<td>• Herding Management Plan aimed at assessing, mitigating and managing loses associated with construction and operation activities (loss of access to grazing areas and water resources, damage to structures, loss of crops, etc.) Stakeholder Engagement Plan addressing approach to disclosure of information, ongoing engagement with affected communities.</td>
<td></td>
<td></td>
<td>• Meeting minutes from consultations; signed compensation agreements; monitoring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Preparation of Herding Management Plan and evidences of implementation.</td>
</tr>
<tr>
<td>Impact / Risk</td>
<td>Measure to Address Impact / Risk</td>
<td>Implementation Timeline / Performance Milestone</td>
<td>Requirement: Legal and/or International Best Practice</td>
<td>Key Performance Indicator</td>
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<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Infrastructure and utilities</td>
<td>• Disruption and damage to infrastructures during construction.</td>
<td>Before construction and monitoring periodically during construction.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• Percentage of relevant grievances responded.</td>
</tr>
<tr>
<td></td>
<td>• Relocation and replacement of grazing infrastructures (structures and water infrastructure’s, territorial markers, etc.).</td>
<td></td>
<td></td>
<td>• Monthly reviews of engagements with local communities.</td>
</tr>
<tr>
<td></td>
<td>• TAP ESIA 2013 Infrastructure and Utilities Management Plan.</td>
<td></td>
<td></td>
<td>• Percentage of herding and other infrastructures reinstated after pipeline, access track and other Project features reinstatement.</td>
</tr>
<tr>
<td></td>
<td>• Grievance mechanism in place for local stakeholders.</td>
<td></td>
<td></td>
<td>• Information disclosure material, meeting minutes from engagement, community grievance trend monitoring and response performance.</td>
</tr>
<tr>
<td></td>
<td>• Monitoring of grievance trends and response performance.</td>
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<tr>
<td></td>
<td>• Compensation to stakeholders as applicable.</td>
<td></td>
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<tr>
<td></td>
<td>• Community liaison in place to communicate with / inform local stakeholders regarding possible disturbances to access to infrastructure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Health and Safety</td>
<td>• Site trespass and injuries.</td>
<td>Before and during construction, as needed.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• Information disclosure material, meeting minutes from engagement, community grievance trend monitoring and response performance.</td>
</tr>
<tr>
<td></td>
<td>• Traffic accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• TAP ESIA 2013 Community Health Management Plan measures including:</td>
<td></td>
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<td></td>
<td>• Install appropriate signage to alert of trespass risks (risks of entering a construction site).</td>
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</tr>
<tr>
<td></td>
<td>• Establish a specific Traffic Management Plan and disclose to local stakeholders (residents and local road users)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact / Risk</td>
<td>Measure to Address Impact / Risk</td>
<td>Implementation Timeline / Performance Milestone</td>
<td>Requirement: Legal and/or International Best Practice</td>
<td>Key Performance Indicator</td>
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</tr>
<tr>
<td>Traffic and transportation</td>
<td>• Traffic Management Plan and monitoring, especially the road between Çorovodë and Potom which will be transited by Project vehicles. • Install appropriate traffic signage.</td>
<td>Before and during construction, as needed.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• Percentage of relevant grievances responded. • Information disclosure material, meeting minutes from engagement, community grievance trend monitoring and response performance.</td>
</tr>
<tr>
<td>Workers management</td>
<td>• TAP ESIA 2013 Health and Safety Management Plan measures. • TAP ESIA 2013 Workers Management Plan measures, including: • Establish a workers grievance mechanism • Comply with TAP H&amp;S management system related to worker H&amp;S and labor rights • Comply with legal framework and international standards related to worker H&amp;S and rights.</td>
<td>Before and during construction, as needed.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania Report.</td>
<td>• Number of times where TAP Code of Conduct has been breached. • Worker grievance trends. • Community grievance trends. • Total recordable incidents, lost time incidents, and other H&amp;S indicators. • Health checks parameters. • H&amp;S monitoring and audits. • H&amp;S performance evaluations for contractors.</td>
</tr>
</tbody>
</table>

Source: ERM, 2017
6.3 CULTURAL HERITAGE IMPACTS AND MITIGATION MEASURES

Table 6.3 provides a summary of the cultural heritage impacts and mitigations measures identified in this report. The types of cultural heritage resources identified in the ESIA Addendum baseline and the magnitude and significance of potential Project impacts are similar to those identified in the TAP ESIA 2013 Albania report. As a result, the mitigation measures recommended to avoid, minimize, and mitigate impacts to cultural heritage resources have been aligned with those found in the TAP ESIA Albania report. Due to the similarities in resource types and impacts, cultural heritage management plan and mitigation tables presented in Section 9.2.7 of the TAP ESIA Albania report are applicable to the cultural heritage resources and Project impacts identified in this report.
### Table 6.3  Cultural Heritage - Summary of Impacts and Mitigation Measures

<table>
<thead>
<tr>
<th>Impact / Risk</th>
<th>Measure to Address Impact / Risk</th>
<th>Implementation Timeline / Performance Milestone</th>
<th>Requirement: Legal and / or International Best Practice</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct physical disturbance resulting in complete loss of resources.</td>
<td>Micro-reroutes to avoid resources.</td>
<td>Before, during, and after construction.</td>
<td>Same as stated in Table 9.1-1 of TAP ESIA Albania report.</td>
<td>Records of stakeholder engagement activities; reports on results of consultations; action plans based on consultations.</td>
</tr>
<tr>
<td>Direct physical damage due to vibration and pollution impacts to resource.</td>
<td>Temporary relocation of resources and post construction reinstatement.</td>
<td></td>
<td></td>
<td>Construction schedule incorporating results of stakeholder consultations to avoid impacting resource setting or ambiance during religious or ritual events.</td>
</tr>
<tr>
<td>Temporary restrictions of user access to resources.</td>
<td>Permanent relocation of resources and/or compensation through construction of suitable replacement resource in consultation with stakeholders.</td>
<td></td>
<td></td>
<td>Reports documenting pre-construction conditions of resources.</td>
</tr>
<tr>
<td>Temporary impacts to resource setting and ambiance during construction.</td>
<td>Vibration and pollution assessments and monitoring based on pre-established thresholds.</td>
<td></td>
<td></td>
<td>Monitoring logs, recorded vibration and pollution levels.</td>
</tr>
<tr>
<td></td>
<td>Stakeholder engagement to determine periods of use.</td>
<td></td>
<td></td>
<td>Photographic documentation of pre- and post-construction landscape documenting restoration efforts.</td>
</tr>
<tr>
<td></td>
<td>Construction scheduling based on stakeholder engagement findings to avoid periods of resource use.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of plans to allow stakeholder access to resources during construction.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Post construction landscape restoration.</td>
<td></td>
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</tr>
</tbody>
</table>

*Source: ERM, 2017*
Annex 1

Field Datasheets
### Biological Environment Findings Summary Datasheet

#### Project:
TAP Re-routes 2017

#### Project Feature Investigated:
Trepollar Re-route  
Approx. length: 11.2 km

#### Specialist:
Ferdinand Bego

#### Date:
- 07/12/2016  
- 08/12/2016  
- 09/12/2016

#### Habitats:
The Trepollar Re-route starts at Martha Pass covered with mountain hay meadows and continues along the ridge heading N. While approaching Cuka e Faqekuqit mountain. At KP1.4 the re-route turns in a W direction and continues on the steep slopes of the mountain in a SW direction. At KP2.0 it changes direction towards W and at KP2.2 the re-route heads towards the NW and continues uphill on steep slopes covered with mountain hay meadows and Calcareous and calcshist to reach the mountain ridge (KP2.9), and then it continues along the mountain ridge heading SW. At KP3.7 it changes direction towards the NW and while approaching the mountain peak of very steep cliffs (KP4.1), it changes direction towards the SW again, continuing downhill on the steep slopes and mountain scree until KP5.0.

At KP5.4 it changes direction towards S and continues downhill until KM 6.2

The steep slopes of most of the re-route between KP5.0 and KP 5.8 are covered with low-laying and scarce scrubby vegetation composed of common juniper (*Juniperus communis*), almond-leaved pear (*Pyrus amygdaliformes*), *Prunus spp.*, dog rose (*Rosa canina*) and common bracken (*Pteridium aquilinum*).

At KP5.9-5.95 and KP6.15-6.35 the re-route comes across patches of harvested beech forest (coppice).

#### Observations:
Cliffs provide shelter and breeding ground for birds of prey such as golden eagle (*Aquila chrysaetos*).

Mountain hay meadows provide breeding and feeding grounds for larks, thrushes (*Monticola saxatilis, Monticola solitarius*), rock partridge (*Alectoris graeca*). They host an abundant population of voles (*Microtus sp.div*) and moles (*Talpa caeca, T. stankovici*) in places of deep and moist soils. Mountain hay meadows are used as feeding and shelter by hare (*Lepus europaeus*), as well. They are part of the distribution range and provide habitats for bears (*Ursus arctos*) and wolves (*Canis lupus*).

The open terrains, with scrubby vegetation and sparsely distributed trees, are used extensively as grazing grounds for sheep and goats and therefore the ecological value of this type of habitat is considered low to medium.

The beech forest (*Fagus sylvatica*) along the pipeline rerouting is mainly found in small patches and is characterised as (coppice) thick young forest of low to medium ecological interest.

Some scattered wild fruit trees (*Pyrus amygdaliformis, Prunus spp.*) are found along the pipeline rerouting. They provide shelter and feeding for some bird species, as well as for bear (*Ursus arctos*) and foxes (*Vulpes vulpes*) during late summer/autumn season.

Degraded transitional woodland/shrubs are of low ecological value, although they may attract some species such as red fox, beech marten and...
At KP6.8, the re-route intersects mountain creeks that are important breeding habitats for aquatic life, including toads, frogs and newts.

Mountain hay meadows and patches of harvested beech forest are heavily used as grazing grounds for sheep and goats and therefore their ecological values are reduced.

The re-route continues on the top of a relatively sharp mountain ridge above Backa-Trepollare at KP6.3 and continues along the mountain ridge in a SW direction for about 1.7 km. From here it turns NW along the mountain ridge until KP8 approx.

NW facing slopes of these 2 km are covered with beech forests, harvested (coppice), while SE facing slopes are steeper and covered with sparse vegetation dominated by Juniperus communis and Juniperus oxycedrus.

At KP8.3 the re-route goes W downhill along a ridge covered with beech forest (coppice) in the upper section and degraded transitional woodland/shrubs in the lower section, dominated by Carpinus orientalis, Juniperus oxycedrus, Quercus cerris.

The south facing slopes continue to be steeper than the north facing slopes and are covered by more degraded scrubby vegetation. Vegetation cover between KP 9.1 and KP 10.8 includes a mosaic of several habitats such as Calcareous rocky slopes with casmophytic vegetation, Galio-carpinetum and arborescent matorral with Juniperus spp. In addition some patches of agricultural land, abandoned after the collapse of the communist regime, are also found.

