

Justification of Junfied Geodetic Network for Rail Transport Infrastructure Project Rail Baltica

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SUMMARY

Rail Baltica is a new railway infrastructure project aimed at integrating the Baltic States into the European railway network. Five European Union countries are participating in the project - Poland, Lithuania, Latvia, Estonia and, albeit indirectly, Finland. The project provides both passenger and freight transport with environmentally friendly electricity-powered transport that generates less noise and vibration. Rail Baltica will reach a maximum speed of 249 km/h for passenger transport and 120 km/h for freight transport. The total length of the Rail Baltica track is 870 km.

During the initial research of the project, discrepancies of coordinates and altitudes at the state borders were identified in the situation if the project would be implemented using the existing coordinate and height systems, which are provided separately in each of the Baltic States. As well as the use of different height systems in individual countries for the implementation of one project creates a height mismatch on cross-border sections that reach a mismatch of at least 10-15 cm. This result contributes to the need to introduce a unified geodetic network, which would also benefit the operational phase and further development of Rail Baltica's railway infrastructure. In order to implement the railway infrastructure project, Rail Baltica offers a solution to implement a unified geodetic network for the project implementation, which would support not only the design and construction phase, but also the operation phase and further development of the railway infrastructure.

In the process of development of Rail Baltica unified geodetic network it is proposed to observe the following criteria:

- to ensure the implementation of a unified geodetic network using the World Geodetic System

WGS-84;

- Linking a new geodetic network with the existing National Geodetic Networks;
- Installation of new geodetic markings on the wall and ground and their harmonious connection with the existing geodetic markings in and near the Rail Baltica railway section;
- To use already existing and fortified points of geodetic networks, if such are located at a sufficient distance from railway;
- To envisage the establishment of new points in the territory of the Rail Baltica railway corridor or close to it in order to reduce the risk of affecting the property of private persons and local governments and to encumber them with the protection zones determined by geodetic points.

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