

EMBEDDING CLIMATE RESILIENCE INTO THE STRATEGIC ROAD NETWORK'S SOFT ESTATE

ABSTRACT Future proofing National Highways' network is essential to protect the Strategic Road Network from the impacts of a changing climate. A suite of innovative climate research projects is underway by National Highways, notably, an analysis of their 'soft estate' assets including woodland, grassland, shrub and heath and moorland. A Climate Risk Assessment of soft estate assets aims to identify the scale and nature of climate risk, improve long-term ecosystem outcomes and explore how the soft estate helps improve the resilience of downstream assets such as drainage, geotechnics, and carriageways.

A phased methodology is completed, step one, a review of environmental management and climate integration, step two, high-level national assessment of climate hazards to soft estate assets, step three, detailed regional investigations informed by stakeholder engagement and geospatial analysis. Climate risk scoring is undertaken through a structured framework based on exposure, sensitivity, and consequence, aligned with Department for Transport guidance.

While the significance of resilience and climate change adaptation is well understood, practical cause-effect-relationships among receptors is an area of high uncertainty. Impact chains have been identified to evaluate the significance of the soft estate on downstream receptors at asset, connection and network levels.

Ensuring a resilient soft estate requires a move from a reactive response to proactive planning, which is only possible when climate risks are understood and innovative climate resilience solutions are explored.

The study outlines the need for the integration of climate thresholds and biodiversity goals, ensuring a systems approach; recognising the soft estate's role in delivering wider value, such as habitat connectivity and carbon sequestration—while supporting safe, reliable and sustainable transport. By exploring ways to embed adaptation into the soft estate's design, operation, and renewal, this work lays the foundation for a future proofed soft estate and Strategic Road Network.