Finally the last portion of the re-route travels through Galio-carpinetum Oak Hornbeam forest (KP 10.8-11.2).

Most of the re-route vegetation is heavily degraded by overgrazing and overcutting.
### Key Fauna Species (Latin/English):

**Mammals:** Brown bear (*Ursus arctos*), grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), hare (*Lepus europaeus*), sibling vole (*Microtus levis*), moles (*Talpa caeca, T. stankovici*) and beech marten (*Martes foina*).

**Birds:** Golden eagle (*Aquila chrysaetos*), common buzzard (*Buteo buteo*), rock partridge (*Alectoris graeca*). Other bird species have been recorded during previous surveys in the area (ESIA, 2011-2013 and TAP rerouting, 2015), such as coal tit (*Parus atter*), common chaffinch (*Fringilla coelebs*), black redstart (*Phoenicurus ochruros*), blue rock thrush (*Monticola solitarius*), European robin (*Erithacus rubecula*), rock bunting (*Emberiza cia*), cirl bunting (*Emberiza cirlus*), Eurasian skylark (*Alauda arvensis*), woodlark (*Lullula arborea*), common raven (*Corvus corax*), common blackbird (*Turdus merula*), European goldfinch (*Carduelis carduelis*), European greenfinch (*Carduelis chloris*), Northern wheatear (*Oenanthe oenanthe*), red-backed shrike (*Lanius collurio*), common kestrel (*Falco tinnunculus*), cirl bunting (*Emberiza cirlus*), hooded crow (*Corvus cornix*), and great tit (*Parus major*).

**Reptiles:** Although no reptile species were observed during the field survey of 07 and 09.12.2016, several species were reported in the area as part of previous ESIA and TAP rerouting surveys, such as Erhard’s wall lizard (*Podarcis erhardii*), common wall lizard (*P. muralis*), vipers (*Vipera ammodytes, V. berus*), smooth snake (*Coronella austriaca*), Balkan wall lizard (*Podarcis tauricus*) and European green lizard (*Lacerta vivipara*).

**Amphibians:** No Amphibian species were recorded inside the re-route survey area during the winter (07 and 08.12.2016), however, some amphibian species, such as

### Observations:

The area provides some temporary/seasonal food sources for bear, wolf and fox.

The Large carnivores’ survey performed in 2015 found highly suitable foraging/commuting/denning areas for bears/wolves within 5 km to the south from the start of the re-route area).

Grassland and mountain hay meadows provide feeding and breeding grounds for hare (*Lepus europaeus*), rock partridge (*Alectoris graeca*), shrikes (*Lanius collurio*), and other passerines such as skylark (*Alauda arvensis*), woodlark (*Lullula arborea*), wheatear (*Oenanthe oenanthe*), rock bunting (*Emberiza cia*).

The beech forest (*Fagus sylvatica*) along the pipeline re-route is mainly found in small patches in the upper section of the re-route and is characterized as coppice of low to medium ecological interest.

The open terrains, with scrubby vegetation and rare trees host a number of passerine birds almost all year around.

Although in advanced stage of degradation, transitional woodland of 9170 Galio-Carpinetum oak-hornbeam forests provides shelter and feeding ground for a number of terrestrial vertebrates, including fox, marten, weasel, birds of prey, passerines, lizards and snakes.

Mountain creeks provide breeding and feeding grounds for insects and amphibians.

The presence of wolf (*Canis lupus*) was confirmed both in upper section (WPE039) and lower section (WPE046) of the re-route.

Fox (*Vulpes vulpes*) scats were frequently found along the surveyed re-route (WPE038, WPE039, WPE040, WPE041, WPE043, WPE044, WPE046).

Presence of beech marten (*Martes foina*) was confirmed in WPE041 and WPE042.

Presence of weasel (*Mustela nivalis*) was confirmed in WPE043.
Greek stream frog (*Rana graeca*), yellow-bellied toad (*Bombina variegata*), common toad (*Bufo bufo*) and smooth newt (*Lissotriton vulgaris*) are likely to be present along the re-route as confirmed by previous surveys conducted as part of ESIA process (2011-2013) and TAP rerouting (2015).

### Key Flora Species (English/Latin):

- **Beech** (*Fagus sylvatica*),
- **common juniper** (*Juniperus communis*, subsp. *nana*),
- **dog rose** (*Rosa canina*),
- **ironwort** (*Sideritis raeseri*),
- **almond-leaved pear** (*Pyrus amygdaliformis*),
- **blackthorn** (*Prunus spinosa*),
- **Hornbeam** (*Carpinus orientalis*),
- **prickly juniper** (*Juniperus oxycedrus*),
- **turkey oak** (*Quercus cerris*),
- **wild blackberry** (*Rubus ulmifolius*).

**Observations:**

Some plants are collected as medicinal and aromatic plants: *Juniperus spp.*, *Rosa canina* and *Sideritis raeseri*.

Some other species such as *Pyrus amygdaliformis*, *Juniperus communis*, *J. oxycedrus*, *Rubus ulmifolius*, *Quercus sp.div* and *Prunus spinosa*, are used as food sources by many passerine birds, as well as for bears, foxes and martens seasonally.

Post-ESIA Flora surveys (2015) along the original basecase route found other Red Data Book/Protected species that may be potentially present along/adjacent to the re-route such as:

- **Banewort** (*Atropa belladonna*),
- **Black walnut** (*Juglans regia*),
- **Wild majoram** (*Origanum vulgare*),
- **Mountain tea** (*Sideritis raeseri*),
- **Male-fern** (*Dryopteris filix-mas*),
- **Woolly foxglove** (*Digitalis lanata*),
- **Common agrimony** (*Agrimonia eupatoria*),
- **Hawthorn** (*Crataegus heldreichii*),
- **Common elder** (*Sambucus nigra*),
- **Maidenhair fern** (*Adiantum capillusveneris*),
- **Hart’s tongue fern** (*Phyllitis scolopendrium*) and **Winter savoury** (*Satureja montana*).

### Hydrobiology:

No major watercourses are crossed by the pipeline re-route. However, there are two small mountain creeks and a small water storage intersected with the pipeline rerouting. Temporary small creeks are formed only during rainy conditions and thunderstorms leading to erosion of the slopes.

**Observations:**

Tadpoles, juveniles, subadults and adults of frogs and toads were observed along the creeks during the previous investigations in the area as part of TAP ESIA process (2011-2013) and Potom rerouting (2015).

### Designated Areas:

No existing or proposed protected areas are crossed by, or located in the vicinity of, this proposed rerouting.

### Area in need of a Construction Restriction Period

The area might be used by bears as feeding ground during early spring and autumn (when wild...
fruit trees are used for feeding by bears), it is recommended that no construction activities are performed during the night in this period, wherever possible, to avoid interaction with and disturbance to bears.

Bird species, such as rock partridge (*Alectoris graeca*), larks (*Alauda arvensis*), blue rock thrush (*Monticola solitarius*) and red-backed shrike (*Lanius collurio*), are characteristic of the grasslands and open terrains of the pipeline re-routing. Therefore, their breeding activity may be affected by the construction works, unless they are scheduled outside the breeding season (April-July).

From KP 6.2 and based on the findings along the route no particular construction restriction period is considered necessary. However, as a general approach, habitat clearance works should be performed, to the extent feasible outside of the breeding season (March – July).

Conclusions and key aspects:

The species and habitats observed along the Trepollar Re-route are consistent with those expected in this area, and in accordance with the ESIA (2013) findings. Specific management plans and procedures developed and implemented subsequently are also valid and applicable.

The species and habitats considered as most relevant, under conservation parameters, are listed above.

Mitigation measures, already considered in the ESIA (2013), include:

- Ensure impacts and risks associated to recorded fauna are dealt with as per the Management Plans included in the ESIA (and the specific management plans and procedures developed subsequently).
- Habitat clearance minimization, including the working strip where feasible.
- Construction works to be performed, to the extent feasible, outside of the breeding season (March – July), which is sensitive period for key species.
- Reinstatement of habitats after construction activities.
- Monitoring to avoid impact on bear dens

In addition to these mitigation measures and as part of the management plans, the following should also be considered:

- Pre-clearance surveys may be required if appropriate time restrictions cannot be applied during construction activities.
- Streams/creeks should be preserved during construction activities, in order to avoid the impact on aquatic life, especially to insect and amphibian larvae.

As a general approach, and as indicated in the *Large Carnivores Survey* reports, for the management of bears high suitability habitat (i.e. potential for hibernation or denning) should be avoided between December-March. In those areas with known presence of bear and wolf but not defined as high suitability habitat for hibernation/denning, restrictions for March-July would apply (to minimize interference with feeding grounds).
Photos:

**WPE024:** Trepollar Re-route at Martha’s Pass; mountain hay meadows. (view N)

**WPE025:** Trepollar Re-route heading towards North close to Ostrovica mountain: Mountain hay meadows associated with *Juniperus communis nana*. (view N)

**WPE025:** Signs of mole presence (*Talpa sp.*).

**WPE025:** Trepollar Re-route heading towards W; mountain hay meadows and calcareous screes. (view W)
WPE026: Water storage for livestock, potential breeding site for amphibians. (view E)

WPE027: Trepollar Re-route on steep slopes. (view SE)

WPE027: Trepollar Re-route heading NW; degraded mountain hay meadows due to overgrazing. (view NW)

WPE028: Trepollar Re-route from slope down at KP2.2. (view E)

WPE028: Trepollar Re-route passing through overgrazed mountain hay meadows and calcareous screes. (view SW)

WPE028: Trepollar Re-route. (view NW)
WPE030: Mountain creek in the Southern face near Trepollar Re-route. (view S)

WPE032: Trepollar Re-route passing along the ridge. (view E)

WPE031: Trepollar Re-route on the top of the ridge; mountain hay meadows. (view W)

WPE032: Trepollar Re-route passing on steep slopes with calcareous screes and overgrazed mountain hay meadows. (view E)
WPE034: Trepollar Re-route overgrazed mountain hay meadows. (view E)

WPE035: Trepollar Re-route passing along the ridge: upper beech forest line overgrazed sparsely scrubs with presence of *Juniperus communis* and *Rosa canina*. (view N)

WPE035: *Rosa canina*.

WPE036: Intersection of Trepollar Re-route with a mountain creek. (view W)
WPE036: Trepollar Re-route heading uphill towards the baseline route that goes along the ridge: Harvested beech forest (coppice). (view S)

WPE036: Intersection of the Trepollar Re-route with a mountain creek; patches of harvested beech forests (coppice) on both sides. (view E)

WPE037: Re-route along the mountain ridge above Backa-Trepollare; Degraded, overgrazed beech forest on NW facing slopes and eroded land with sparse scrubby vegetation on steeper SE facing slopes. (view NE)

WPE038: Re-route along the mountain ridge: beech forest (coppice) on NW facing slopes and sparsely scrubby vegetation on SE facing slopes. (view NE)
WPE038: Re-route along the ridge: beech forest on NW facing slopes and scrubby vegetation dominated by *Juniperus communis* on steeper SE facing slopes. (view SW)

WPE039: Re-route along the ridge, where the scats of wolf and fox were found. (view NE)

WPE039: Re-route along the mountain ridge; beech forest on NW facing slopes and sparse scrubby vegetation on SE facing slopes. (view SW)

WPE039: Wolf (*Canis lupus*) scats.
WPE040: Re-route changing direction from SW to NW: more degraded vegetation due to overgrazing. (view SE)

WPE041: Re-route passing along the ridge: degraded beech forest with Juniperus oxycedrus as understorey. (view W)

WPE040: Juniperus oxycedrus.

