

11 June 2014

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12:07

Examination in Chief of Mr Hanson (continued)

PH	Ned to correct] to "highway" annualisation factors.
	Annualisation factors were revised further after [] contrary to what Mr Cheek says.
	Annual data include weekdays in termtime and non-termtime (see C-1-2)
NC	If you have annual data for the entire year do you need to follow Mr Cheek's approach ?
PH	No
NC	If Mr Cheek's right is 2.7% material?
PH	No
PH	Has taken out peaks referred to in annualisation at para 5.2(c) of Cheek proof.

NC	Need to look at E-3-22, para 2.2.2. Assumptions about generalised costs. Is quality one of the factors?
PH	Yes the penultimate bullet.
NC	2.4.4 page 6. Forecasts- is there a description of quality aspects included.
PH	That's correct.
NC	If we go to Tab E-3-17, which is TAG unit on traffic assignment modellin, does that at page 19 6.5.3 gives evaluation for bus quality factors?
PH	It does.
NC	How do you convert quality into a number?
PH	People value quality so the quality is represented as a change in generalised time or generalised money representing people's willingness to buy, to pay for better quality.
NC	That's the guidance. Keep that and take up C-2-4 which is the quality factors report. Page 8, fig.2. You can see that ...are these the quality factors assumed for purpose of the model?
PH	No. These were conclusions of research that you can see built into the guidance.
NC	ITS is the assoiation Prof Bonsall was associated with?
PH	That's correct.
NC	Those figures have been adopted by the TAG guidance- that's the figure in the "overall" for the TAG document?
PH	Correct - transcribed across.
NC	Consistent or inconsistent with TAG guidance?
PH	Consistent with guidance,
NC	Page 17 of the rebuttal to Mr Cheek. Say misleading to exclude the perception of higher quality. Explain why you say Mr Cs approach is misleading?
PH	Trying to compare and doing so without looking at quality is misleading.
NC	Does WebTAG say you should exclude them?
PH	No, it says they should be included.
NC	Appendix 1 to Mr Cheek. He takes at 4.13 page 9 handwritten, He says when you apply penalties yo should apply as a proportion of journey time rather than an absolute value.
PH	In the context here, it's right to take an absolute value. It would be difficult and require more assumptions to do it in that way. Would introduce error.

MW	What do you mean "penalties"- as if it deteriorates from the service?
PH	Yes. The research derives absolute values. To apply proportions you would have to make further assumptions.
NC	Values derived from?
PH	Mr Chadwick's work.
NC	"stated preference"- why?
PH	Because those are the direct outputs.
NC	Mr Cheek says in other schemes Croydon and Nottinham they've been applied as a proportion of in-vehicle time and you've not taken that approach. Can you give us more detail as to why?
PH	In some cases where the evidence is less direct it may be appropriate to interpret the data using that approach. We have considered using that approach and rejected it.
NC	In rebuttal to you., he says, "not made clear whether LTM updated to reflect the improved emissions..of First's fleet of hybrids" wat's the response?
PH	The info I provide is not the emissions of those vehicles- not a question for me.
NC	Ability of LTM to respond to changes of fares - rebuttal of Cheek at 4.6. He says the assumed rate of increase not stated.
PH	Section 3 of C-1-8, page 11, fares and charges, 2.5.
NC	Are the assumptions set out?
PH	They are.
NC	Mr Cheek's rebuttal at 4.10. He's there responding to ara 6.13 of your PoE. At 6.13 o your roof you refer to outside the immediate NGT corridor and say not materially affecting public transport demand. What area does 3.6% apply to?
PH	To all of Leeds, outside the immediate corridor.
NC	Might be higher on Meanwood Road corridor?
PH	Yes.
NC	Picking up a point taken when Mr Robertson was giving evidence
MW	Can I clarify, does that include all public transport in Leeds other than the corridor?
PH	Yes all of it.
NC	On do-minimum scenario, Mr Robertson said no changes to signals. His attn drawn to C-1-8, para 2.4, "Traffic signal optimisation", on do-minimum scenario. Were any of those changes to signals in the corridor?
PH	No -across Leeds and none of them were in the corridor.
NC	Now, NWLTF rebuttal to your evidence. Para 6.2. They say they don't think the guidance in WebTAG 3.11.1 has been followed and they produce a map showing the zones (as Appendix B to their Statement of Case). Do you need to refer to that map?
PH	In principle no.
NC	Guidance E-3-15 page 14 para 4.3 which gives guidance on zones for public transport models. Is this he right reference?
PH	Pages 13 and 14 I think.
NC	Can you explain how you've chosen the zone and whether the guidance has been complied with?
PH	3rd para up from bottom - "less than 1k,m radius". Generally that is the guidance that has been followed and I'm satisfied it is suitable for its purpose.
NC	What type of area are we in - zones through which public transport does pass or doesn't?
PH	First one.
NC	Para 6.4 of NWLTF reuttal to your 5.10. Whether moderation means diversio or suppression of trips.
PH	The model represents a range of factors. Suppression will not be a material effect. It will be change of route, change of mode, change in travel pattern/distribution- choosing not to travel into the town centre because it's congested. I haven't analysed it out further.

