Day Eleven

Nick Helps

Evidence in Chief

Mr Helps was asked to read his position paper note on HGV flows.

Mr Helps said that the a HGV was defined in DMRB Vol 12 S1, para 6.3.5.

Mr Helps said that the corrected figures on HGV flows were included in the Major Scheme Business Case, section 6.

Mr Helps said that he had corrected para 3.13 of his full proof.

Mr Helps noted the contents of the folder he had prepared, containing the additional information that had been requested in his previous cross-examination.

Cross Examination

Additional information. S4. Journey time survey results. Do we have any particular days?
-Approximately three days between 6th and 21st of June.

Timed runs?
-Enumerator instructed to drive at normal traffic speed, timing of run noted by passenger.

With just these global journey times, we have no indication of where the pinch points are along the route?
-Not from this table.

Section 8. Journey time validation. Pg9. Compared journey time in model and observed times referred to in Section 4?
-Correct

Can one understand where pinch points are from the graphs?
-From the data one can assess the junctions with the greatest delays.

Distance between the link points are not equidistant, but set out as such on graph.
-Difficult to produce a graph that accurately reflects distances
-Correct that not equidistant on map

Must understand precisely where existing pinch points are, difficult to work out from data.

-Purpose of data to validate the model

Is it not possible to provide an analysis of where the pinch points are?
-Data produced in journey time data section, contains a large number of spread sheets.

Fig3.2, S6. Model time and observed time run close to each other, then start to depart.
-Slightly

Can see where that occurs.
-Agreed

In terms of analysis, what is that departure attributable to?
-Very good fit for most of the line
-Graph shows comparison between modelled and observed journey times
-Fit for Westbury itself close

Two-three minutes on cumulative journey time?
-Model trying to replicate reality
-Very good fit for most of distance
-Beyond the extent of the scheme figures are different.
-Overall shows a good fit
-Disagree that casts doubt on analysis

Table 3.1. The discrepancy is in the region of two and a half minutes.
-Two minutes

Two and a half.
-Agreed
-Stress that not a discrepancy, trying to replicate reality, good fit for scheme route

Journey time saving for scheme in the region of two minutes.
-Agreed
-Very good fit for area affected by scheme
-Journey time prediction very good for bypassed road

Pinch point at Yarnbrook /West Ashton, which scheme does not address.
-Agreed

S5. Through traffic analysis. Based on model, not interviews?
-Model based on roadside interviews and traffic counts

Interviews found in S6 Saturn Model, pg5-7, 2.2?
-Most recent interviews

-Earlier interviews in model as well

Data from roadside interviews in Sept 2005, they were fed into model?
-Correct

Satisfied that roadside interviews over the space of two days adequate and sufficient?
-Table 2.1 gives sample rates.
-Satisfactory sample.

Is there guidance on what percentages should be undertaken?
-There is guidance, not on hand - web tag
-Sure figures meet minimum guidance
-Even 5% adequate
-Actual figures 12%
-Robust data

Do we have an indication of when sampling began and finished?
-7am till 7pm

When we look at percentages of through traffic, cut off point for through traffic? Does traffic to and from the West Wilts Trading Estate count as through traffic?
-WWTE taken as part of Westbury urban area

In terms of through traffic, is it possible to calculate percentage of through traffic that is HGVs?
-Yes

Is there data?
-Tables in proof

Figures in S7, without ban. Why have just provided links that have been provided, presumably flows without ban should apply across the model?
-Correct
-Particular interest in Station Rd, provided additional info on other links

Interest across area, in knowing situation with and without ban, have not got information, cannot make like for like comparison?
-Provided info for Station Rd and other sites

No info on Haynes Rd or Warminster Rd?
-Did not need to show changes across network

<u>Mr Morland</u>

Mr Morland drew attention to Fig 4.2 of Mr Helps' supplementary proof. He said that the HGV flows in certain roads seemed astonishingly high, and noted that in many places HGV flows would not be greatly affected by the proposed scheme.

Mr Morland suggested that HGVs will continue to travel through Westbury if there is no HGV ban on Station Rd, despite the high quality of the proposed bypass. Mr Helps agreed that HGVs always tend to use the shortest legal route.