WPE040: Fox (Vulpes vulpes) scats.

WPE040: Juniperus communis.

WPE041: Beech forest (coppice) on steep slopes. (view N)
WPE042: Steep slopes of degraded beech forest (coppice) along the re-route. (view E)

WPE043: Fox (Vulpes vulpes) footprints.

WPE042: Degraded beech forest and transitional woodland along the re-route. (view W)

WPE043: Beech marten (Martes foina) footprint.

WPE043: Re-route centerline along the ridge covered with degraded transitional woodland/shrubs. (view E)

WPE043: Re-route passing on abandoned agricultural land and degraded transitional woodland/shrubs. (view W)
WPE044: Transitional woodland/shrubs and abandoned agricultural land/grassland overgrazed. (view E)

WPE046: Eroded terrains with degraded and sparse scrubby vegetation of Juniperus oxycedrus and Carpinus orientalis. (view NE)

WPE044: Degraded transitional woodland/shrubs dominated by Carpinus orientalis and Juniperus oxycedrus. (view W)

WPE046: Wolf (Canis lupus) scats.
WPE047: Re-route along the ridge with heavily degraded transitional woodland/shrubs (*Juniperus oxycedrus* and *Carpinus orientalis*) due to overgrazing close to Potom Pass. (view NE)

WPE047: Re-route along the ridge with heavily degraded transitional woodland/shrubs due to overgrazing close to Potom Pass. (view SW)
## Biological Environment Findings Summary Datasheet

<table>
<thead>
<tr>
<th>Project:</th>
<th>Project Feature Investigated:</th>
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<tbody>
<tr>
<td>TAP Re-routes 2017</td>
<td>Temporary Access track</td>
</tr>
<tr>
<td></td>
<td>Approx. length: 3.9 km</td>
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<td></td>
<td>Complementary access track features include:</td>
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<tr>
<td></td>
<td>• Spoil stockpile areas (1 and 2): 1.23 ha (combined)</td>
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<tr>
<td></td>
<td>• Telepheric working area: 0.25 ha</td>
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<tr>
<th>Specialist:</th>
<th>Date:</th>
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<tbody>
<tr>
<td>Ferdinand Bego</td>
<td>13/04/2017</td>
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</tbody>
</table>

<table>
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<tr>
<th>Habitats:</th>
<th>Observations:</th>
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<tbody>
<tr>
<td>The Proposed Access Track starts at Martha’s pass, close to the Memorial of the World War II and continues for about 200 m along the ridge heading North direction. Then it turns left (KP0.2) heading West direction and continues throughout steep slopes. At KP 0.45 and KP 1.95 it intersects two mountain creeks. Most of the corridor of the proposed access track passes on steep slopes covered with Mountain Hay Meadows (Habitat code 6520) , and in three small sections (KP 2.0-2.1 and KP 2.7 and KP 3.7) it crosses steep slopes of calcareous screes (Habitat code 8120). At KP 3.1 the proposed access track passes through a small patch of beech forest (coppice) used as shelter grounds for sheep (temporary shepherd shelter found). The steep slopes of most of the proposed corridor of access track are covered with low-laying herbs and scarce scrubby vegetation composed of common juniper (Juniperus communis nana), almond-leaved pear (Pyrus amygdaliformes), Prunus spp., and dog rose (Rosa canina). Mountain creeks intersected by the proposed access track provide suitable habitats for aquatic life, such as insects, frogs, toads and newts, as it was confirmed by previous field surveys in the area as part of ESIA process (2013) and TAP Rerouting 2014. The open terrains, with scrubby vegetation and rare trees are used extensively as grazing grounds for sheep and goats and therefore the ecological value of this type of habitat is low to medium. The beech forest (Fagus sylvatica) [9110 Luzulo-Fagetum beech forests] along the proposed access track corridor is found in small patches and is characterized as (coppice) of low ecological interest, as it is intensively used as shelter ground for shepherd and livestock for</td>
<td>Mountain hay meadows provide breeding and feeding grounds for sky larks (Alauda arvensis), thrushes (Monticola saxatilis, Monticola solitarius), rock partridge (Alectoris graeca). They hosts abundant population of voles (Microtus sp.div) and moles (Talpa caeca, T. stankovici) in places of deep and moisture soils. Mountain hay meadows are used as feeding and shelter by hare (Lepus europaeus), and viper (Vipera ammodytes). They are part of the distribution range and provide habitats for bears (Ursus arctos) and wolves (Canis lupus). Fresh tracks of bear were observed at KP 0.0. Mountain creeks intersected by the proposed access track provide suitable habitats for aquatic life, such as insects, frogs, toads and newts, as it was confirmed by previous field surveys in the area as part of ESIA process (2013) and TAP Rerouting 2014. The open terrains, with scrubby vegetation and rare trees are used extensively as grazing grounds for sheep and goats and therefore the ecological value of this type of habitat is low to medium. The beech forest (Fagus sylvatica) [9110 Luzulo-Fagetum beech forests] along the proposed access track corridor is found in small patches and is characterized as (coppice) of low ecological interest, as it is intensively used as shelter ground for shepherd and livestock for</td>
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harvested beech forest are heavily used as grazing grounds for sheep and goats and therefore their ecological values are reduced.

The spoil stockpile areas are found at KP1.9 and KP 3.1 (area 1 and area 2 respectively). Both of the proposed sites are located on gentle slopes, stockpile area 1 is covered with mountain hay meadow habitat over which temporary shelters for shepherds and livestock exist, whilst stockpile area 2 is located over a small patch of sparse beech forest (*Fagus sylvatica*).

The proposed site for telepheric work area is located at the foothill of the mountain peak over steep slopes of calcareous screes (Habitat code 8120) close to KP3.4 of the proposed access track. It is bordered by cliffs uphill and mountain hay meadows downhill.

**Observations:**

The area provides some temporary/seasonal food sources for bear, wolf, wild boar and fox. Presence signs of all these species were observed during the field survey.

Grassland and mountain hay meadows provide feeding and breeding grounds for hare (*Lepus europaeus*), rock partridge (*Alectoris graeca*), shrikes (*Lanius collurio*), and other passerines such as skylark (*Alauda arvensis*), woodlark (*Lullula arborea*), wheatear (*Oenanthe oenanthe*), rock bunting (*Emberiza cia*). Lizards and snakes, including vipers are also common in such habitat type.

Mountain creeks provide breeding and feeding grounds for insects and amphibians.

**Key Fauna Species (Latin/English):**

**Mammals:** Brown bear (*Ursus arctos*), grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), wild boar (*Sus scrofa*), hare (*Lepus europaeus*), sibling vole (*Microtus levis*), moles (*Talpa caeca, T. stankovici*).

**Birds:** Eurasian skylark (*Alauda arvensis*), common buzzard (*Buteo buteo*), rock partridge (*Alectoris graeca*). Other bird species have been recorded during previous surveys in the area (ESIA, 2011-2013 and TAP rerouting, 2015, 2016), such as Golden eagle (*Aquila chrysaetos*), coal tit (*Parus atter*), common chaffinch (*Fringilla coelebs*), black redstart (*Phoenicurus ochruros*), blue rock thrush (*Monticola solitarius*), European robin (*Erithacus rubecula*), rock bunting (*Emberiza cia*), cirl bunting (*Emberiza cirlus*), woodlark (*Lullula arborea*), common raven (*Corvus corax*), common blackbird (*Turdus merula*), European goldfinch (*Carduelis carduelis*), European greenfinch (*C. chloris*), Northern wheatear (*Oenanthe oenanthe*), and red-backed shrike (*Lanius collurio*).

**Reptiles:** Wall lizards (*Podarcis muralis*)

Some scattered wild fruit trees (*Pyrus amygdaliformis, Prunus spp., Rosa canina*) are found along the access track corridor. They provide shelter and feeding for some bird species, as well as for bear (*Ursus arctos*) and foxes (*Vulpes vulpes*) during late summer/autumn season.
and horned viper (*Vipera ammodytes*) were observed during the field survey. Other species were reported in the area as part of previous ESIA and TAP rerouting surveys (2011, 2013, 2015), such as Erhard’s wall lizard (*Podarcis erhardii*), vipers (*Vipera berus*), and smooth snake (*Coronella austriaca*).

Amphibians: No Amphibian species were recorded along the survey area during the April 13th, 2017, however, some amphibian species, such as Greek stream frog (*Rana graeca*), yellow-bellied toad (*Bombina variegata*), common toad (*Bufo bufo*) and smooth newt (*Lissotriton vulgaris*) are likely to be present along the small creeks intersected by the access track, as confirmed by previous surveys conducted as part of ESIA process (2011-2013) and TAP rerouting (2015).

### Key Flora Species (English/Latin):

- Beech (*Fagus sylvatica*)
- Common juniper (*Juniperus communis*, subsp. *nana*)
- Dog rose (*Rosa canina*)
- Ironwort (*Sideritis raeseri*)
- Almond-leaved pear (*Pyrus amygdaliformis*)
- Blackthorn (*Prunus spinosa*)

### Observations:

Some plants are collected as medicinal and aromatic plants: *Juniperus spp.*, *Rosa canina* and *Sideritis raeseri*.

Some other species such as *Pyrus amygdaliformis* and *Prunus spinosa*, are used as food sources for many birds, as well as for bears and foxes seasonally.

### Hydrobiology:

No major water courses are crossed by the proposed access track. However, there are two small mountain creeks intersected with the proposed access track.

### Observations:

Tadpoles, juveniles, subadults and adults of frogs and toads were observed along the creeks during the previous investigations in the area as part of TAP ESIA process (2011-2013) and Potom rerouting (2015).

### Designated Areas:

No existing or proposed protected areas are crossed by, or in the vicinity of the proposed access track nor its complementary features. Lirza Beech forest Nature Monument is situated long distance from the proposed access track and therefore is not expected to receive direct or indirect threats and impacts from the construction of the access track.

### Area in need of a Construction Restriction Period

No section of the proposed access track or any of its complementary features is considered to require the implementation of a construction restriction period. However, as the area might be used by bears as feeding ground during early spring and autumn (when wild fruit trees are used for feeding by bears), it is recommended that no construction activities are performed during the
night in this period, wherever possible, to avoid interaction with and disturbance to bears. Birds species, such as rock partridge (*Alectoris graeca*), skylarks (*Alauda arvensis*), blue rock thrush (*Monticola solitarius*) and red-backed shrike (*Lanius collurio*), are characteristic of the grasslands and open terrains of the proposed access track. Therefore, their breeding activity may be affected by the construction works, unless they are scheduled outside the breeding season (April-July).

