

# Considering the economic significance of the strategic road network

This report was commissioned by Highways England to inform the emerging Strategic Economic Growth Plan (SEGP) and better understand the relationship between economic growth and the strategic road network. This report does not inform or relate to planning matters or investment decisions.

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Considering the economic significance of the strategic road network

## Contents

|              |     |
|--------------|-----|
| Introduction | p.4 |
| The task     | p.4 |
| Key findings | p.5 |
| Conclusion   | p.7 |

## Introduction

- 1.1 The report summarises work undertaken as part of the wider evidence base, led by Atkins, to assist Highways England in producing its first Strategic Economic Growth Plan (SEGP). This element was led by Volterra and considered how an economic value of the Strategic Road Network (SRN) might be established and how this could support future investment decision-making.
- 1.2 The report is structured as follows:
  - Section 2 sets out the work that was undertaken;
  - Section 3 presents key findings; and
  - Section 4 describes how Highways England is looking to use the findings from the work.

## The task

- 2.1 The SRN is vitally important to the economy of England and the rest of the UK. It enables people to get to work, make business trips and travel for tourism and other leisure purposes.
- 2.2 Despite its clear economic importance, a value related to the SRN's economic role has never been placed on the SRN before, albeit the Highways Agency's accounts for 2014 suggested that it would cost £111bn to physically replace the infrastructure of the SRN.
- 2.3 Being able to place such a value on the SRN was considered useful for Highways England to understand and consider, especially in the context of the SEGP. This was because it might provide information about where the returns on investment are likely to be highest and lowest, and hence help to inform where investment would be best targeted. And thereon it could form part of the appraisal framework for Highways England and others when making future investment decisions.
- 2.4 Volterra were tasked with a "think-piece" that would consider how a number might be assigned to the SRN as a whole, or parts of the SRN, that would give a good representation of the SRN's economic role, and whether this methodology could be used to develop a framework for improving investment decision-making by enabling Highways England to better understand how to focus on schemes that will maximise economic value to the UK.

## Key findings

- 3.1 In considering how a number might be assigned to the SRN as whole three different approaches were considered that could be used to value the SRN:

Table 1: Ways of valuing the SRN

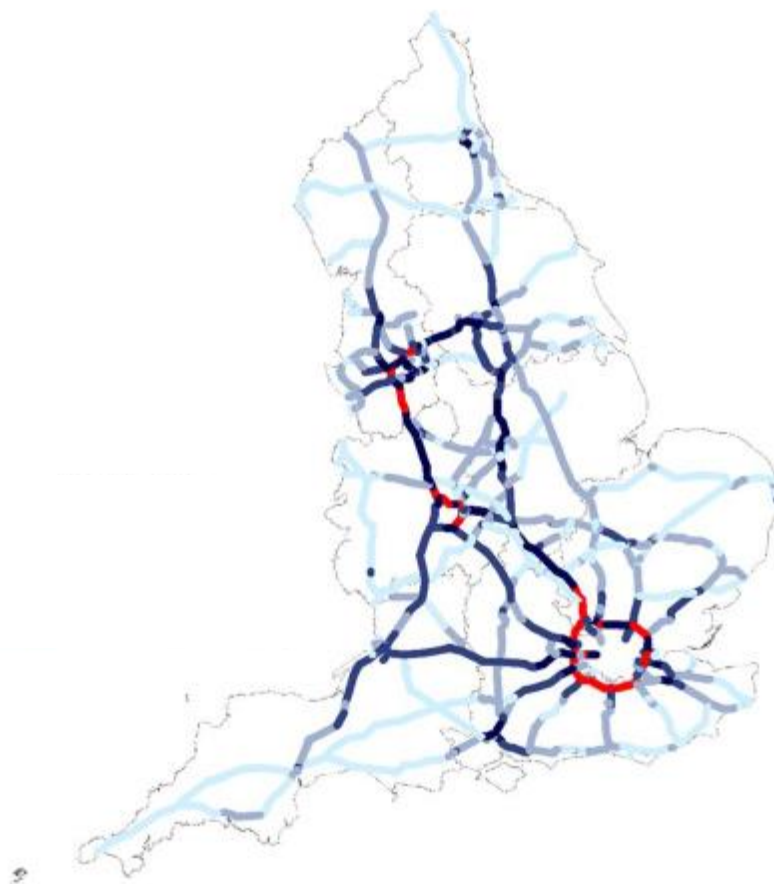
| <b>Name</b>                      | <b>Description</b>   | <b>Strengths</b>   | <b>Weaknesses</b>   |
|----------------------------------|--|--|---|
| <b>Replacement cost</b>          | Estimate how much it would cost to replace the SRN in its entirety.  | Relatively simple: this was estimated by the then Highways Agency to be £111bn in 2014.  | Does not capture the value of the economic benefits that the SRN delivers.  |
| <b>Traditional user benefits</b> | Compare the SRN to a scenario without the SRN, and estimate the value of the incremental benefits between those two scenarios.   | Captures the economic benefits of the SRN rather than just valuing the cost.   | It is near impossible to know what the counterfactual would look like. It is unrealistic to model a scenario where the SRN is removed and nothing else changes. In reality that would dramatically change trip and land use patterns. If the SRN was not in place, the UK would look very different to how it does now. |
| <b>User costs</b>                | Estimate the value of user costs of using the SRN, and then apply an uplift to this on the basis that the value of the SRN must be at least as high as the user costs. | Have detailed information on vehicle flows and speeds by link and by hour. Captures how much users spend on the SRN. Does not require a scenario to compare against. | Not clear what the value of the uplift should be between trip costs and the value to users. There are benefits other than those directly accruing to users that are not captured.   |

- 3.2 The User Cost approach was focussed on and an indicative map produced (figure 1) showing, by SRN links highlighted in red, those parts of the SRN with the greatest “user cost”.

