**Category: Best use of technology to improve health, safety and well-being**

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| 1 | **MHA+ member name** |
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|  | Aecom |
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| 2 | **other partners involved in the development of this product/project/nomination** |
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|  | Client - Derbyshire County Council |
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| 3 | **Please provide a brief description of what was done.** |
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|  | AECOM designed a low-cost, custom-made, GIS based, frequency ratio landslide susceptibility model with a high (1m) spatial resolution for Derbyshire County Council using predominantly open-source data. This was so they could better understand which parts of their 'Resilient Routes Network (RRN)' (the roads defined by the council as being most critical for logistics and health and safety) that were most susceptible to landslides. AECOM's model quantifies the spatial relationships between past landslides and a range of potential controlling factors to assess the overall regional landslide susceptibility and therefore allows identification of where potential future landslides are most likely to occur. |
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| 4 | **Please provide a brief overview of what were the benefits of the digital deployment** |
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|  | The model enabled the council to complete a relatively rapid and low cost county-wide assessment of landslide susceptibility on their entire RRN. The high 1m spatial resolution meant that the results could be interpreted for specific road sections. The model can also be readily combined with other hazard data held by the client for future multi-hazard assessments. |
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| 5 | **Please provide a brief overview of why you should win an award** |
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|  | AECOM’s model helps DCC identify high-risk areas of the RRN, so they can proactively target key early-stage interventions. This allows them to improve road user/network safety, reduce delays, and maximizes their funding spend efficiency. The low-cost, innovative solution fully met the client needs, accounts for geological factors, and supports large-scale risk and resilience assessments. |
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| 6 | **Please provide any other information that you feel needs to be included in the submission** |
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|  | Derbyshire County Council (DCC) developed a network hierarchy to rank their roads and highways assets in order to prioritise how they maintain them. This “Resilient Routes Network” identified key roads across the county (based on traffic levels and the presence of suitable diversion routes) to prioritise for mitigation and therefore keeping open during adverse conditions. Due to the county's complex geology and geomorphology, critical road infrastructure across Derbyshire is regularly impacted by landslides, resulting in safety risks to road users and network disruptions. |
|  | In order to address this issue, DCC needed a county-wide understanding of which parts of the network were at the most risk. This traditionally would have required fieldwork-based or computationally-heavy numerical modelling approaches for slope stability assessments which are typically time and/or cost-prohibitive over large spatial scales. As such, AECOM designed an innovative, high resolution, digital, large-scale landslide susceptibility model to meet the Client’s requirements within a limited budget. A collaborative working environment ensured that model iterations were robustly interrogated, allowing the design of innovative, model-improving, geological inputs. |
|  | The Client had no change requests, which was testament to the AECOM teams’ proactive approach and successful early Client engagement to fully agree the technical approach. This ensured that the project was kept within programme and under budget. The team emphasised assessing and communicating model uncertainties which was vital, as the results would be used in future multi-hazard assessments that have implications for wider safety and client resource management. The designed approach can be readily applied to other high landslide hazard regions, providing a crucial component for large-scale risk and resilience assessments. This model also includes innovative inputs that considered the complex interactions between the Bowland Shale Formation and overlying Millstone Grit Group. The designed modelling approach can now be easily applied to other high landslide hazard areas and can combine landslide information with other hazard data to facilitate multi-hazard assessments. |
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