### Conclusions and key aspects:

The species and habitats observed along the corridor of the proposed access track are consistent with those expected in this area, and in accordance with the TAP Albania ESIA (2013) findings. The species and habitats considered as most relevant, under conservation parameters, are listed above.

Standard general mitigation measures, already considered in the TAP Albania ESIA (2013), include:

- Assess the importance of this access track corridor in terms of associated fauna
- Habitat clearance minimization, including the working strip where feasible.
- Construction works to be performed, to the extent feasible, outside of the breeding season (March – July), which is sensitive period for key species.
- Reinstatement of habitats after construction activities.

Specific management plans and procedures developed and implemented subsequently (i.e. after the ESIA) are also valid and applicable.

Pre-vegetation clearance surveys may be required, in absence of time restrictions to the construction activities.

### Photos:

**WPE051**: Starting of proposed access track at Marta pass (KP 0.0)-mountain hay meadows) (heading N)

**WPE051**: Bear (*Ursus arctos*) fresh tracks on muddy grounds at the starting point of the proposed access track.
WPE052: Proposed access track turning towards West direction at KP 0.3-mountain hay meadows (heading W)

WPE054: Wild boar (Sus scrofa) tracks on snow covering steep slopes at KP 1.1 (heading SE)

WPE053: Mountain creek intersected with the proposed access track at KP 0.45 (heading S)

WPE055: Mountain creek intersected with proposed access track at KP 1.95 (heading S)

WPE056: View over the corridor of the proposed access track at KP 2.35, view

WPE056: Proposed access track passing on steep slopes of mountain hay meadows and
towards area proposed as spoil stockpile area 2 at KP 1.9 (heading E)

**WPE057:** Small patch of beech forest (*Fagus sylvatica*) at KP 3.1 where the spoil stockpile area 2 is projected (heading E)

**WPE058:** Calcareous screes at KP 3.3 where the Telepheric work area will be constructed (heading SE)

calcareous screes at KP 2.4 (heading NW)

**WPE057:** *Juniperus communis nana* as understorey of beech stand

**WPE059:** Calcareous screes on steep slopes along the corridor of the access track at KP3.6 (heading W)
WPE059: Signs of burnt Juniper scrubs by shepherds to increase pasture quality at KP3.6 (heading NE)

WPE060: Intersection of the proposed access track with Trepollar Re-route mountain hay meadows and calcareous screes at KP 3.8 (heading SE)

WPE0560: Hare (*Lepus europaeus*) dropping on mountain hay meadows at KP3.8

WPE060: Intersection of the proposed access track with Trepollar Re-route - mountain hay meadows at KP3.8 (heading SW downhill towards Trepollar Re-routing)
### Biological Environment Findings Summary Datasheet

**Project:**
TAP Re-routes 2017

**Project Feature Investigated:**
Small temporary camp
Approx. area: 1,0 ha

**Specialist:**
Ferdinand Bego

**Date:**
13/04/2017

**Habitats:**
The proposed site for the temporary camp is located adjacent to KP79 of the re-route centerline, located on a small plateau bordered by gentle slopes covered with mountain hay meadows (Habitat code 6520); beech forest [9110 Luzulo-Fagetum beech forests] are found in the surroundings.

The beech forest in this area is partly harvested, but most of the forest is in good ecological condition and provides suitable habitat for large carnivores and wild boar, as it is confirmed by the field survey of April 13, 2017 and the previous surveys conducted as part of ESIA (2011-2013), ERM large carnivores surveys of December 2014 and April 2015 and RSK 2015 surveys on large carnivores as well.

**Observations:**
Mountain hay meadows provide breeding and feeding grounds for sky larks (*Alauda arvensis*), thrushes (*Monticola saxatilis, Monticola solitarius*), rock partridge (*Alectoris graeca*). They host abundant population of voles (*Microtus sp.div*) and moles (*Talpa caeca, T. stankovici*) in places of deep and moisture soils. Mountain hay meadows are used as feeding and shelter by hare (*Lepus europaeus*), and viper (*Vipera ammodytes*). They are part of the distribution range and provide habitats for bears (*Ursus arctos*) and wolves (*Canis lupus*). Fresh and old tracks of bear and wolf were observed at pipeline centerline KP77, and KP 79 during our the April 2017 survey.

Mountain hay meadows are used extensively as grazing grounds for sheep and goats and therefore the ecological value of this type of habitat is low to medium.

The beech forest (*Fagus sylvatica*) [9110 Luzulo-Fagetum beech forests] around the temporary camp is recently being harvested, but further south towards Lirza, beech forest it is still in good shape and old stands are still found there. The ecological value of this forest is high, as it provides shelter for large carnivores and bird communities linked with old growth forest.

**Key Fauna Species (Latin/English):**

**Mammals:** Brown bear (*Ursus arctos*), grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), wild boar (*Sus scrofa*), badger (*Meles meles*), beech marten (*Martes foina*), hare (*Lepus europaeus*), sibling vole (*Microtus levis*), moles (*Talpa caeca, T. stankovici*).

**Observations:**
Grassland and mountain hay meadows provide feeding and breeding grounds for hare (*Lepus europaeus*), rock partridge (*Alectoris graeca*), shrikes (*Lanius collurio*), and other passerines such as skylark (*Alauda arvensis*), woodlark (*Lullula arborea*), wheatear (*Oenanthe...*)
Birds: Eurasian skylark (*Alauda arvensis*), common buzzard (*Buteo buteo*), rock partridge (*Alectoris graeca*). Other bird species have been recorded during previous surveys in the area (ESIA, 2011-2013 and TAP rerouting, 2015, 2016), such as coal tit (*Parus atter*), common chaffinch (*Fringilla coelebs*), black redstart (*Phoenicurus ochruros*), blue rock thrush (*Monticola solitarius*), European robin (*Erithacus rubecula*), Syrian woodpecker (*Dendrocopos syriacus*), white-backed woodpecker (*Dendrocopos leucotos*), rock bunting (*Emberiza cia*), cirl bunting (*Emberiza cirlus*), woodlark (*Lullula arborea*), common raven (*Corvus corax*), common blackbird (*Turdus merula*), European goldfinch (*Carduelis carduelis*), European greenfinch (*C. chloris*), Northern wheatear (*Oenanthe oenanthe*), and red-backed shrike (*Lanius collurio*).

Reptiles: No reptile species were recorded in the surveyed temporary camp site during the field survey of April 13th, 2017, but some species were reported in the area as part of previous ESIA and TAP rerouting surveys (2011, 2013, 2015), such as Wall lizards (*Podarcis muralis*), Erhard’s wall lizard (*Podarcis erhardii*), vipers (*Vipera ammodytes*), and smooth snake (*Coronella austriaca*).

Amphibians: No Amphibian species were recorded in temporary camp site surveyed during April 2017, however, some amphibian species, such as Greek stream frog (*Rana graeca*), yellow-bellied toad (*Bombina variegata*), and smooth newt (*Lissotriton vulgaris*) are likely to be present along small creeks found to the east of the camp as confirmed by previous surveys conducted as part of ESIA process (2011-2013) and TAP rerouting and access tracks (2014 and 2015). In beech forest in proximity of temporary camp the presence of fire salamander (*Salamandra salamandra*) is likely.

**Key Flora Species (English/Latin):**
Beech (*Fagus sylvatica*), common juniper

**Observations:**
A community of saffron species is commonly
(Juniperus communis, subsp. nana), dog rose (Rosa canina), ironwort (Sideritis raeseri), Saffron (Crocus sp.div).

spread out in the mountain hay meadows after the snow melting. Plant species of hey meadows are impacted by extensive grazing activity during summer and early autumn. Some old stands of beech forest are found at proximity of the temporary camp site.

Hydrobiology:
Small mountain creeks are found to the east of the camp site along the re-route centerline.

Observations:
Tadpoles, juveniles, subadults and adults of frogs and toads were observed along the creek during the previous investigations in the area as part of TAP ESIA process (2011-2013) and Potom rerouting (2015).

Designated Areas:
The site proposed as temporary camp is not part of any protected area. Lirza Beech forest Nature Monument is situated a long distance from the temporary camp site and therefore is not expected to receive direct or indirect threats and impacts from the construction work and operation of the temporary camp.

Area in need of a Construction Restriction Period
Proposed site for temporary camp is not considered to require the implementation of a construction restriction period, as the area is intensively used during summer and early autumn as grazing ground for livestock. However, provided the altitude of the site and weather conditions (snow coverage), the site may not accessible or difficult to access during late autumn, winter and early spring.

Birds species, such as rock partridge (Alectoris graeca), skylarks (Alauda arvensis), blue rock thrush (Monticola solitarius) and red- backed shrike (Lanius collurio) are characteristic of the grasslands and open terrains in the surrounding but less present in the proposed camp site, due to disturbance and extensive grazing. Hence, their breeding activity may be affected by the construction works, unless they are scheduled outside the breeding season (April-July).

Conclusions and key aspects:
The species and habitats observed in the site proposed for the temporary camp are consistent with those expected in this area, and in accordance with the TAP Albania ESIA (2013) findings. The species and habitats considered as most relevant, under conservation parameters, are listed above.

Proposed site is part of the LC (bear and wolf) distribution range and potential for human-LC conflicts. Therefore, measures to avoid conflicts with bears and wolves should apply.

Standard general mitigation measures, already considered in the TAP Albania ESIA (2013), include:

- Assess the importance of the sites in terms of associated fauna.
- Avoid working at night.
- Habitat clearance minimization.
- Construction works to be performed, to the extent feasible, outside of the breeding season (March – July), which is sensitive period for key species.
• Reinstatement of habitats after construction activities.

Specific management plans and procedures developed and implemented subsequently (i.e. after the ESIA) are also valid and applicable.

Pre-vegetation clearance surveys may be required, in absence of time restrictions to the construction activities.

**Photos:**

**WPE048:** Fresh tracks of wolf (*Canis lupus*) on snow at KP 79

**WPE049:** Presence signs of voles (*Microtus levis*) on the ground at temporary camp site area.

**WPE049:** Presence signs of moles (*Talpa sp.*) at temporary camp site - mountain hay meadows impacted by grazing.

**WPE049:** View of the temporary camp site at pipeline centerline KP79 - mountain hay meadows (heading N)
**WPE049:** View of the temporary camp site at pipeline centerline KP79 -mountain hay meadows surrounded by beech forest (heading S)

**WPE049:** View of the temporary camp site in proximity of pipeline centerline KP 79 (heading E)

**WPE049:** View of the temporary camp site at proximity of pipeline centerline KP 79 – mountain hay meadows and scattered low-laying scrubs of *Juniperus communis nana* (heading E)
# Socioeconomic Findings Summary Datasheet

<table>
<thead>
<tr>
<th>Project:</th>
<th>Project Feature Investigated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAP Re-routes 2017</td>
<td>Trepollar Re-route</td>
</tr>
<tr>
<td></td>
<td>Approx. length: 11.2 km</td>
</tr>
</tbody>
</table>

## Specialist:
Ferran Climent

## Date:
7/12/2016  
8/12/2016  
09/12/2016

## Settlements:
Re-route locate within the Korça/Skrapar Municipality.  
Closest villages include:  
- Trepollare (Backa)  
- Potom

## Observations:
Trepollare (Backa), and Potom are the closest villages to the proposed centerline. These two villages are located to the South of the centerline (1 and 1.5 km respectively) and consist of a small number of scattered farms and auxiliary buildings.

