

# The Use of Orthophotomaps to Verify the Network of Agricultural Transport Roads in the Land Consolidation Project

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## SUMMARY

The number of cadastral plots is systematically growing in Poland. Currently, there are about 37.36 million. Over the past 12 years, the number of cadastral parcels has increased by over 3 million. In addition, the fragmentation in south-eastern Poland worsens the condition of the spatial structure. Comprehensive land consolidation works are improving this structure. Unfortunately, land consolidation is not performed on an appropriate scale. Only 18% of the country's territory was consolidated in Poland. In order to increase the number of land consolidations, EU co-financing was introduced - RDP, which allows to finance the consolidation process and land management after consolidation. EUR 2,000/1 ha of merged land was allocated for land management after consolidation. RDP funds are allocated to the agricultural transport routes designed in the integration project or modernized within the integrated area. Each newly separated cadastral parcel must have access to a public road. Therefore, based on the land and building register map (EGIB), we design the network of agricultural transport roads in the consolidation project. The EGIB map of the merged precinct does not always reflect the actual state of land use. Research shows [Balawejder et al. 2018] that there are actually more agricultural transport roads than in the EGIB base.

Therefore, the aim of this research is to use the current orthophotomap to verify the network of agricultural transport roads in the land consolidation project. The orthophotomap available at [www.geoportal.gov.pl](http://www.geoportal.gov.pl) can be used by downloading raster files or via the WMS service. The above data sets are open archives containing image data for the entire territory of Poland, in different spatial resolution and from different dates. The scope of the research covered rural areas in the Podkarpackie Province, where land consolidation was carried out.

Based on the orthophotomap and the EGIB map superimposed on it, the density of the road network

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in the structure (before consolidation) G1 and G2 (after consolidation) was calculated. Based on the density of the road network in the G1 facility and the density of the road network in the G2 facility, the percentage index of the road network density in the W4 merged area was calculated. The following results were obtained. Overall, the density of the agricultural transport road network has increased. Before consolidation, the road network density was 5.13 km/100 ha GR. After consolidation, the road network density was 6.01 km/100 ha GR. On the other hand, the road network index (W4) in the examined objects is + 14.7%.

The use of an orthophotomap to verify the network of agricultural transport roads in the land consolidation project contributed to the achievement of a number of benefits. Agricultural transport routes have been located and designed to secure the access of each cadastral plot to a public road. Thanks to an orthophotomap and a small study in the office (a study of existing and planned roads and a study of plots without access), the time and costs of the study were reduced. There is no longer a need for a field survey of geodesists to assess the actual state of the agricultural transport road network for the land consolidation project, it can be done in the office using the current orthophotomap.

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