NC	6.5 of their rebuttal responding to your 6.6 on quality factor. We've looked at WebTAG guidance on quality factors. It's asserted you've not followed the guidance in respect of the overcrowding factor. Can we get your rebuttal to Prof Bonsall? REB-2 OBJ 1719 and 2-11. Is there an error in relation to quality factors?
PH	I think Prof Bonsall's point has some merit. There is no representation of having to stand on the service in the model. Have a sensitivity test - taken sensitivity test, assumed everyone would have to stand and assessed the implications. The demand reduces by 4% if I assumed everybody had to stand.
NC	Would that happen?
PH	No- there are seats on the service.
NC	Prof Bonsall or the Forum at 6.11 of their rebuttal note the absence of a number of tests - bullet two - likelihood of having to stand - is that such a test?
PH	That's correct.
NC	C-2-32. Does it ID a number of tests that have been carried out? Where?
PH	It does - table page 4 lists the tests and the subsequent pages describe the output of the tests.
NC	Deciphered by Table 2, test descriptions.
NC	Prof Bonsall says an absence of tests. On bus-stop penalties is he right?
PH	No - assumptions that there would be improvements in bus stop facilities is allowed for in the forecasts.
NC	Can we look at C-1-8 page 31. Assumption there about CCTB and the differential between NGT and bus stops. Have adjustments been made?
PH	Those are the adjustments that have been made yes.
NC	Representation of fares, your PoE p.33, para 8.13. And this is a response to Forum rebuttal at 6.8 and 6.9. You say, you observed a misrepresentation in the way fares are represented in the LTM. The Forum ask whether following discovery, revised forecasts have been produced. When did the errors or misrepresentations occur?
PH	The errors occurred in Nov last year - in the business case.
NC	APP-103. Answer 8 refers to this point.
PH	That provides the information.
NC	Is there a material impact on the business case?
PH	No material impact on the forecast.
NC	Can we go to APP-103B- the diagrams. Page 7 of 142. A point taken with Mr Robertson about the flows appearing understated on Moor Road. AM PEAK. 50 in one direction, 300 in the other. Shore Lane is where it says 2244. And page 17 is "do something" - nothing there and the point made was that it was an inaccurate representation.
PH	That is correct. This is at the levels of tolerance that these models can produce. If I take you to page 52, the Otley Road and Shore Lane junction. Shows numbers of vehicles modelled as turning - shows 20 turning left. But the evidence is 100. Incorrect representation of where the movement is made - too many going through the junction. These are the tolerances. That's why I'm quite careful that it should not be used directly for junction design. Mr Robertson has looked carefully at these and made adjustments.
NC	Do you have any concern?
PH	No, so long as applied at right level of detail. Shows level of traffic going down the road. This is an illustration of the tolerances in this type of model.
NC	At 6.12, this is the overall response of NWLTF to your conclusion. Do you accept their criticisms or concerns?
PH	No.
NC	Reasons?
PH	We have worked through this earlier.
NC	Last subject is modal shift. Let's take C-2 the Programme Entry Business Case. Page 32, table 8.4. And C-1, the latest business case at 12-32, table 12.14. Where are car and active modes dealt with together?
PH	Simplification. No other reason than that.

