UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA
"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES"
05-06 November 2026



STUDY OF THE GEOMETRIC AND URBAN PLANNING CONDITIONS FOR THE LOCATION OF AN INDIVIDUAL DWELLING ON A CADASTRAL PLOT IN GIROC COMMUNE, TIMIȘ COUNTY

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Introduction

Residential development in peri-urban areas requires accurate cadastral information and careful assessment of urban planning regulations. The location of individual dwellings depends on plot geometry, property boundaries, building setbacks, accessibility, and land occupation indicators. This study examines a 521 m² cadastral plot in Giroc Commune, Timiș County, focusing on the geometric and urban planning conditions for constructing a single-family dwelling. The research highlights the importance of integrating cadastral documentation, architectural design, and urban regulations to ensure efficient land use and appropriate residential development. The analysis also emphasizes the importance of verifying building setbacks and land-use indicators to ensure compliance with urban planning requirements. Accurate spatial and numerical assessments contribute to the efficient organization of residential plots and their surrounding infrastructure.

Material and method

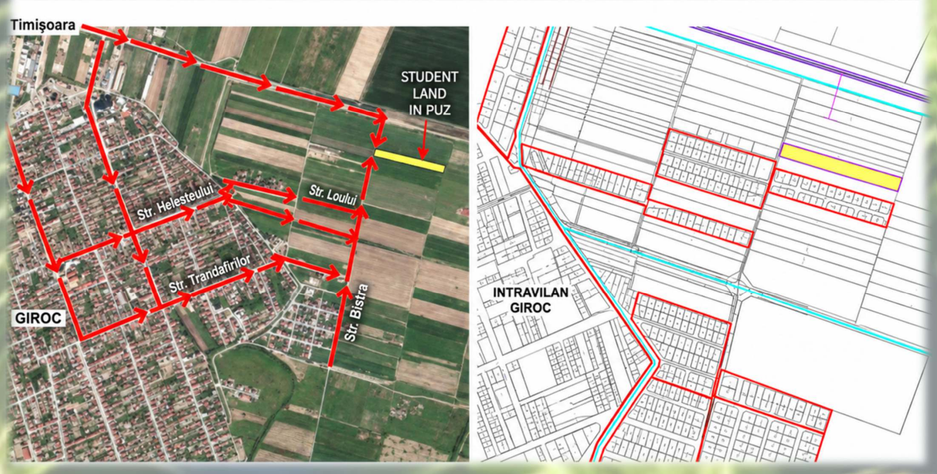
The study is based on the analysis of cadastral documentation, architectural technical records, and urban planning drawings for a 521 m² residential plot in Giroc Commune, Timiș County. The methodology includes the verification of plot geometry, building setbacks, land occupation percentage (POT), land use coefficient (CUT), and the distribution of built and unbuilt areas. A comparative analysis was performed using three urban planning drawings (U01, U03, and U04) from a separate 10,000 m² zonal urban plan (PUZ) to examine the surrounding urban context. Numerical calculations were used to verify the proposed building footprint, green spaces, and surface balance, identifying potential inconsistencies in the technical documentation.

