

ROAD MAINTENANCE PRIORITISATION UNDER CONSTRAINED FINANCE AND CLIMATE NEUTRALITY: “MAKING FRIENDS AND INFLUENCING PEOPLE”

ABSTRACT Whole-life-cost and -carbon minimisation are familiar concepts within the highway sector. Ultimately, resilient networks are in good condition throughout. However, in Great Britain, severe budget constraints-particularly across local roads, which account for 97% of the network-mean that maintenance practices often diverge from these ideals. Reactive maintenance dominates due to the poor and deteriorating state of assets, a necessity for safety but one that delivers poor value for money and high carbon emissions, as it adds no life to the asset. The hurdle is not to make the whole-life cost (or carbon) case for better asset management (that has clearly failed to win out), but to appeal to the realpolitik and target the metrics that directly influence decision-makers.

The paper reimagines carbon accounting, cost and asset degradation forecasting to produce simplified metrics directly relevant to key decision-makers. These include: forecasting defects (relevant to elected representatives), local authority capital and revenue spend streams (relevant to local authority leaders), whole-life carbon and cost (relevant to amongst others, Government).

We present a what-if tool to test various scenarios and have piloted the tool with various local highway authorities. Applied to England as a whole, results show that approaches aligned with whole-life principles deliver the greatest gain in metrics valued by stakeholders - particularly reductions in defects and revenue spending (for local stakeholders). For example, if the current strategy (delivering only 60% of the maintenance needed to halt deterioration) persists for 10 years, defects will rise by 30% by 2033/34 compared to 2023/24, increasing carbon emissions and financial pressure. Conversely, adopting a steady-state maintenance strategy-sufficient to halt deterioration-prevents this escalation and represents significantly more favourable whole-life cost and carbon outcomes.

By articulating the performance of local roads through these metrics, the case for investment in their condition and resilience can become more persuasive.