

DD20

A453 Widening M1 Junction 24 to A52 Nottingham

SUMMARY PROOF OF EVIDENCE TRAFFIC AND ECONOMIC ASPECTS

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1. Personal Introduction

1.1 My name is Colin Robert Shields. I am currently employed as a Director at the Leicester office of WYG. I have been the Team Leader for the traffic and economic aspects of the A453 Widening Scheme (subsequently referred to as A453W) since Laing O'Rourke were appointed as the Early Contractor Involvement contractor in March 2006.

2. Scope of the Evidence

2.1 My evidence describes the existing traffic flow and safety conditions on this stretch of the A453 and identifies and quantifies the problems being encountered by users. My evidence describes the transport model built to forecast future conditions, to inform the design and to prove the transport economic efficiency of the scheme. It confirms that the scheme addresses the problems identified. My evidence also provides a safety assessment to demonstrate how beneficial the scheme would be in safety terms.

3. Existing Transport Conditions

3.1 Results from transport studies carried out indicate that the A453 is currently congested particularly in the peak periods, which causes journey time unreliability and vehicles re-routing on to unsuitable routes. Traffic flows exceed the capacity flow level that can be handled by a single carriageway design. Pedestrian and cycle flows in the rural section are low, whilst in the urban section they are high. Overall the A453 currently has a poor safety record and a higher accident rate than that expected for this type of road. There are particular concerns with the accident record on the rural section at the power station access and the Barton Lane junction. There are particular concerns with the number of pedestrian and cycle accidents in the urban section.

4. The Base Year Transport Model

4.1 Using survey data collected in March 2006, a transport model was developed to assist with the design and appraisal of the A453W scheme. The model was built and validated in accordance with Department for Transport (DfT) Web based Transport Appraisal Guidance (WebTAG) and Design Manual for Roads and Bridges (DMRB) criteria [DD176]. The model demonstrates that it is capable of replicating existing traffic conditions and hence, in my opinion, I consider the model to be fit for purpose to evaluate future year conditions both with and without the A453W scheme.

5. Model Forecasting

5.1 Forecast transport models were constructed for the Opening Year of 2012 and the Design Year of 2027 for design and environmental assessment purposes. Transport models for 2017 and 2031 were produced for economic assessment purposes to supplement the information from the 2012 and 2027 forecasts.

5.2 The Do Minimum (i.e. without the scheme) model was updated from the base model to include all known committed infrastructure and land use developments. The Do Something (i.e. with the scheme) model was updated from the Do Minimum model to incorporate the A453W scheme.

5.3 The model statistics for each of the forecast years exhibited a good level of convergence. Therefore, the estimates of future year traffic are considered a robust basis for the purpose of operational, economic and environmental assessments.

5.4 The future year models indicate only a marginal increase in traffic on the A453 without the scheme in 2012 and a small increase by 2027. This reflects the fact that the A453 is currently congested and cannot accommodate any significant increase in traffic. However, these increases will make congestion even worse on the A453. With the scheme, a large increase in flow on the A453 is predicted, which reflects traffic diverting onto the A453 from unsuitable routes as well as traffic transferring from other routes such as the A6005 and the A52. An analysis of modelled journey

times indicates significant time savings in the Do Something when compared to the Do Minimum network scenario in all time periods.

5.5 Detailed assessments of the capacity of the proposed links and junctions on the scheme demonstrate that the scheme will have sufficient capacity in the 2012 and 2027 assessment years. In my opinion the operational assessments demonstrate that the scheme meets its economic efficiency objective by reducing congestion and improving the reliability of journey times.

6. Safety Assessment

6.1 A spreadsheet COst Benefit Analysis (COBA) based methodology was used to assess the safety benefits of the scheme. The assessment area for the Safety assessment covered the alternative routes to the A453 in the study area and the local roads around the A453, in addition to the scheme itself. Analysis of the results indicated a significant benefit in terms of a reduction in accidents across the study area. A total of 453 accidents are predicted to be saved over a 60 year assessment period of which 175 Killed or Seriously Injured accidents and 278 slight accidents would be saved. In my opinion the safety assessment demonstrates that the scheme meets its safety objective.

7. Transport Economic Efficiency Assessment

7.1 The economic benefits and disbenefits of the scheme were calculated using:

- Transport User Benefit Appraisal (TUBA) to calculate travel cost changes between the with and without scheme.
- Safety Cost Benefit Appraisal using the spreadsheet calculations based on the COBA methodology
- Queues and Delays at Roadworks (QUADRO) to quantify the travel cost and accident changes during construction of the scheme and for the maintenance period of the scheme.

7.2 The results from the economic assessment indicate that the scheme has a Benefit Cost Ratio (BCR) of 3.25 which provides High value for money. In my opinion the A453W Scheme gives a high economic rate of return and the scheme is considered to meet its economic efficiency objective.

8. Further Modelling Work

8.1 Subsequent to the DfT and Highways Agency approval of the modelling and economics work in December 2008 and publication of the scheme draft Orders in January 2009, a number of changes arose in the WebTAG guidance as regards the modelling and economics work. As a result, further modelling and economic assessment work was carried out. The key changes arose from revised Values of Time (VOT) and Vehicle Operating Costs (VOC) and also the need to take into account Uncertainty in Modelling, whereby sensitivity tests are carried out on the core modelled scenario to derive a range in forecasting results, and the associated economic assessment, to cover the effects of uncertainty. As part of this modelling update work a review of the assumptions in the Core model was also carried out to include, for example, changes announced for the M1 Widening project.

8.2 The results indicated that for the Core scenario traffic flows are broadly similar to those previously approved and that the results from the economic assessments are broadly similar providing a slightly higher BCR of 3.3. For the sensitivity tests, as expected traffic levels were generally lower than the Core scenario in the Low Growth scenario and higher than the Core scenario in the High Growth scenario. The scheme economics for the Low Growth scenario were lower than the Core (giving a BCR of 2.1). The scheme economics for the High Growth scenario were higher than the Core (giving a BCR of 7.1).

8.3 As such I consider that with the revised Core and sensitivity testing modelling, my conclusions remain unchanged as regards to the scheme meeting its economic efficiency objective by reducing congestion, improving the reliability of journey times and providing High value for money and to the scheme meeting its safety objective by reducing accidents. As such I consider that there is a compelling case for acquisition in the public interest.