

## 1 TRANSBOUNDARY IMPACTS

As a result of the construction of the border tunnel No. 22 (with a total length of 2.383 m, of which 1,193.70 m belong to the territory of the Republic of Bulgaria, chainage km 87 + 280,00 to km 89 + 560,00) connecting the Republic of Macedonia with the Republic of Bulgaria, and the performance of construction works near the border with the Republic of Bulgaria, environmental impact assessments have taken into account and analyzed for possible environmental impacts that may be caused in the construction and operation phase which can cause transboundary effects.

Construction activities, close to the border, include the construction/reconstruction of a border tunnel with all accompanying elements.

It is envisaged that all raw materials and auxiliary materials will be stored on the Macedonian side. The excavated land, stone and other materials will be disposed on defined landfills on the Macedonian side and all other accompanying activities will take place exclusively on the same site, ie in certain locations in front of the tunnel or in the tunnel itself<sup>1</sup>.

Given the baseline of the location (absence of sensitive receptors), and the type of activities to be performed, it can be concluded that the construction of the railway under normal operating conditions is not expected to cause significant impacts on the environmental media and environmental areas that would cause a transboundary effect, or if, for example, impacts on ambient air quality or impacts caused by increased noise levels do occur, they are likely to be negligible. Both in the construction and in the operational phase, under normal operating conditions, no transboundary impacts are expected on the environmental media.

It is also of particular importance to point out that the performance of the construction and operational activities of the railway line is not expected to cause negative transboundary impacts on protected NATURA 2000 sites on the territory of the Republic of Bulgaria.

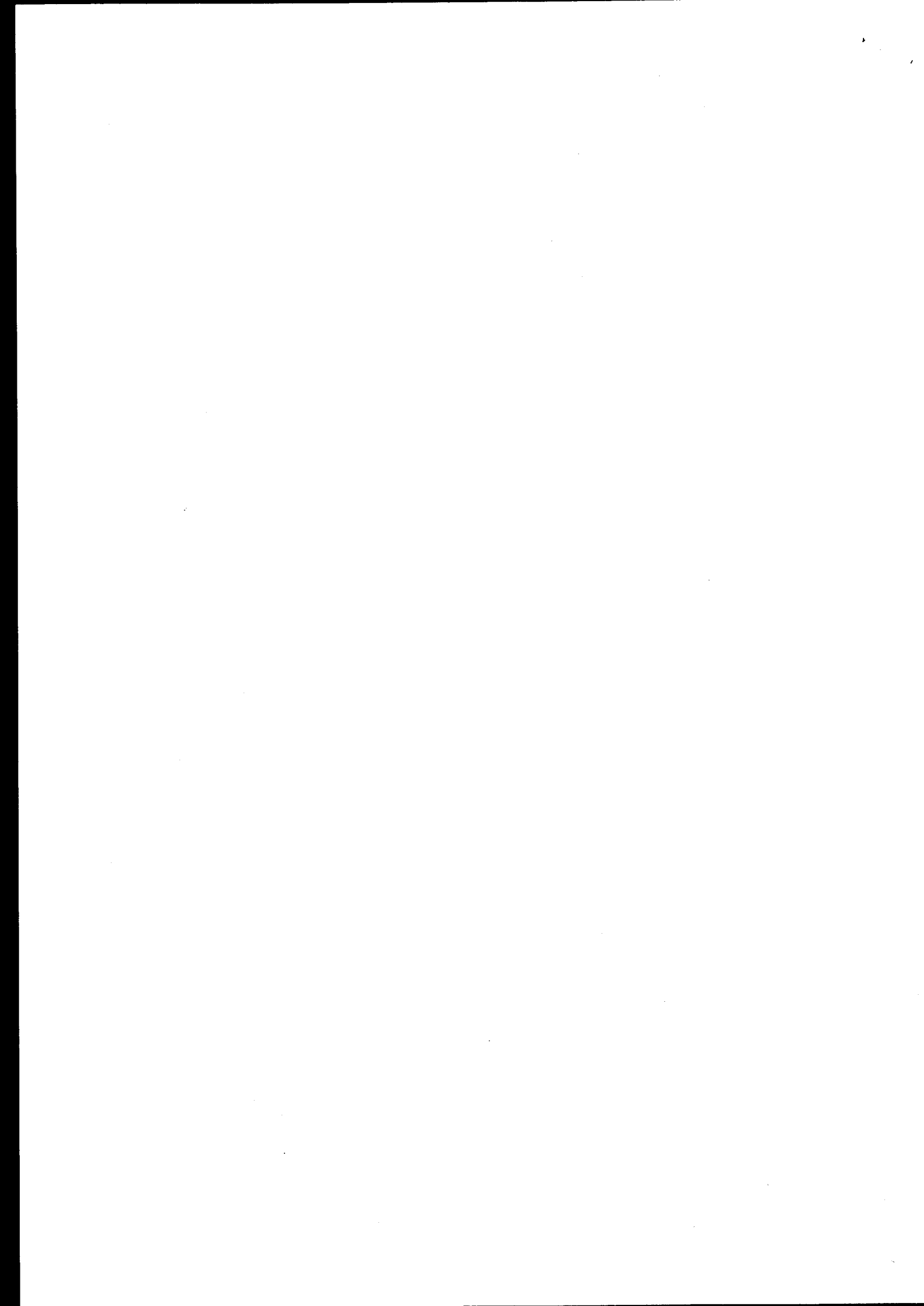
As a result of the construction and operation of the railway, under normal conditions, negative transboundary impacts on the social aspects are not expected, but on the contrary, with the operation of the railroad, the improvement of the transport infrastructure and the connection with the Republic of Bulgaria, the improvement of the transport of people and goods, will have a positive impact and significant contribution to the economic development of both countries.