## Land Cover/Uses:
The land cover/uses crossed by the alignment include:  
- Alpine grasslands  
- Beech forest  
- Agricultural/grassland parcels  
- Bare/eroded soil

## Observations:
From KP 0 to KP 6.0 the re-route is located on high lands climbing up to the Cuka e Faquekuquit mountain (i.e. above forested areas). Vegetation cover is limited to alpine grasslands.  
From KP 6.0 onwards the re-route follows the ridge from the highest areas (NE) towards the valley (SE). The crest is characterized by the presence of beech forests (mainly on the North and West slopes) shrublands and some scattered agricultural areas (currently abandoned and being used as grazina areas only). The mountain slopes located on the south are more prone to erosion and south. In general, areas more prone to erosion are found on the lower sections of the route where shrubby vegetation is more abundant, possibly linked to grazing pressure and harsh climate.  
Due to the altitude no arable lands or crops are found in the vicinity of any of the alignments. Even on the lowest portions of the part of the re-route, no arable lands are found. Use of these lands is limited to grazing with
Livelihood:
Livelihoods along the re-route are mostly related to the land and associated natural resources:
- Grazing livestock
- Logging

Observations:
Refer to the above Land Cover/Uses section.
Grazing was confirmed along the entire re-route from the Martha’s Pass to the vicinity of Potom village (evidences of sheep/goat presence, infrastructures such as shepherd huts, etc.).
Logging in the beech forest was confirmed along the re-route, and specially along the descent towards Potom, where forests are relatively abundant on the northern slopes and ridges.

Infrastructure / Construction:
The area can be defined as remote and difficult to access.
Noted infrastructure includes:
- Basic shepherd huts and goat/sheep pen
- Territorial Markers
- Basic water collection system
- Spring
- Mountain/local paths
- Rock mounds

Observations:
Infrastructure is scarce. The elements found are in most cases directly related with grazing activities, (1) small paths; (2) presence of 2 shepherd huts with goat/sheep pens (located about 120 m from the centerline and 290 m from the proposed re-route), (3) remains of a hut/structure on a site where evidence of logging and grazing were identified located about 34 m north of the proposed re-route); (4) basic water collection system (located 1 km NW of the centerline and 140 m NW of the proposed re-route distance), and (5) spring (280 m from the proposed re-route).
In addition, several territorial markers were found along the ridges of the mountains surveyed and some small mounds of rocks were also found within an area that was possibly cultivated years ago but is now only used as pasture.

Conclusions and key aspects:
The proposed re-route crosses areas with characteristics equivalent to those already found in similar areas of the former ESIA centerline. Therefore the findings and mitigation measures provided in the TAP Albania ESIA (2013) are valid and applicable to this re-route. Specific management plans and procedures developed and implemented subsequently are also valid and applicable.
Key elements of interest would be the management of (1) impacts on grazing activities and especially potential disruption of traditional activities in the vicinity of the proposed alignments.
due to noise/dust and interference with existing huts and water collection systems, (2) clearance of beech forests (to the extent feasible provided the alignment is located on a ridge) and (3) the potential nuisances to livestock (grazing activities) during construction.

Photos:

WPS019: General view of the first section of the re-route. (view N)

WPS020: General view of the alpine grasslands located in the vicinity of Martha’s Pass towards the Cuka e Faquekuquit. (view N)

WPS021: Alpine grasslands located in the vicinity of Martha’s Pass (view S)

WPS022: Small water collection system for livestock located 140 m NW of the proposed re-route (KP1.7) (view W)
WPS023: General view of the re-route which travels at the foot of the Cuka e Faquekuquit peak from the east (Martha’s Pass) towards the W (Cuka e Frengut peak). (view N)

WPS024: General aerial view of the central portion of the highest section of the re-route. (view NW)

WPS025: General view of a portion of re-route. The centerline climbs the grasslands to reach the crest and continues towards the West (left in the photo). (view W)

WPS026: Detail of a shepherd hut and pen for keeping livestock located 290 m from the proposed re-route (KP2.5)
WPS027: Spring located at the bottom of Cuka e Frengut mountain 280 m from the proposed alignment (KP2.7).

WPS028: Portion of the re-route towards the Cuka e Faquekuquit peak before descending to the valley (Trepollar) (view E).

WPS29: Portion of the re-route towards the Cuka e Frengut peak before descending to the valley (Trepollar) (view E).

WPS30: Territorial marker located 108 m NW of the proposed re-route (KP4.2).
WPS31: Partial view of the re-route on the Western portion of the area of study: on top of the ridge and from the last scree descending towards the west. (view NW)

WPS32: Detail of flat stones used by shepherd to provide salt to the livestock (KP5.6).

WPS33: Detail of the descent from the ridge towards the valley. (view N)

WPS34: General view of the descent from the ridge towards the valley. (view N)
WPS035: Territorial marker and view of the descent from the mountain towards Trepollar located 5 m W of the proposed re-route (KP5.8). (view N)

WPS036: Detail of a shepherd hut and fencing for keeping livestock. The site is located by the stream that descends towards Bersaka village located 120 m east of the proposed re-route (KP5.9).

WPS037: General view of the ridge (KP6.6). Evidence of cattle and logging activities on the beech forests. (view SW)

WPS038: Scattered grasslands with evidence of grazing activities. (view NE)
WPS039: Alignment on the ridge with mixed bushes, grasslands and beech forest. Evidence of grazing along the route. (view NE)

WPS040: Portion of the crest with mixed bare/eroded soil, forest patches and grasslands. (view NE)

WPS039: Alignment on the ridge with mixed bushes, grasslands and beech forest. Evidence of grazing along the route. (view SW)

WPS041: Descent towards Potom village. Patches of beech forest, bushes, grasslands and bare soil can be found. Evidence of sheep and goat. (view SW)
WPS042: Site with evidence of locals building a hut. Evidence of logging and grazing. 34 m North of the re-route. (view NE)

WPS042: Detail of some beech trees (see evidence of coppicing)

WPS043: Detail of beech forest with small branches left on site after logging activities. (view SW)

WPS044: Beech forest crossed by the proposed alignment. (view NE)

WPS044: Grassland area with mounds of stones, possibly related to former agricultural activities on the site. (view NE)
WPS045: General view of grasslands and forest crossed by the proposed centerline. (view NE)

WPS046: Descent along the ridge towards Potom village on eroded/bare soil, forest patches and bushes. (view NE)

WPS047: Last portion of the re-route along the ridge. Just before reaching the mountain pass between Potom and Krastë. (view SW)

WPS048: In the vicinity of the mountain pass. A couple of territorial markers found (see 2nd marker on the pass) located about 19.5 m E of the re-route. Note the sheep herd at the background of the photo. (view SW)
## Socioeconomic Findings Summary Datasheet

<table>
<thead>
<tr>
<th>Project:</th>
<th>Project Feature Investigated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAP Re-routes 2017</td>
<td>Access track route</td>
</tr>
<tr>
<td></td>
<td>Approx. length: 3.9 km</td>
</tr>
<tr>
<td></td>
<td>Complementary access track features include:</td>
</tr>
<tr>
<td></td>
<td>• Spoil stockpile areas (1 and 2): 1.23 ha (combined)</td>
</tr>
<tr>
<td></td>
<td>• Telepheric working area: 0.25 ha</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialist:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giulio Marin</td>
<td>13/04/2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Settlements:</th>
<th>Observations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access track located within the Korça/Skrapar Municipality.</td>
<td></td>
</tr>
<tr>
<td>Closest villages include:</td>
<td></td>
</tr>
<tr>
<td>• Trepollare (Backa)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trepollare is the closest village to the proposed access track. It is located to the South of the access track (1.7 km) and consists of a small number of scattered farms and auxiliary buildings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land Cover/Uses:</th>
<th>Observations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The land cover/uses crossed by the alignment and complementary features include:</td>
<td></td>
</tr>
<tr>
<td>• Alpine grasslands</td>
<td></td>
</tr>
<tr>
<td>• Agricultural/grassland parcels</td>
<td></td>
</tr>
<tr>
<td>• Bare/eroded soil</td>
<td></td>
</tr>
<tr>
<td>• Patches of Beech forest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The access track is located on high lands along the southern slope of the Cuka e Faquekuquit mountain (i.e. above forested areas). Vegetation cover is mostly limited to alpine grasslands, nonetheless the access track has areas where rocky screes are located (KP2.0-2.1; KP2.6-2.9 and KP3.6-3.8) which are highly prone to erosion; shrubby vegetation patches are present, possibly linked to grazing pressure and harsh climate.</td>
</tr>
<tr>
<td></td>
<td>Spoil stockpile sites 1 and 2 occur on relatively flat areas with alpine grasslands (at KP1.9) and a small patch of beech forest (at KP3.2) respectively. The Telepheric working area within a rocky scree up slope from access track at KP3.4.</td>
</tr>
<tr>
<td></td>
<td>Due to the altitude no arable lands or crops are found in the vicinity of the access track alignment and other features. Even on the lowest portions of the mountain section of the access track, no arable lands are found.</td>
</tr>
</tbody>
</table>
Use of these lands is limited to grazing with livestock, which is by far the most notable activity. Due to climatic conditions grazing during the cold months is marginal but expected to be important for the local communities during the rest of the months (i.e. from spring to late autumn).

Livelihood:
Livelihoods along the access track are mostly related to the land and associated natural resources:
- Grazing livestock
- Logging

Observations:
Refer to the above Land Cover/Uses section. Grazing and livestock activities was confirmed along the entire access track alignment (e.g. evidences of sheep/goat presence, infrastructures such as shepherd huts and pens, etc.). Stockpile 1 is located within a livestock rearing area (presence of hut and corrals); whilst stockpile 2 is located within a resting area. Logging activities in the nearby beech forests was confirmed, specially to the east of the access track where forested areas are relatively abundant.

Infrastructure / Construction:
The area can be defined as remote and difficult to access. Noted infrastructure includes:
- Basic shepherd huts and goat/sheep pens
- Territorial Markers
- Basic water collection system
- Springs
- Mountain/local paths
- Rock mounds

Observations:
Infrastructure is scarce. The elements found are in most cases directly related with grazing activities: (1) small paths; (2) presence of shepherd huts with goat/sheep pens (some located within the acces track alignment, whilst others adjacent adjacent to it within 100 m) and (4) basic water collection piping system in a mountain stream.
In addition, several territorial markers and rock mounds were found in flat areas along the access track.