MW	Don't add up?
PH	These are different forecasts. The forecasts I provided included effects on active modes and the difference is it was not reported.
NC	You said in answer to the previous question that it was the same information. Different interpenetration same figures or categories. What did you mean?
PH	Same categories of info.
MW	But different data.
NC	Doc 112
GJ	We've not got it off the website.
NC	A note from AECOM. I know Prof Bonsall's got it. I'm told we went onto the website to get it and it's not there.
MW	I'll adjourn till 5 past two [13:08].
NC	[2:08pm] - If we go to NWLTF-112, there was a data request for breakdown of active mode and other modes.
PH	NGT and "other PT" are from Leeds, others are national.
NC	Have active modes been looked at separately?
PH	Yes.
NC	If we look at [APP-103??], third page - was data request limited to the transport corridor?
PH	No, total demand. GB figures.
NC	You've looked at the corridor - do they identify active modes
PH	Yes
NC	NWLTF114 - an extract from TAG unit M2 and para 4.7.7 under heading "active modes" - says "most scheme appraisals will be sufficient where active modes are not included". Have active modes been included in the demand model in this case?
PH	Yes.
NC	Has the guidance at 4.7.7 which indicates that there may be special reasons for examining active modes, been followed?
PH	Yes I think so.
	Cross-examination of Mr Hanson
MW	I'll hand over to Mr Bonsall now. How long will you take?
B	I think we'll be looking at tomorrow lunchtime.
	Part of your background working for NVA - were you working on Sheffield supertram?
PH	No.
B	I would like to ask questions about those errors. Late-discovered error for LCA. You said it wouldn't affect any other runs?
PH	That's right.
B	Should all other LCA runs be discarded?
PH	No. Other LCA options look at the P&R and the relativity would not be affected.
B	But actual numbers - relativity isn't necessarily the answer. Can the numbers themselves be relied upon?
PH	I think the answer is yes - but let me check the specifications.
B	He's looking at tests done since, but I'm asking about the tests done previously relating to LCA. Are there any tests done previously relating to LCA that we should take any notice of at all?
PH	Tests for P&R alternatives would not be affected but those affecting the corridor would be.
B	I should ignore any results that are in C-1?
PH	Yes correct.

B	The only others I can find are the tests done since the start of the inquiry?
PH	The forecasts presented in C-1-8 and C-1 have been superseded. For LCA we should refer to APP-104.
B	Those are OK?
PH	Those are fine.
B	The ones in your proof are not okay?
PH	Where I have tested a P&R service, I think they are not affected. That's the only distinction I would like to make.
B	Why wasn't the error discovered earlier?
PH	It should have been.
B	My evidence was that insufficient care had been taken over LCA. Isn't that further evidence sufficient care had not been taken when producing the business case?
PH	Care had been taken. That's your interpretation.
B	In 8.13 you refer to another error on representation of fares- which runs affected?
PH	All the runs.
B	What was the error?
PH	Double-counting of the fares. The changes in fare were represented twice. These are changes in fare relative to incomes.
MW	Twice
NC	Can I ask that Prof Bonsall wait for an answer.
MW	It's a case of clarifying. Double-counted the increase in fare relative to incomes.
PH	That affects people's behaviour. The perception of changes in bus fares.
B	This affected bus fares and NGT fares?
PH	And rail.
B	Big impact?
PH	The number is small. Affects them all in a consistent way.
B	You haven't rerun them. Is that because you think the relativities wouldn't be affected?
PH	A combo of that and also the effect was small and insignificant.
B	Shouldn't you have run a test, say a premium fare?
PH	Strictly the answer is yes. But the only choice that would be affected would be bus and NGT. That wouldn't be affected and that is the largest change. The effect on overall public transport demand would be bigger.
B	If a premium fare has been introduced twice, it should have been run again to see the effect when done once.
	Mr Cameron has already asked questions on specification of bus stops. Again, why wasn't that error discovered earlier?
PH	As with all work we have processes to pick up errors but won't pick up all of them.
B	Wouldn't have been noticed without our question on specification of bus stops- prompted you to look in detail.
PH	Well it was at the same time, I suspect we would have discovered the error.
B	At some time perhaps after the inquiry had finished.
	Section of your Poof describes model outputs. Mr Haskins wouldn't be led on this and said he's left it to you to define what outputs would be required. How was the specification arrived at, how did you decide which outputs to provide for the consideration of NGT?
PH	The instructions were set out from Metro in our contract with them. We are asked to provide a statement of what to provide that the client would review.
B	How did you decide what outputs were required?
PH	Using experience of previous projects.
B	What about the needs of this project?

