

DEVELOPMENT OF A SCALABLE APPRAISAL TOOL FOR INTERVENTIONS TO IMPROVE TRANSPORT RESILIENCE

ABSTRACT Interventions targeted at improving the resilience of transport systems will almost always have wider impacts which affect the overall utility which society obtains from the existence of these systems. In order to assess which investment option should be chosen to address a specific resilience challenge it is therefore necessary for decision makers to be able to compare the whole life cycle costs of all impacts arising from the different available options.

This paper describes the development of a practical, scalable and transferable online tool which is capable of quantifying these costs, and which is implemented in a user-friendly online interface. The tool is based on the integration of established methods for assessing transport costs, benefits and resilience, which are both consistent and compliant with government requirements for transport investment appraisal in the DfT's Transport Analysis Guidance (TAG) and Transport Business Case assessment processes. It considers all financial costs throughout the project life, monetised impacts of changes in carbon emissions, noise and vibration levels and safety, and changes in direct and indirect damage costs arising from disruptive events linked to climate change. All costs and benefits are discounted over time, and probabilistic approaches are used to handle uncertainty in future conditions.

The online interface for the tool was co-produced with potential end users, to ensure good alignment with stakeholder needs. It has sufficient flexibility to provide either a financial whole life-cycle cost-benefit analysis or a broader social cost-benefit analysis, and allows users to vary key inputs and valuations such as discount rates and carbon prices. It has also been designed in a way that allows it to be easily linked with broader transport risk analysis frameworks and solutions.