The transboundary environmental and social impacts and their assessment are shown in the table below.

**Table 1** Overview of transboundary impacts

Environmental media and factors	Assessment of transboundary impacts	Mitigation measures
Geology and geomorphology	No significant impacts are expected, due to the terrain characteristics.	Adhering to the proposed tunneling methodology
Soils	No significant impacts are expected, due to the fact that construction activities, landfilling, storage of materials will be performed at Macedonian territory.	No measures are proposed

<sup>1</sup> On the base of the prepared Waste management programme by the future Contractor and in close communication with the Municipality of Kriva Palanka.



<b>Surface water</b>	No significant impacts are expected, due to the fact that there are no shared watershed areas at the border line between the two countries	No measures are proposed
<b>Groundwater</b>	No significant impacts are expected, due to the identified low permeability of the soil and rocks, and the depth of the groundwater table (more than 100 m).	Adhering to the proposed tunneling methodology, monitoring of the groundwater table and quality using the installed piezometers on the Bulgarian and Macedonian side.
<b>Air quality</b>	No significant impacts are expected.	No measures are proposed
<b>Noise</b>	No significant impacts are expected, due to the distance of settlements and protected areas.	No measures are proposed
<b>Vibrations</b>	No significant impacts are expected, due to the distance of settlements and protected areas.	No measures are proposed
<b>Climate change</b>	No significant impacts are expected.	No measures are proposed
<b>Visual fetures of landscape</b>	No significant impacts are expected, due to the fact that most of the tunnel is already constructed and there are no nearby receptors.	No measures are proposed
<b>Functional characteristics of landscape</b>	No significant impacts are expected, due to the fact that most of the tunnel is already constructed and the tunnels are preferred option regarding the functional aspects of the landscape.	No measures are proposed
<b>Habitats</b>	No significant impacts are expected, due to the fact that most of the tunnel is already constructed and the tunnels are preferred option regarding the protection of the existing habitats in the area.	No measures are proposed
<b>Plant species</b>	No significant impacts are expected.	No measures are proposed
<b>Animal species</b>	No significant impacts are expected.	No measures are proposed
<b>Diatoms and macroinvertebrates</b>	No significant impacts are expected.	No measures are proposed
<b>Protected areas</b>	No significant impacts are expected, due to the fact that the tunnel alignment does not interfere with protected areas, and the distance between the border tunnel and NATURA 2000 sites on the neighboring country (Republic of Bulgaria): <ul style="list-style-type: none"> <li>✓ approx. 1, 90 km from the "Osogovska Planina" site (site code: BG0002079); and</li> <li>✓ approx. 1,50 km from "Karshalevo" (site code: BG0000294)</li> </ul>	No measures are proposed
<b>Forestry</b>	No significant impacts are expected, due to the fact that no deforestation is envisaged during the construction of the border tunnel and operation of the railway	No measures are proposed
<b>Waste</b>	No significant impacts are expected, due to the fact that the waste generated by the construction activities will be deposited on identified locations <sup>2</sup> , far away from the border	No measures are proposed
<b>Social aspects</b>	<b>Assessment of transboundary impacts</b>	<b>Mitigation measures</b>

<sup>2</sup> Some of the locations are already identified, but will be approved by the future Contractor for construction of the railway.