PH	We'd been working on it for several years. We responded to the brief and part of that was whether we met their requirements.
B	Did you take account of the policy context surrounding the NGT project?
PH	Can you e more specific.
B	The fact that introduction on A66 was deemed necessary to meet loal congestion issues?
PH	The outputs do include measures of journey time so yes.
B	That's the only relevant effect?
PH	It's relevant to congestion.
B	Which journey times are relevant? Times across the corridor?
PH	Those were included/
B	Rat-running. What outputs should we look at?
PH	Answer's yes. There is info that indicates the likelihood of rat-running.
B	A partic issue was the issue of diversion and rat-running. Can this model be used to assess whether NGT solves that or makes it worse?
PH	It can provide indicators.
B	Isn't very precise?
PH	Yes.
B	Can't find detailed info about rat-running.
PH	If you're asking whether tens of vehicles are represented on indiv roads, no.
B	What about hundreds?
PH	Er will give an indication - will suggest direction and a scale.
B	Direction and an order of magnitude?
PH	Certainly that.
B	Not sufficient for rat-running and trip diversion.
	Fact that existing public transport not thought to offer sufficient capacity and is affected by congestion
PH	Yes, it will give an indication.
B	A direction and an order of magnitude? Or something more precise?
PH	If you ask me about precision of specific outputs I can answer that. It can provide info that can help
B	I take that as "maybe and sometimes"
B	Transfer from active modes?
PH	The precise measure of active modes is difficult. Active mode travel is represented in the model but it is synthetic- based on population and travel distances. The effect of improvements in public transport and how that affects people's choices between walking and PT is represented, bt would not be appropriate to look at something specific-a cycle lane for instance, in its own right, at a local level.
B	Can it tell us about the impact of the cycle lanes along the NGT?
PH	As I've just said., those are not represented.
B	Don't have a representation of the cycle lanes?
PH	No.
B	Access and connectivity for overall journey times?
PH	Can be generated.
B	Have they been generated?
PH	No, because Mr Chadwick has a different model he's using.
B	Mr Chadwick's info on the economy has no connection from your model?
PH	Not so far as I'm aware.
B	His model doesn't have as an input he output from your model?

PH	No.
	Not unusual to have different models for different purposes. The junction models are at a different area of detail. And economic models it does happen.
B	So far as you are aware the costs from your model have not gone into Mr Chadwick's model?
PH	No.
B	There was an objective that it increase system efficiency. Can your model help with that?
PH	Journey time and can provide information on benefits.
B	There's an indication but none of these can be answered by your model? [A660 congestion, trip diversion, rat-running, congestion across the system, public transport capacity, encouragement of active modes, pedestrians and cyclists]
PH	There is info which will help.
B	Let's just take impact o congestion on buses and whether we need a greater degree of segregation. How does your model help with that?
PH	The model represents the impact of bus congestion on journey times.
B	You're sure- I'll come back.
PH	The answer is yes.
B	What does this contribute to measure system efficiency?
PH	The business case - user benefits which can be derived from journey times.
B	Journey times, what else?
PH	The overall cost-benefit is a measure of system efficiency.
B	The issues identified were not addressed.
PH	You presume that these will happen. It may not.
B	You say we may not need a model if no impacts?
PH	This is a public transport scheme that may affect the highway. But the impact is small so it doesn't matter.
B	Your indication is the effect is smal so it doesn't matter what the effect is?
PH	Not my words but yes.
B	LTM is not fit for purpose as it cannot answer the Qs we have.
PH	It's supported by local junction models.
B	That tells us about local junctions, but not about active modes or rat-running.
PH	There are other complementary methods.
B	So what sources will we look at.
PH	That;s a question for Mr Chadwick. He'll tell you how it's been appraised. My model tells us how there is a transfer from active modes if no improvements to cycle provision on the route.
B	But there are, so we can't rely on it.
B	Doesn't tell us about the economy.
PH	Only one of the pieces of evidence.
B	What else will help with rat-runs?
PH	We can provide indication of the effects on traffic flows and directions.
B	Is it fit for purpose in looking at the LCA?
PH	Yes, with the same caveats as to the scope of capability. I've explained that I wouldn't wish to apply the model to look at detailed active mode capabilities. But within ts capabilities it is suitable.
B	You didn't say it wasn't suitable for rat-running and impact on the economy. Are there any others where you want to pre-emptively say, "no it's not suitable for it"?
PH	It relates to the tolerances of this type of model, set out in guidance.
B	Let's look at zones in the guidance. Zones are a basic building-block. You claim it was prepared in relation to E-3-15. We skated away from it quickly. Section 4.3.
	Mr Cameron took you to the paragraph in the middle o the page and read out part of 1

