

# **Highway route selection using GIS and analytical hierarchy process case study Ramadi Heet rural highway**

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## **Abstract**

An appropriate road network imposes on planners take into account factors such as land use, slope, soil type, hydrology, and agricultural area. Due to various considerations and desires, the planning process is difficult hence there may be confusion in interest in the decision-making process. The use of a geographic information system (GIS) and Multi-Criteria Decision Analysis (MCDA) assist planners in achieving more detailed and desirable results. Thus, reducing the complexity of the planning process and helping various stakeholders for drawing to general conclusion. The study site was chosen on an area between the cities of Ramadi and Heet in Anbar Province, western Iraq, where it suffers from congestion and traffic accidents. This research aims to integrate a set of evaluation criteria using the Analytical Hierarchy Process (AHP) and a spatial multicriteria model to find the optimal path in the study area. In this study, two alternate paths were proposed and compared with the current path to find the best path. Finally, the results indicated that the first alternative is 36% better. This research succeeded in proving that it is possible to decide a rural highway route between two cities using GIS and MCDA.