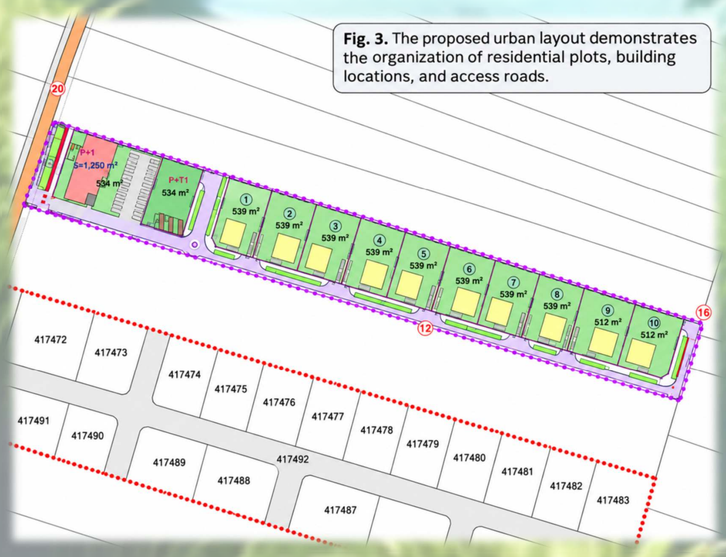
Result and discussions

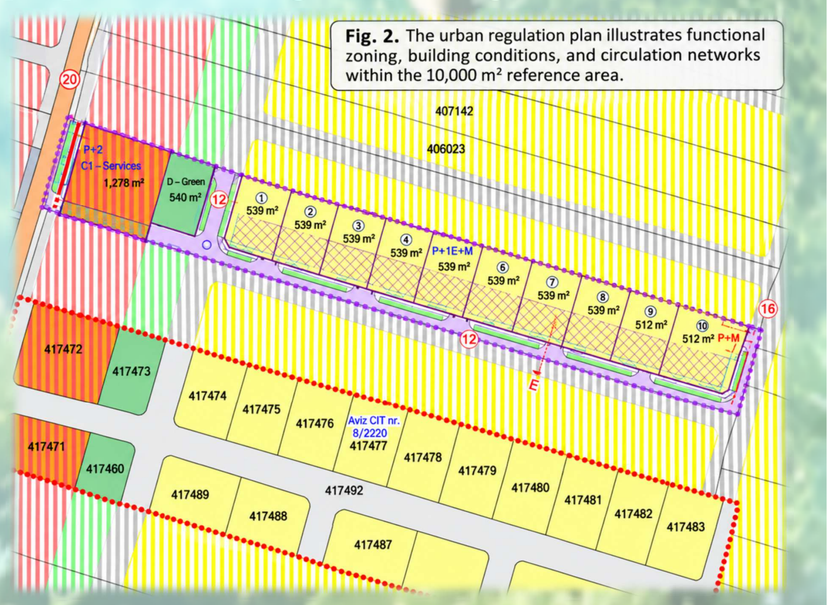
The research is based on cadastral documentation, architectural plans, and technical records for a 521 m² residential plot in Giroc Commune, Timiș County. The methodology includes the analysis of property boundaries, building setbacks, land occupation percentage (POT), land use coefficient (CUT), and the distribution of built and unbuilt areas. Three urban planning drawings (U01, U03, and U04) from a separate 10,000 m² zonal urban plan were examined to assess the urban context. Numerical calculations were performed to verify the proposed building footprint, green spaces, and surface balance, highlighting potential inconsistencies in the technical documentation.

The territorial analysis highlights the urban development context of Giroc Commune and the relationship between residential areas and existing infrastructure (Fig. 1). The urban regulation plan illustrates functional zoning, building conditions, and circulation networks within the 10,000 m² reference area (Fig. 2). The proposed urban layout demonstrates the organization of residential plots, building locations, and access roads (Fig. 3). The three-dimensional architectural representation illustrates the proposed single-family dwelling and its integration into the residential environment (Fig. 4). For the individual 521 m² plot, the proposed building footprint is 153.59 m², corresponding to a land occupation percentage (POT) of 29.47%, below the declared maximum of 35%. Green spaces represent 37.22% of the plot, while the surface balance verification identifies an unallocated difference of 15.25 m² requiring clarification in the technical documentation.

Fig. 1. Territorial analysis highlights the urban development context of Giroc Commune and the relationship between residential areas and existing infrastructure.









Conclusions

The study demonstrates the importance of integrating cadastral information, geometric analysis, and urban planning regulations when evaluating the location of individual dwellings. For the 521 m² plot, the proposed building footprint of 153.59 m² corresponds to a land occupation percentage (POT) of 29.47%, below the declared maximum of 35%. The proposed green spaces represent 37.22% of the plot, while the verification of the surface balance identifies an unallocated difference of 15.25 m² requiring clarification. The analysis highlights the need for accurate area calculations, verification of building setbacks, and consistency between architectural and urban planning documentation to ensure efficient residential land use.

Acknowledgement: This research work was carried out with the support of GEOMATICS RESEARCH LABORATORY infrastructure, https://erris.gov.ro/LABORATOR- CERCETARE GEOMATICA, BIORESOURCES, ENVIRONMENT AND GEOSPATIAL DATA CENTER from BUASMV "King Michael I of Romania" Timisoara - Faculty of Agriculture. BIORESOURCES