Considering the economic significance of the strategic road network

- 3.3 Closer review of the analysis highlighted, as might have been expected, that these correlated closely with parts of the SRN with higher volumes of traffic and where the SRN operates closer to capacity.
- 3.4 There were however constraints with taking this forward more specifically, both technical (for example could or should the approach consider other factors that have an economic consequence such as safety and resilience) and practical (were outside of the programme for delivering the final SEGP). For example, the user cost may be high if a road experiences a high volume of traffic travelling at or near the speed limit; in which case there is limited potential to reduce travel times from investing in this road.

Figure 1: Total User Cost



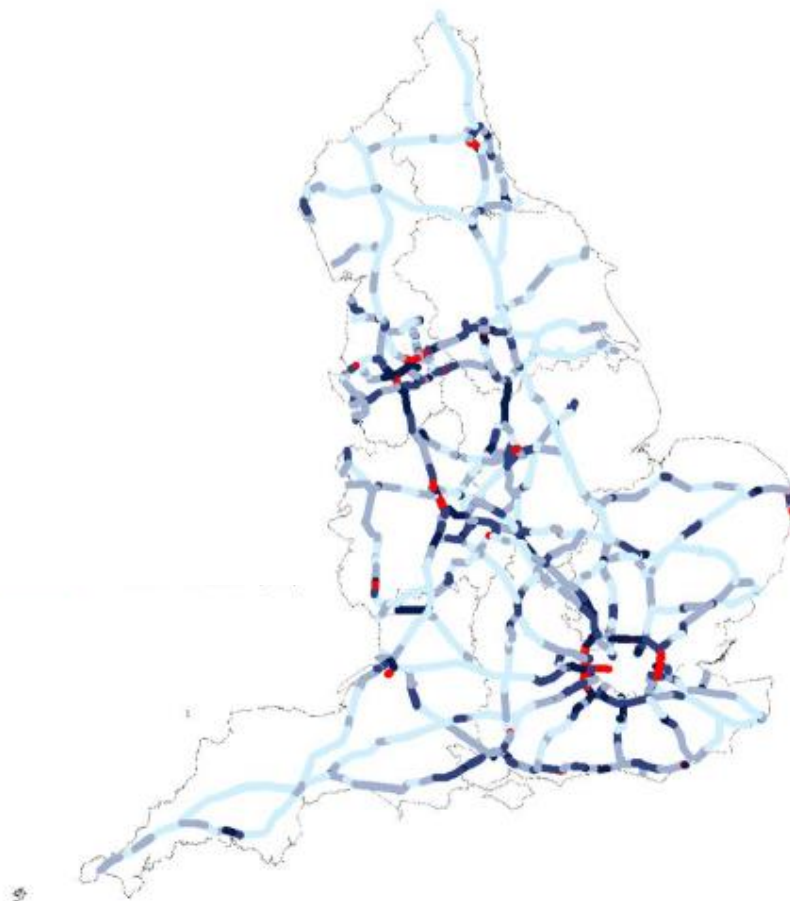
- 3.5 At a more fundamental level remained the question as whether the user cost approach was a good indicator to guide investment. Firstly, the estimates of total benefits did not net off user costs; as such the approach risked overestimating the overall social and economic value of the SRN. Secondly the uplift was based on assumptions so lacked robustness to take forward at that time.
- 3.6 Nonetheless the approach did provide scope to estimate the extent to which user costs could fall from reducing travel times such that all vehicles are travelling at a minimum of the speed limit. In so doing there may be an approach that could enable Highways England to have an earlier understanding of schemes that will maximise economic value by establishing an upper-bound for the likely benefits of future

Considering the economic significance of the strategic road network

scheme investment. The identification of this “size of the prize” would be done by identifying the potential economic gain that would be delivered if the whole of the SRN operated at a minimum of the speed limit.

- 3.7 An indicative map (figure 2) was produced showing how this could be done. This revealed that whilst in general those links that show the biggest potential user savings (highlighted in red) are those where demand and congestion is highest this is not always the case, such as on the trunk road network in Herefordshire and Norfolk.

Figure 2: “size of the prize”



## Conclusion and next steps

- 4.1 This research has the potential to enumerate an upper-bound for the future benefits of investment in the SRN. This might provide a means of filtering out schemes at an early stage where the anticipated costs are not expected to justify the benefits, helping to ensure that Highways England’s spending represents value for money.
- 4.2 Further, whilst this work initially centred on decongestion benefits there are a number of other possible gains the approach may be able to consider; for example, investments in the SRN may result in lower accidents, improvements to air quality and wider economic impacts. As a consequence there is the possibility to build on this analysis by estimating the ‘size of the prize’ associated with other benefits from investing in the SRN.

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