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Response to
REP6-033 - NATIONAL HIGHWAYS' RESPONSE TO REP4-031

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How does the model include public transport?

1. Introduction

Only a limited amount of information has been received from NH on the public transport elements of the model. First it only contains full trip data for eight areas in the model: sectors 1 to 8. Trips which are produced in or attracted to these areas and end or start in the other 17 sectors have been supplied, but no other sector to sector trips.

Secondly only 2025 data has been supplied so it is impossible to see what the model predicts for 2040 and thus whether public transport grows or falls, either in real terms or in terms of mode share. This is critical to understanding the long term impact of the scheme on both carbon and sustainable travel (which has other benefits beyond carbon reduction).

Our work on the alternatives package revealed that some of the actual bus route data was also inaccurate but this note focusses on which public transport flows are in the model and how they are represented.

The rest of this note is based on our analysis of the recently supplied NH data from the model.

2. How much of the public transport travel is in the model?

It is a matter agreed with NH that only public transport trips which are made by people who have access to a car are in the model. It is hoped that the precise definition will be included in the SoCG. It was therefore clear that the model did not represent the total picture for public transport in the area. Once the data was received from NH it was possible to assess the scale of the missing trips. National Travel Survey data has been used to derive a figure for the ratio of public transport (PT) trips to car trips. In 2019 this car to PT ratio was 12.5, in other words the public transport trips were about 8%. In the model data supplied, the ratio of car to PT trips is more than ten times this figure at 130. In other words the PT trips are 0.8% or a tenth of the actual expected total.

The significant lack of PT trips in the model means of course that the figures cannot be validated against flow data for modelling purposes in the same way that highway trips have

been. Again it is important to clarify this since there was some impression at the ISH that public transport was fully included in the forecasting and modelling[1].

As stated above, no information has been supplied on the future level of public transport use in 2040. This is important because it is impossible to test how far the NH forecasts meet sustainability targets without them. It is a major gap in the information placed before the Examination Panel.

3. Where are the missing trips?

A key question following on from this is whether the lack of trips is evenly spread. In terms of where trips are produced and where they go, the public transport and highway matrices allow analysis of the modelled flows between the different sectors. This reveals a high number of zeros for public transport trips. The figures are for 24 hours so this is very surprising.

Of the 8 sectors which form the basis for the Area of Detailed Modelling (Sectors 1 to 8) 19 of the 56 zone pairings between them[2] have zero entries for "Home Based Commuting and Business" trips, and 18 of them have zeros for trips for "Other" purposes. All of the 8 Area of Detailed Modelling (ADM) sectors have at least one zero. There are a further 7 cells with less than 10 trips (Business/Commute) and 8 with less than 10 for "Other" purposes. This confirms the seriousness of the missing trips from the detailed model area and how there can be no confidence in the overall picture the public transport forecasts provide in the immediate vicinity of the scheme.

4. More trips produced than attracted

Finally there is clearly serious asymmetry between the rows and columns (i.e. where the trips are produced and where they go to). This is particularly strong in the case of Home Based Business and Commuting where 69% more trips are produced in the 8 sectors than are attracted. This is very unusual given that many of these trips will be commuting and we now have asked NH if they have an explanation. Some small asymmetry is acceptable (for example the "travelling salesperson effect" where they leave on one day and don't come back within 24 hours) but the scale of the issue here should have immediately alerted analysts to the problem.

5. Conclusions

The underlying problem here is that the forecasting and modelling is highway based and is not valid for public transport analysis.

A collateral impact has been that it has not allowed for the level of analysis we had hoped for the public transport elements of the package of alternatives.

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[1] Transcript of Issue Specific Hearing 2 Session 3 at 26.58 page 8/19
[2] This excludes 8 cells for internal to internal trips