	<p>sentence. "They should generally be sufficiently small for it to be realistic to expect people to walk from anywhere in the zone to the nearest public transport stop". But the previous paragraph has bullet points with guidance about how to identify the zones e.g. Not spanning rivers. We'll come back to that.</p>
B	:Let's look at my map NWLTF-108
MW	I've not got it.
B	It's a response to FOI request we put in some time ago. We have the map of zone centroid connectors. That's a notional link from the centre of gravity of a zone to a network and is the link down which people are assumed to travel from home or business to the network.
PH	People may walk beyond that one to another zone centroid connector but yes I agree.
B	Consider the position of the Zone Centroid Connector (ZCC) - zone assumed to travel to a point near Headingley Hill with LEEDS written in it. That's not the nearest bus stop for anybody living in that zone is it?
PH	Correct.
B	Nearest would be the Arndale Centre or Kirkstall Lane?
PH	That's right.
B	So guidance that people be assumed to walk to closest bus stop has clearly not been followed.
PH	The guidance relates to definitions of the zones. I would argue that the zones do conform with the guidance but I do agree that the centroid could have been better coded.
B	I would say a centroid outside the zone cannot comply with guidance.
B	Bennet Road, St Michael's Road and Benn. To the east of Headingley Hill. Fed on near Richmond Avenue. But not their nearest bus stop?
PH	Correct.
B	Might be their nearest NGT stop.
PH	You may be right,
B	The point where the connector links them onto the A660 is just where the stop is?
PH	Shown on the green dot.
B	So close it's superimposed on it. One with Headingley Ground written on it. In reality, they would catch a bus at St Michael's Church or a bus on Cardingham Road and there is a zone centroid there. Am I right it's showing them going near the NGT stop?
PH	Yes. But what I would do is point to the zone we had been mistakenly discussing where the access is again, imprecise, but pointing to the same stop rather than the Arndale centre which would be a closer NGT stop.
B	Thanks for giving me another example. The odd coding is putting centroids in the wrong places. Consequences: Will predict people wanting to use routes on A660 rather than 56 or 69 on Kirkstall Lane?
PH	I agree but the primary effect will be on the other end of the bus route. If they want to reach something close, they will walk.
B	Yes, I agree. But takes them onto A660 rather than routes on other roads.
PH	I suspect the diffs are extremely small.
B	I've only given 1 example, but everyone in that zone will have been shipped onto the A660.
PH	Only a 2 minute extra time.
B	The model will tend, other things being equal to put them onto A660 rather than other services?
PH	Yes, tend to depending on their destination.
B	And will end up on NGT rather than Arndale Centre?
PH	Yes.
B	So 3 zones fed into Headingley Hill rather than Arndale Centre when true of 1 of them?
PH	Possibly.
B	And St Michael's one, fed very close to NGT route rather than normal stop that's St Michael's