Conclusions and key aspects:
The proposed access track alignment crosses areas with characteristics equivalent to those already found in similar areas of the former ESIA centerline. Therefore the findings and mitigation measures provided in the TAP Albania ESIA (2013) are valid and applicable to this access track. Specific management plans and procedures developed and implemented subsequently are also valid and applicable.
Key elements of interest would be the management of (1) impacts on grazing activities and
especially potential disruption of traditional activities occurring within and directly adjacent to the access track alignment/stockpile sites due to interference with existing huts/pens as well as noise/dust impacts in adjacent areas, and (2) the potential nuisances to livestock (grazing activities) during construction.

Photos:

**WPS054:** General view of the alpine grasslands located at the start of the access track once it turns West from the pipeline re-route and travels along the southern slopes. (view W)

**WPS057:** General view of the alpine grasslands with scattered rocks. The access track broadly follows existing herder tracks. (view E)

**WPS062:** Sheep herder hut and holding pens located adjacent to prospective access track footprint. (view NW)

**WPS063:** Sheep herder hut located within proposed spoil stockpile 1 footprint. (view N)
WPS062: High mountain creek. Photo shows piping used to transport water. (view N)

WPS068: Sheep herder hut and holding pens located adjacent to prospective access track footprint. (view N)

WPS070: Flat area located on mountain slope used as resting area for sheep located within access track footprint. (view SW)

WPS072: Territorial marker within flat area, located within spoil stockpile 2 footprint. (view SW)
WPS073: Herder hut found in flat mountain area, within access track footprint, adjacent to spoil stockpile area 2. (view E)

WPS077: Livestock grazing along edge of mountain rocky scree, uphill from edge of access track footprint and telepheric working site. (view N)

WPS077: Sheep resting area, as suggested by high density of sheep droppings. Flat area is located adjacent to access track footprint, some 80 m west of the telepheric working area.

WPS078: Intentional vegetation burn markings made by livestock herders. (view N)
### Socioeconomic Findings Summary Datasheet

**Project:**
TAP Re-routes 2017

**Project Feature Investigated:**
Temporary camp  
Approx. area: 1.0 ha

**Specialist:**
Giulio Marin

**Date:**
13/04/2017

**Settlements:**
Access track located within the Korça/Skrapar Municipality. Closest villages include:
- Trepollare (Backa)

**Observations:**
Trepollare is the closest village to the proposed temporary camp. This village is located to the Southwest of the temporary camp (3.4 km) and consists of a small number of scattered farms and auxiliary buildings.

**Land Cover/Uses:**
The land cover/uses crossed located within the temporary camp footprint include:
- Alpine grasslands

**Observations:**
The temporary camp is located within a small plateau area of Alpine grassland.  
Due to the altitude no arable lands or crops are found in the vicinity of the temporary camp. The camp is surrounded to its east, south and west by beech forests. Use of these lands is limited to grazing with livestock, which is by far the most notable activity.  
Due to climatic conditions grazing during the cold months is marginal but expected to be important during the rest of the months (i.e. from spring to late autumn).

**Livelihood:**
Livelihoods in the area of influence of the temporary camp are mostly related to the land and associated natural resources:
- Grazing livestock  
- Logging

**Observations:**
Refer to the above Land Cover/Uses section.  
Grazing was confirmed within the temporary camp footprint (e.g. evidences of sheep/goat presence.).  
Logging activities in the nearby beech forests was confirmed, specially to the east of the temporary camp where forested areas are abundant.
**Infrastructure / Construction:**
The area can be defined as remote and difficult to access. 
No infrastructure was observed in the vicinity of the area.

**Observations:**
Infrastructure is non-existant in the area.

**Conclusions and key aspects:**
The proposed temporary camp footprint is located within an area with characteristics equivalent to those already found in similar areas of the former ESIA centerline. Therefore the findings and mitigation measures provided in the TAP Albania ESIA (2013) are valid and applicable to this temporary camp. Specific management plans and procedures developed and implemented subsequently are also valid and applicable.

Key elements of interest would be the management of (1) impacts on grazing activities and especially potential disruption of traditional activities occurring within and around the temporary camp as well as noise/dust impacts in adjacent areas, and (2) the potential nuisances to livestock (grazing activities) during construction.

**Photos:**

**WPS050:** Sheep droppings are widely present throughout the plateau where the prospective camp is envisaged.

**WPS050:** General view of the alpine grassland plateau with scattered boulders where the temporary camp will be located. (view E).
### Cultural Heritage Findings Summary Datasheet

<table>
<thead>
<tr>
<th>Project:</th>
<th>TAP Re-routes 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Feature Investigated:</td>
<td>Trepollar Re-route</td>
</tr>
<tr>
<td></td>
<td>Approx. length: 11.2 km</td>
</tr>
<tr>
<td>Specialist:</td>
<td>Iris Pojani</td>
</tr>
<tr>
<td>Date:</td>
<td>07/10/2016</td>
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<tr>
<td></td>
<td>08/12/2016</td>
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<tr>
<td></td>
<td>09/12/2016</td>
</tr>
<tr>
<td>Archaeological Site:</td>
<td>No archaeological sites were identified along the pipeline re-route.</td>
</tr>
<tr>
<td>Observations:</td>
<td>No archaeological finds were identified on the surface, even in those parts of surveyed territory with good visibility. Due to the high elevation and rugged terrain, modern activities in the area are limited to seasonal occupations by pastoralists and their herds of livestock. This low intensity, seasonal use of the area was likely also practiced by historic and prehistoric populations. A number of cultural heritage resources were identified, suggesting additional surface and subsurface resources may be present.</td>
</tr>
<tr>
<td>Monuments:</td>
<td>Several cultural heritage resources were identified during the survey of the Trepollar Re-route:</td>
</tr>
<tr>
<td></td>
<td>- Territorial markers</td>
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<tr>
<td></td>
<td>- Shepherd installation (shack)</td>
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<tr>
<td></td>
<td>- Station for shepherds in a flat area with stone slates.</td>
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<tr>
<td></td>
<td>- Water storage system</td>
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<tr>
<td></td>
<td>- Water fountain/springs providing water</td>
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<tr>
<td></td>
<td>- Flat areas with stone slates.</td>
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<tr>
<td>Observations:</td>
<td>The stacked stone territorial markers play an important social, economic, and cultural role in the local pastoral communities. Their presence, use, and maintenance are part of and contribute to the maintenance of traditional pastoral lifeway in the area. In addition, the construction of these markers also represents a traditional cultural practice that requires preservation.</td>
</tr>
<tr>
<td></td>
<td>A water storage and water fountain, hydric works made by the locals were found in the vicinity of the re-route.</td>
</tr>
<tr>
<td></td>
<td>The shepherd ruins are interpreted as <em>stanes</em>, and are the material remains of the pastoral corrals and represent the remains of pastoral activities in the area. These sites represent a record of the traditional, pastoralist lifeway</td>
</tr>
</tbody>
</table>
The flat areas with stone slates are used by shepherds to provide salt to the livestock.

**Sites with Intangible Cultural Value:**

All cultural heritage assets listed above have significant historical and intangible cultural values.

**Observations:**

The *stane* ruins found in the area are a physical manifestation of traditional pastoralist lifeway common in the area. Many aspects of this traditional lifeway, such as traditional technologies/knowledge such as milk processing and storing, knowledge and practices of animal husbandry and flock management, are important aspects of traditional culture in the area and represent important intangible cultural heritage.

**Areas with High Archaeological Potential (AHAP):**

The areas around the following resources have been determined to be AHAP:

- Territorial markers.
- Shepherd installation (shack).
- Water storage system.
- Water fountain/springs providing water.
- Flat areas with stone slates.

**Observations:**

A number of cultural heritage resources associated with modern and/or historic pastoralists were identified along the re-route. The areas immediately around these resources have a high potential to contain subsurface, archaeological features associated with the pastoralists that constructed the visible cultural heritage resources.

**Conclusions and key aspects:**

The temporary pastoral structures identified during the survey are consistent with the types of cultural heritage resources identified in the ESIA (2013). The age of the *stane* ruins could not be determined but they likely represent modern or possibly historic structures. These structures and their ruins appear to be relatively common in the region and would qualify as replicable cultural heritage under international standards. Due to their association to traditional pastoralist lifeway, common in the area, they should be protected whenever possible to minimize impacts to the historical landscape, which is an essential part of the cultural heritage in this area.

A number of the cultural heritage mitigation measures presented in the ESIA (2013) should be implemented along the proposed re-route:

- If technically and economically feasible, the *stane* ruins and similar features should be avoided.
- If avoided, the ruins should be clearly marked for avoidance.
- If they cannot be avoided they should be documented and removed using the best
available technique and in consultation with local stakeholders.

As per the standard procedures and ESIA (2013) particular care should be taken during the construction phase, where continuous monitoring will be required. Should potential cultural heritage resources be identified the stop work protocols in the Chance Finds Procedure will be followed.

Photos:

**WPC013:** Skeleton of provisional shepherd’s hut located approx. 35 m NE of the proposed re-route. View SE

**WPC015:** Water storage system located 140 m E of the proposed re-route.

**WPC016:** Fenced area for livestock located about 246 m W of the proposed re-route.

**WPC017:** Stone located near the fountain, detail, modern graffiti/inscription on the stone.
WPC017: Fountain made of local stones located approx. 280 m W of the proposed re-route.

WPC020: Stone structures built by shepherds located approx. 79 m E of the re-route and 1600 m NW of the centreline.

WPC025: Territory marker located approx. 3 m W from the re-route.

WPC027: Station for shepherds located 2 m S of the re-route: flat area with stone slates for resting and providing salt to livestock.
WPC032: Territory marker found along the crest toward the Potom pass approx. 18 m from the re-route. (view SW)

WPC033: Territory marker found near the Potom pass approx. 10 m from the re-route.
**Cultural Heritage Findings Summary Datasheet**

<table>
<thead>
<tr>
<th>Project:</th>
<th>TAP Re-routes 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Feature Investigated:</strong></td>
<td>Access Track</td>
</tr>
<tr>
<td>Approx. length: 3.9 km</td>
<td></td>
</tr>
<tr>
<td>Complementary access track features include:</td>
<td></td>
</tr>
<tr>
<td>• Spoil stockpile areas (1 and 2): 1.23 ha (combined)</td>
<td></td>
</tr>
<tr>
<td>• Telepheric working area: 0.25 ha</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialist:</th>
<th>Iris Pojani</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>13/04/2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Archaeological Site:</th>
<th>No archaeological sites were identified along the access track and other complementary features</th>
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</thead>
<tbody>
<tr>
<td>Observations:</td>
<td>No archaeological finds were identified on the surface, even in those parts of surveyed territory with good visibility. Modern activities consist mostly in pastoral activities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monuments:</th>
<th>Several monuments were found along the Access Track:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Martha’s Pass (Qafa e Martës) Memorial Monument and Graves. (WPC03550)</td>
<td></td>
</tr>
<tr>
<td>• Memorial to Fatmir Xhezo who died from lightning strike. (WPC03651)</td>
<td></td>
</tr>
<tr>
<td>• Bektashi Monumental Grave and shrine, built in 1941, restored in 2007. (WPC038)</td>
<td></td>
</tr>
<tr>
<td>• Territory marker (WPC044)</td>
<td></td>
</tr>
<tr>
<td>• Seasonal livestock corrals (WPC039, 040, 042, 045, 046)</td>
<td></td>
</tr>
<tr>
<td>Observations:</td>
<td>The Martha’s Pass (Qafa e Martës) Memorial Monument (WPC050) and its associated graves are dedicated to individuals who died during the armed conflict between Albanian and Greek fighters following Albanian Independence in 1912. This historical period has great local and national significance. Gravestones in the cemetery indicate the deceased died in September 1913. The resource was identified during previous TAP cultural heritage baseline studies in July 2014. Due to its national significance the monument and graves meet the IFC PS 8 criteria for non-replicable cultural heritage and the resource has previously been determined to be a cultural heritage resource of high importance.</td>
</tr>
<tr>
<td>The Memorial of Fatmir Xhezo (WPC03651) is a small stone obelisk dedicated to a young individual who was killed by lightning strike. Similar types of memorials are typically found along Albanian national roads, commemorating</td>
<td></td>
</tr>
</tbody>
</table>
people who died in traffic accidents.

