

MCA & Wayfinder: The geospatial base for linear infrastructure projects.

Nicole Kiely (Australia)

Key words: Spatial planning; Standards

SUMMARY

The placement of new overhead transmission lines or linear infrastructure is a complex and multi-faceted decision that is started before the considerations of geographical context. There are multiple factions that are competing for consideration regarding the placement of infrastructure, with the arguments for and against locations at odds with one another. □□ When faced with projects of this nature, our Geospatial Team approaches this question from an unbiased position and leverages the power of spatial data to better understand the geography in which we are investigating. □□ Geospatial practitioners have access to a wide suite of statewide datasets, and in Victoria, these are captured within a consistent framework. Using this data together can enhance decision making with respect to the placement of linear infrastructure projects, particularly large-scale Projects. These datasets can be powerful inputs into Multi Criteria Analysis (MCA), scoring, measuring, and weighting distinct categories of data against each other, such as: □□ 1. Environmental data. □2. Community data. □3. Land use and Planning. □4. Engineering and constructability data. □5. Cultural Heritage data. □□ This analysis across categories can generate constraint surfaces that can reflect a locations sensitivity to impact, a projects sensitivity to consideration or the feasibility for a project to be constructed in a landscape. □□ Due to the use of geospatial MCAs in the early-stage planning for projects that have since proven contentious in the community, the word MCA can have negative connotations. It is critical that the geospatial industry champions these analysis methods to create a robust evidence base for answering location placement questions. □□ Location placement, when considering projects that span many hundreds of kilometres, is another complex problem that can be simplified using intelligent location data. With access to an MCA cost surface, it is a straightforward step to generate a least cost path, however when considering the complexity and scale of the projects we are facing it's also important to consider the alternatives to the least cost path. □□ Jacobs uses its in-house tool Wayfinder, to assess every possible corridor between a start and end point beyond the least cost path. This

MCA & Wayfinder: The geospatial base for linear infrastructure projects. (13108)
Nicole Kiely (Australia)

FIG Working Week 2025
Collaboration, Innovation and Resilience: Championing a Digital Generation
Brisbane, Australia, 6–10 April 2025

analysis highlights all the possible corridors available when measuring avoiding the high-cost regions against overall cost over distance. The outputs create an easily understandable as well as visual story of winnowing a region to a study area to a corridor for linear infrastructure projects. □□ Jacobs has used this approach to support projects through early planning and design to develop infrastructure both in Australia and globally.

MCA & Wayfinder: The geospatial base for linear infrastructure projects. (13108)
Nicole Kiely (Australia)

FIG Working Week 2025
Collaboration, Innovation and Resilience: Championing a Digital Generation
Brisbane, Australia, 6–10 April 2025