Mr Nicholson

Validation of traffic model. Definition of HGV – 'other goods vehicles'. Important to inquiry to understand how other goods vehicles defined. Not what most people would think of as an HGV.
-Easiest way to identify HGV through size and axles Definition given gives unladen weight.

Anything bigger than a transit van?
-A vehicle which has four tyres on the back axle is a HGV.

Concerned that HGVs may be thought of as articulated lorries, when in fact defined as anything over 1 and a half tonnes.
-Range of vehicles would fall under definition

DfT study. Manual counts subject to accuracy problems. 95% confidence within plus or minus 24%? If count says 100 vehicles, could be 76 or 124?
-Accept that difficulty in distinguishing HGVs
-Enumerators well trained and experienced
-An issue that is understood clearly by enumerators

Guidance says existence of errors must be assumed and taken into account. How have errors been taken into account?
-Stress that enumerators used by WCC are high quality
-Validation which is required on passenger car units, not HGVs
-Total flows on links which are validated

Most counts automatic traffic counts?
-Mixture

Criteria of distinguishing HGVs in automatic counts?
-Vehicles over 6.5m
-Rigid and articulated vehicles.
-Potentially be some leeway in counting

Some discrepancy?
-Tha'ts why we take more accurate manual counts

Manual counts at two points?
-More than that used

No evidence of others being applied to assessment.
-Earlier manual counts undertaken, two most recent used in assessment

When were earlier counts undertaken?
-Cannot recall

No evidence of these brought to inquiry?
-Agreed

Which method of automatic counting used?
-Induction loops used, embedded in highway
-More accurate, can measure length

Taken out after count?
-Remain in position

Problem remains of under-counting. Agree?
-Sites carefully chosen for greater accuracy

Are some of sites on multi-lane roads?
-If they are they would have loops in each lane
-Vast majority would be in single carriageway roads

Tag Worksheet One. WHA108. Stress 19%. Slight beneficial. Is stress a measure of journey time reliability?
-This is a DfT method for assessing.

Journey Time Reliability a stronger objective than relieving congestion?
-Scheme has a number of objectives, cannot rank

Slight beneficial = 200,000-1 million. Score 335,000. Low end of range?
-Roads which have higher vehicle flows would generate result on higher end – unfair to schemes outside major urban area. This ranking favours building roads in much larger urban areas
-Bias in methodology

Which links referred to?
-Points to the north and south of existing road and proposed road.

Old route key link Haynes Rd?
-Correct

Model validation report. Suppressed traffic of 1.8-9% due to congestion is not widespread.
-Correct

Why not take that model of traffic across network and use in validation, forecasts and CBA?
-Not necessary to redo modelling work on fixed trip matrix approach

Discovered that there is a 1.8% increase in traffic.
-Under DfT criteria not significant enough to require demand modelling.

Preliminary demand modelling robust?
-Sensitivity test indicates DfT criteria met, therefore fixed trip matrix robust.

Guidance says should include reasonable selection of links. Important that model reflects peak and inter-peak periods. Have checked inter-peak periods?
-Model for am and pm peaks

Independent count data used to validate, counted at sites where road side interviews. Need to use independent data from different sites. Done?
-Yes

Says that important to check modelling of road junctions. Cannot find in model validation report.
-No model validation report on link flows and journey times
-Key junctions also assessed

Validation report aggregates junctions and links. Haven't studied junctions separately?
-Count figure could be for link or turn
-Some roundabouts, including Ham roundabout.

Can you say that you have checked turning flows?
-Cannot give precise detail, but on main A350 some junctions are important, would have been work

Accept that validation report does not show the reader that turns validated?
-Agreed
-One junction discussed, but not on area affected by bypass – good to model junctions in areas not affected by scheme

Yarnbrook junction relevant?
-Mr Hopkins asked if scheme relieved congestion at Yarnbrook

Journey times. Survey of route along A350. Guidance refers to 85% of routes. Only one route tested.
-Says 85% of links

Pg 429 of guidance, Table 4.2. 85% of routes.
-Links being validated, not routes

Validated model on one route of network.
-Main routes

How did you decide how many routes to model?
-A350 main route scheme designed to relieve

Tables 3.1, 3.2, 3.3 and 3.4. Observed average. How many journeys averaged?
-'Large number' of journey times undertaken
-S4 of green folder.