The Bektashi Monumental Grave (qivur) at WPC038 was initially identified during a previous TAP cultural heritage baseline survey in July 2014. The Bektashi Order is a dervish (Sufi Islam) order found throughout Anatolia and the Balkans and played an important historical role in the spread of Islam in Albania. The monument is important for both its architecture and its religious significance to the local and regional population; and its association with a nationally important and historically significant religious group. The monument was previously determined to be a cultural heritage resource of moderate importance.

A dry, stacked stone territorial marker was identified in spoil stockpile area 1. Territorial markers are a common feature in the area. They are typically used to mark pasture areas between communities and serve as important economic, territorial, and potentially social and cultural markers among the pastoral communities of the area.

The livestock corrals are seasonal stations built by local pastoralist and are very common in the area. The corrals at WPC046, WPC045, WPC042, and WPC039 are located within the proposed access track or stockpile area footprints. Construction of these project components may permanently impact these components of the local, pastoralist, living cultural tradition.

**Sites with Intangible Cultural Value:**
- Martha’s Pass (Qafa e Martës) Memorial Monument and Graves. (WPC035; CH-562)
- Memorial of Fatmir Xhezo died from lightning strike. (WPC036)
- Bektashi Monumental Grave and shrine, built in 1941, restored in 2007. (WPC038)

**Observations:**
See descriptions in preceding section.
Areas with High Archaeological Potential (AHAP):

There are no areas with high archaeological potential along the Access Track or complementary features.

Observations:

The Access Track passes through a rugged area at high elevation. Due to the high elevation and rugged terrain, modern activities in the area are limited to temporary, seasonal occupations by pastoralists and their herds of animals.

This low intensity, seasonal use of the area was likely also practiced by historic and prehistoric populations, resulting in a low potential for the presence of significant archaeological resources.

Conclusions and key aspects:

Several cultural heritage resources were identified during the Access Track field survey:

- The Martha’s Pass (Qafa e Martës) Memorial Monument and the graves;
- The Bektashi monumental grave and the shrine;
- Memorial of Fatmir Xhezo;
- Territorial marker; and
- Livestock corrals.

These findings are consistent with the types of cultural heritage resources identified in the TAP Albania ESIA (2013). A number of the cultural heritage mitigation measures presented in the TAP Albania ESIA (2013) should be implemented along the proposed pipeline route:

- The Martha’s Pass (Qafa e Martës) Memorial Monument and cemetery, Bektashi monumental grave and the shrine, and Memorial of Fatmir Xhezo should be avoided. These resources should be clearly marked with high visibility flagging or fencing during construction and use of the access road to avoid any accidental impacts;
- Impacts to the historical landscape, which is an essential part of the historical memory at Qafa e Martës, should be avoided, minimized and particular care should be taken during post-construction reinstatement in the area.
- Due to their proximity to the access road corridor the Qafa e Martës Memorial Monument and cemetery, Bektashi monumental grave and the shrine, and Memorial of Fatmir Xhezo will require vibration and pollution monitoring during construction and operation activities in the area. Particular attention should be paid to potential vibration and pollution impacts caused by repeated vehicular traffic during use of the access road;
- Local stakeholders should be engaged to determine if the Qafa e Martës Memorial Monument and cemetery, Bektashi monumental grave and the shrine, and Memorial of
Fatmir Xhezo are still used or visited by the local, regional, and/or national population. If the sites are visited or used, construction activities will be scheduled to avoid restricting user access to the resources or impacting the resource setting/ambiance during significant events.

- The territorial markers and livestock corrals should be avoided if possible. If the territorial marker and livestock corrals cannot be avoided the Project will engage local stakeholders to determine appropriate compensation and/or to temporarily or permanently relocate these resources. The relocation of these resources will need to be determined in consultation with local stakeholders to ensure they do not lose significant social, economic, or cultural value.

As per the standard cultural heritage management procedures outlined in the TAP Albania ESIA (2013) archaeological and/or chance finds monitoring should be conducted during all construction activities. Should any potential cultural heritage resources be identified the stop work protocols in the Project Chance Finds Procedure should be followed.

**Photos:**

WPC035: Qafa e Martës memorial monument (view SE)

WPC037: Fatmir Xhezo memorial, died by lightning strike (view N)
WPC035: Graves associated with Qafa e Martes Memorial (view NE)

WPC038: General views of the location of the Bektashi grave and shrine, built in 1941 and restored in 2007. (view NW).

WPC 42: Livestock corral (view NW)

WPC044: Territory marker (view NW).
WPC047: Telepheric working site (view NW)
# Cultural Heritage Findings Summary Datasheet

**Project:**
TAP Re-routes 2017

**Project Feature Investigated:**
Temporary camp
Approx. area: 1.0 ha

**Specialist:**
Iris Pojani

**Date:**
13/04/2017

**Archaeological Site:**
No archaeological sites were identified within the temporary camp footprint.

**Observations:**
No archaeological finds were identified on the surface, even in those parts of surveyed territory with good surface visibility.

**Monuments:**
No monuments

**Observations:**
NA

**Sites with Intangible Cultural Value:**
No sites with Intangible Cultural Value

**Observations:**
NA

**Areas with High Archaeological Potential (AHAP):**
No AHAP were identified during the survey.

**Observations:**
NA

**Conclusions and key aspects:**
As per the standard cultural heritage management procedures outlined in the TAP Albania ESIA (2013) archaeological and/or chance finds monitoring should be conducted during all construction activities. Should any potential cultural heritage resources be identified the stop work protocols in the Project Chance Finds Procedure should be followed.

**Photos:**

![General view of temporary camp](WPC034.png)
WPC034: General view of temporary camp area (view E)

area (view NW)
Annex 2

BASELINE FEATURE MAPS
11.2
8.2
8.3
8.4
8.5
8.6
8.7
8.8
8.9
9
9.1
9.2
9.3
9.4
9.5
9.6
9.7
9.8
9.9
10
10.1
10.2
10.3
10.4
10.5
10.6
10.7
10.8
10.9
11
11.1
11.2

**NOTES:**

**SCALE:** 1:8,750

**DOCUMENT Nº:** REV: PAGE:

- **REV:**
- **DATE**
- **PURPOSE OF ISSUE**

**TOTAL**

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**TERPOLLAR RE-ROUTE**

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**TERPOLAR RE-ROUTE**

- **PM:**
- **CONTROL:**
- **DRAWN BY:**
- **CHECKED BY:**
- **APPROVED BY:**

---

**TAP Albania ESIA Addendum – May 2017**

Preliminary Environmental and Social Impact Assessment (PESIA): Terpollar Re-route

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**ERM ERM Spiecapag**

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**PMC CCFB 28.04.2017 ISSUE FOR REVIEW**

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**DMO DMO**

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**A 07.04.2017 ISSUE FOR REVIEW**

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**AL00-C10766-641-X-TAP-0004_0_IFC_20170616_EN_01**
Annex 3

Trepollar Re-route Field Notes
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<th>Survey #</th>
<th>Sample</th>
<th>Waypoint Code</th>
<th>Project Component</th>
<th>Coordinates</th>
<th>Species</th>
<th>Habitats</th>
<th>Other Remarks on Fauna</th>
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<td>WPE024</td>
<td>4452410</td>
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<td>bear and wolf habitat, but no signs observed</td>
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<td>Trepollar Re-route</td>
<td>4449520</td>
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<td>Microtus sp., Vulpes vulpes, Talpa caeca (mole hills)</td>
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<td>Microtus sp., Vulpes vulpes, Talpa caeca (mole hills)</td>
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<td>WPE027</td>
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<td>Trepollar Re-route</td>
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<td>grassland. Mountain hay meadow</td>
<td>Juniperus communis, Rosa canina</td>
<td>bear and wolf habitat, presence of bear confirmed</td>
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<td>3A ENV</td>
<td>WPE028</td>
<td>4450927</td>
<td>Trepollar Re-route</td>
<td>4449970</td>
<td>stream/creek, and Beech forest (coppice) and grassland on both sides. Potential breeding and feeding site for Amphibians</td>
<td>Aquila chrysaetos flying over the cliffs</td>
<td>bear and wolf habitat, presence of bear confirmed</td>
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<td>Fagus sylvatica</td>
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<td>Fagus sylvatica</td>
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<td>Fagus sylvatica</td>
<td>bear and wolf habitat, presence of bear confirmed</td>
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<td>Fagus sylvatica</td>
<td>bear and wolf habitat, presence of bear confirmed</td>
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<tr>
<td>Way Point Code</td>
<td>Note</td>
<td>Project Component</td>
<td>Observation / Remarks</td>
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<td>DA ENV APE039</td>
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<td>4468053 'Beach forest (coppice) on north-facing slopes and open heath vegetation on south-facing slopes. Planned with Phus nigra to stabilize the land against erosion and landslides.'</td>
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<td>DA ENV APE040</td>
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<td>Trepollar Re-route</td>
<td>4468049 Degradation stage of beach forest, due to overgrazing, in both sides of the mountain ridge.</td>
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<td>DA ENV APE041</td>
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<td>4468039 Degradation stage of beach forest (coppice), on steep slopes prone to erosion, with oak and Juniperus communis.</td>
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<td>4468009 Degradation stage of beach forest (coppice), with Juniperus communis as understorey.</td>
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<td>DA ENV APE046</td>
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<td>4467989 Degradation stage of beach forest (coppice), heavy degradation.</td>
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<td>4467979 Degradation stage of beach forest (coppice), heavy degradation.</td>
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<tr>
<td>SC ENV APE048</td>
<td></td>
<td>Small Temporary Camp</td>
<td>4467869 Juniperus communis forest; Abies sp. (male trees), Viburnum vulpes (scats).</td>
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<tr>
<td>SC ENV APE049</td>
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<td>Small Temporary Camp</td>
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<tr>
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<td>Small Temporary Camp</td>
<td>4467849 Juniperus communis forest; Abies sp. (male trees), Viburnum vulpes (scats).</td>
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<td>4467839 Juniperus communis forest; Abies sp. (male trees), Viburnum vulpes (scats).</td>
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<td>4487911</td>
<td>Grassland: Mountain hay meadow 0520 Mountain hay meadows</td>
<td>Juniperus communis; Talpa caeca (mole hills); Microtus sp., Vulpes vulpes (scats); Buteo buteo flying over</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE053</td>
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<td>4487922</td>
<td>Mountain creek on Grassland; Mountain hay meadow 0520 Mountain hay meadows</td>
<td>Microtus sp., Vulpes vulpes (scats)</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<td>Grassland: Mountain hay meadow 0520 Mountain hay meadows</td>
<td>Wild bear (S. arctos) tracks on snow</td>
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<td>13.04.2017</td>
<td>Temporary Access track 0303</td>
<td>4450230</td>
<td>4487442</td>
<td>Grassland: Mountain hay meadow; Juniperus communis name; P. sylvatica (scattered trees); Talpa caeca; Microtus sp., Vulpes vulpes (scats); Buteo buteo flying over</td>
<td>important breeding ground for toads and bugs</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE056</td>
<td>13.04.2017</td>
<td>Temporary Access track 0305, 0315</td>
<td>4449070</td>
<td>4487726</td>
<td>Grassland: Mountain hay meadow and calcareous areas 0520 Mountain hay meadows and 8120 Calcareaeous areas</td>
<td>Juniperus communis; L. europaeus (droppings)</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE057</td>
<td>13.04.2017</td>
<td>Temporary Access track 0318, 0321</td>
<td>4449011</td>
<td>4487946</td>
<td>Small patch of beech forest with Juniperus communis name as understorey 0910 Luzulo-Fagetum beech forests</td>
<td>P. sylvatica, J. communis name; Minuca sp., Triche sp</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE058</td>
<td>13.04.2017</td>
<td>Temporary Access track 0323</td>
<td>4449720</td>
<td>4488138</td>
<td>Calcareaeous areas surrounded by patches of Mountain hay meadow 0520 Calcareaeaus areas and 0520 Mountain hay meadows</td>
<td>Juniperus communis; Talpa caeca; Microtus sp., Vulpes vulpes (scats)</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE059</td>
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<td>Temporary Access track 0328, 0330</td>
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<td>4489233</td>
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<td>L. europaeus (droppings)</td>
<td>bear and wolf habitat, but no presence signs observed</td>
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<tr>
<td>3C ENV WPE060</td>
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<td>4488160</td>
<td>Grassland: Mountain hay meadow and calcareaeous areas 0520 Mountain hay meadows and 8120 Calcareaeaus areas</td>
<td>L. europaeus (droppings)</td>
<td>bear and wolf habitat, but no presence signs observed</td>
</tr>
</tbody>
</table>

TAP Albania ESIA Addendum - April 2017 Preliminary Environmental and Social Impact Assessment (PESIA)
Trepollar Reroute
Annex 3 - Field Survey Notes
Environmental (ENV) Field Survey Notes

Date

Observations / Remarks

Habitat EU- Habitats Species Other Remarks on Fauna
Survey # | Discipline | Way Point | Coordinates | Observations / Remarks
--- | --- | --- | --- | ---
Trepollar Re-route | Trepollar Re-route | 226 | 4451304 4445854 | Reference WP for aerial photos; general view of the proposed alignment (RR-003b) on the Western portion of the area of study (RR-003b) on the Western portion of the area of study.
Trepollar Re-route | Trepollar Re-route | 200 | 4452400 4446215 | Alpine terraces are widespread along the sides of the pass. The site is located on the left side of the proposed alignment (RR-003b) on the Western portion of the area of study.
Trepollar Re-route | Trepollar Re-route | 365 | 4446667 4448631 | Reference WP for aerial photos; general view of the complete section including the 2 alternative re-routes (RR-003b). (view N).
Trepollar Re-route | Trepollar Re-route | 352, 353, 355 | 4447147 4446428 | Site located few meters to the west of the centerline where evidences of logging and grazing were found. The site also included a small water collection system for livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 311 | 4446258 4446173 | Location along the descent toward the mountain pass between Potom and Krastë. Here the bare soils occupy a relevant surface area and are extensively used by livestock (sheep/goat).
Trepollar Re-route | Trepollar Re-route | 334 | 4448237 4446549 | Grasslands located along the alignment. Evidences of grazing activities, including some large flocks of sheep wool, traces and droppings.
Trepollar Re-route | Trepollar Re-route | 313 | 4447429 4441252 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Trepollar Re-route | Trepollar Re-route | 319 | 4446920 4446176 | Site with isolation of several rock ridges on the ground line we used by shepherd to provide salt to the livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 319 | 4446920 4446176 | Site with isolation of several rock ridges on the ground line we used by shepherd to provide salt to the livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 319 | 4448953 4446309 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Trepollar Re-route | Trepollar Re-route | 314 | 4448161 4446752 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Trepollar Re-route | Trepollar Re-route | 329 | 4449592 4446480 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Trepollar Re-route | Trepollar Re-route | 325 | 4448719 4446542 | Site located few meters to the east of the centerline where evidences of logging and grazing were found. The site also included a small water collection system for livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 321 | 4447429 4446542 | Site located few meters to the east of the centerline where evidences of logging and grazing were found. The site also included a small water collection system for livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 328, 329, 330 | 4447117 4446428 | Site located few meters to the west of the centerline where evidences of logging and grazing were found. The site also included a small water collection system for livestock (RR-003b).
Trepollar Re-route | Trepollar Re-route | 320 | 4447404 4446540 | Site with evidences of past logging activities (abundance of small branches and woody debris).
Trepollar Re-route | Trepollar Re-route | 314 | 4448583 4446568 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Trepollar Re-route | Trepollar Re-route | 317 | 4448158 4446304 | Site with a good view of the beech forest crossed by the alignment. The site was possibly part of the past arable lands in the past.
Temporary Access Track | Temporary Access Track | 260, 261, 262, 263, 264 | 4452099 4446812 | Photos of initial prospective Temporary camp area (N, E, S and W). Temporary camp is to be located within a clearing characterized by alpine grasslands. Area is currently used for livestock grazing activities (sheep/goat). Photos 264 shows sheep/goat droppings which are commonplace throughout the area.
<table>
<thead>
<tr>
<th>Way Point Code</th>
<th>Date</th>
<th>Project Component</th>
<th>Notes</th>
<th>Observations / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>286, 287</td>
<td>Photo of second option for Temporary camp, showing much flatter topography than the initial option with Alpine grasslands and scattered boulders. Panoramic view of Martha’s Pass where the start of the Access Track is envisaged within Alpine grasslands. Presence of sheep for and droppings, the latter being commonplace in the area.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>238</td>
<td>Small cemetery dating back to World War 1. Only two tombs are visible.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>292</td>
<td>Path where the Access track starts from the ROW, within Alpine grassland</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>293</td>
<td>Turn of Access track towards the West, within Alpine grassland</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>294</td>
<td>Downhill photograph of High mountain creek dissecting among Alpine grassland</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>295</td>
<td>Access track largely follows existing sheep/goat herding tracks located within Alpine grassland with high density of stones.</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>296, 297</td>
<td>Access track following livestock herding tracks; Access track following livestock herding tracks (top track).</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>298, 299, 300</td>
<td>Small shrine used by the locals (recent construction) in the vicinity of a livestock rearing area.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>299</td>
<td>Livestock pen within Alpine grassland area with high density of stones from nearby screes.</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>300</td>
<td>Livestock rearing complex showing pens and huts.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>301</td>
<td>Livestock herder shack.</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>302</td>
<td>High mountain creek in Alpine grassland area showing high density of boulders</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>303</td>
<td>Old livestock pen remains. Photo of mountain top showing callyst rock and Alpine grasslands.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>304</td>
<td>Callyst rock and livestock rearing area with pens and huts. Valley of Trepollar with town at the bottom of the valley.</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>305</td>
<td>Livestock rearing area within Alpine grasslands, by the edge of Callyst rock.</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>306</td>
<td>Photo of mountain top showing callyst rock and Alpine grasslands, showing presence of scattered young Beech trees (coppice)</td>
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<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>307</td>
<td>Lot area used as sheep resting site (evidence of droppings and grazing), with a small patch of Beech forest area (as coppice) and large rocks.</td>
</tr>
<tr>
<td>3C</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>308</td>
<td>Lot area used as sheep resting site (evidences of droppings and grazing), with a small patch of Beech forest area (as coppice) and large rocks.</td>
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<tr>
<td>Way Point Code</td>
<td>Date</td>
<td>Project Component</td>
<td>Note:</td>
<td>Observations / Remarks</td>
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<tr>
<td>WP5072</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>220</td>
<td>Territory marker in flat area, surrounded by small patches of beech forest (as coppice)</td>
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<tr>
<td>WP5073</td>
<td>13/04/2017</td>
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<td>241</td>
<td>Livestock herder shack</td>
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<tr>
<td>WP5074</td>
<td>13/04/2017</td>
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<td>223</td>
<td>Livestock rearing area within Alpine grasslands, by the edge of Calchyst screes</td>
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<td>WP5075</td>
<td>13/04/2017</td>
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<td>224</td>
<td>Photo of Trepollar valley, within livestock rearing area, characterized by Alpine grassland with high density of rocks from nearby screes.</td>
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<tr>
<td>WP5076</td>
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<td>Prospective telepheric site within scree area.</td>
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<tr>
<td>WP5077</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>25L 327</td>
<td>High density of sheep droppings in resting area. Livestock grazing on edges of mountain screes</td>
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<tr>
<td>WP5078</td>
<td>13/04/2017</td>
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<td>228</td>
<td>Intentional vegetation burn markings made by livestock herders.</td>
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<tr>
<td>WP5079</td>
<td>13/04/2017</td>
<td>Temporary Access</td>
<td>229</td>
<td>Photo taken route point toward Trepollar valley showing Alpine grassland and the base of the mountain and its mix with rocky scree areas.</td>
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<tr>
<td>WP5080</td>
<td>13/04/2017</td>
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<td>250</td>
<td>Endpoint of prospective Access track, final sections decline through rocky scree areas.</td>
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<td>Project Component</td>
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<td>Small Temporary Camp</td>
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<td>CH WPC040</td>
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<td>NP- 062/1-3</td>
<td>yes</td>
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</table>

**CH WP numbering is continuous from previous surveys**
Annex 4

LANDSCAPE
LEGEND

- **POINT OF VIEW**
- **TERPOLLAR RE-ROUTE**
- **BASECASE ROUTE (JANUARY 2016)**
- **SETTLEMENTS**