Individual journey times? Can we know how many journeys were averaged?
-'Large number'

One, ten, a hundred, a thousand?
-Could not say number
-Variability in journey times, need significant sample

Average over a period of days, weeks or months?
-At least three days

If you take an average, doesn't that mean numbers have converged towards a mean that is more likely to agree with model?
-Model trying to replicate a mean journey time

Observed times are varied, if had not been average a lot more might have disagreed with model.
-Averaging necessary due to variability

Individual links, compared to model average. Seven legs of journey. Link-by-link not within 15% of observed times. Up to 62% difference in some points. Agree that systematic error of model around Yarnbrook/ West Ashton?
-Variation in section, but less crucial as not bypassed by scheme

Consistent difference reliable as averaged over a lot of trips?
-Inference suggested not correct
-Slope of graph between Semington and Yarnbrook same for both
-Not consistent or systematic difference

SP. Fig3.5 and Table 3.4. Discrepancy?

-Only 21 seconds difference, not significant
-Lines possibly been overlayed

Accept that graph does not represent table?
-Graph meant to be illustrative example, can refer to table when lines overlaying

Pg14. Two locations labelled '14'.
-Possible that identification numbers have error.

Table 3.4 and 3.2. Northbound between Yarnbrook Roundabout and West Ashton Crossroads. Speeds slower than in centre of Westbury. Wrong key link? Shouldn't stress measurement use that link?
-Stress measurement measuring impact of proposed scheme, not other locations

Table 3.7. Diff = difference between count and model?
-Correct

When difference added up, figures of +1,176. Does that indicate a valid model?
-DfT would not use this model of validation

Systematic error in model, exaggerating traffic passing through network?
-DfT set out criteria for model validation, all apart from one criteria met.
-Better to assess how have met DfT's criteria

Trowbridge. Four sites. Observed counts actually estimates?
-Based on counts
-Possibly rounded to nearest ten

Not nearest hundred?
-We wouldn't round to that level

One in ten-thousand chance of them being rounded to nearest ten.
-Definitely not rounded to nearest hundred

If those four figures are not accurate counts, instead of 34 locations we only have 28. 5 out of the 28 do not have GEH figure less than 5. 82% meet GEH criteria.
-Figure mentioned in proof

Prepared to accept that 85% used, where it should have been 82%?
-Still a high level of flows met criteria

If it is 82% is it in DfT's criteria?
-Just below

Right to take out links with suspiciously round numbers. Accept that 87% should read 85%?

-If Trowbridge taken out, yes

When other sites taken out, 80%. Less than 85%?
-Picking links in Trowbridge that far from proposed scheme

Pick wider area than model itself. If true figures 82%, 85% and 80%, would meet criteria?
-Would be below criteria
-Need to check Trowbridge figures were – would then show that criteria have been met.

SP Pg17. Table 3.3, Convergence criteria. What is reader supposed to conclude in terms of validating traffic model?
-Meant for technical audience who would understand table

Is convergence when model eventually agrees with itself.
-Agreed

Does this tell us that model is validating traffic flows in reality, or just agreeing with itself?
-Trying to replicate driver choice and route choice.

If model is stable, does that tell us that it corresponds closely to reality?
-Show when switching stops and model becomes stable

Tells us that model close to reality or is capable of stabilising?
-Convergence shows model becomes stable.

Anywhere in DfT guidance encouraging tree diagram being included in validation report?
-Diagrams show results of model trees, not a validation tool.

Re-examination

Mr Helps said that his summary was still robust.

Inspector's Questions

Mr Yellowley discussed with Mr Helps the proposed HGV ban on Station Rd. Mr Helps said that it was likely that only HGVs over 7 ½ tonnes would be subject to the ban, although it was possible that a lower figure could be applied. Mr Helps conceded that the model was not able to disaggregate the figures for HGVs over 7 ½ tonnes and those between 3 ½ and 7 ½ tonnes. Mr Helps was not able to

state what proportion of HGVs affecting Station Rd were between 3 ½ and 7 ½ tonnes, but stated that those weighing over 7 ½ tonnes caused the greatest nuisance and removing these HGVs would deliver most of the benefits.