	church.
PH	But other zones further away. I agree with that zone but for the other 2 zones the model will understate the attractiveness and overstate time required for NGT.
B	And the bus.
PH	Relative to bus.
B	People in zone with Leeds in it you say will make journeys on NGT worse than on bus.
MW	You need to have the plan to go into this detail.
B	At least for 1 of the zones ...I'd like to come back
MW	[3:15] Will adjourn till 3:30.
B	Are these the same positions of centroid connectors as are used for car trips? [DIDN'T ANSWER]
AH	Sorry can we just conclude on those 3 points.
B	First -road with LEEDS written in it, will predict use of NGT rather than 56 or 19?
AH	Yes but for other zones the reverse is true.
B	Would use stop near Arndale Centre not Headingley Hill?
Ah	Yes for that zone.
B	And St Michael's church stop not Headingley Hill?
AH	I agree but in the case of other 2 zones LEEDS and the other, the opposite is true.
B	You say there are compensating errors, sometimes go one way sometime the other. And overall you've got it bang right?
AH	No but we've tested it and overall the outputs are appropriate.
B	The point I'm making is, we've got 2 zones and in one people tending to be put on N660 rather than a competing corridor. In another, pulled towards NGT. And for both, towards Headingley Hill rather than other stops. You said, errors in other zones. I say, why didn't you correct the errors?
Ah	There are always corrections that can be made in any model. But these are not material.
B	You say, we looked at them but it's not a serious problem so we won't bother.
AH	They've been looked at. There are changes I'd make but they won't affect the forecast.
B	I think your answer is, there are errors but overall it's okay. But a model can be right for the wrong reasons- when compensating errors it can appear to be right in calibration but it's unsafe to rely on it for forecasting?
AH	The magnitude of errors is small.
B	If we go back to E-3-15. First bulleted list - read it out.
AH	"avoid grouping together areas served by diff't public transport services".
B	Would include grouping areas served by A660 and also the other no56 and 19 buses?
AH	Yes in principle.
B	So for the zone with LEEDS in it, won't comply.
AH	There will always be people with a similar access time for different services however small the zone.
B	Means not zones where part is served by 1 service and part another.
AH	It means zones with reasonably homogeneous access to diff't services.
B	It says, "generally..one zone for each stop".
AH	Preceding sentence says less than 1km.
B	Doesn't say should be 1km. It says 1 for each stop or station.
AH	Or group of stops.
B	It doesn't say that.
AH	It would be normal, where there are stops close to each other, to cluster them in most models.
B	Not all say the Arndale Centre. The zone with Leeds written in it should have been split into

	2?
AH	I'm not sure I would agree with you. What we're trying to represent is access to alternative services. If I look at services where...I'm at the point in my own mind where it could be split but it's probably not essential.
MW	Mr Hanson's given an answer.
B	Can we look C-1-8 p.37 - boarding and alighting figures. A large number of people forecast as alighting at Headingley Hill, greater than at Arndale Centre stop. Anyone with local knowledge would think that was a bit odd rather than Arndale Centre where there's shops and offices. Table 53, AM-OFF: Headingley Centre is zero. It's the location of the centroid connector that
AH	I would. There's a difference between relative use of bus and NGT which is appropriately represented and the point of access onto NGT.
B	Would you agree they will have designed a higher specification of stop for higher numbers of people so the stops would be affected.
AH	I would agree but you are overstating the case. I'm not aware the designers altered the specification of stops.
B	They had to downgrade some specifications of stops and will have relied on the model
AH	I can see the point you are making.
B	You didn't answer whether car trips were modelled with a separate set of connectors?
AH	They are.
B	Not provided.
AH	No.
B	Didn't want to trouble to give us the maps. One place you did is NWLTF-112. Zone 333. Mr Robertson drew our attention to these. He said he couldn't answer the questions because he said the zone size was "a tad too large". Zone 333 seems to break a number of the rules. Breaks the rule about a zone spanning a major barrier because it spans the A660.
AH	I would agree.
B	Do you know where the connectors are?
AH	No.
B	I deduce that it's near the Lawnswood School from the movements but it made it difficult. The other one was [Shawn Lane]. We can move from zone sizes but first, can you see why I might doubt that with such zone sizes I might doubt how the model can possibly explain all the questions about NGT
PH	I've explained there are some things it cannot explain.
B	We differ on definition of purpose when we say whether it is "fit for purpose".
PH	That may be the case.
B	I think it needs to tell us whether to invest in NGT.
PH	That's my definition too. I'm not making the decision- there are other methods. E.g. I make no assessment of journey time reliability. There are other assessments that look at those. It's part of the toolkit.
B	Which part of the toolkit tells us about local rat running?
PH	The LTM. The model provides a level of precision that it can.
B	Let's agree to differ on whether it is precise enough.
	Let's go to C-1-3 figure 8. (page 28). Which trips can shift their time?
PH	They all can
B	Are they all equally likely to shift their time or are some less likely than others.
PH	I would have to refresh my memory on the parameters. I'm referring to C-2-6, page 26, table 4.6 which refers to sensitivity parameters. And there's table 4.7 on the following page. The sensitivity is similar but there's a variation.
B	Which are very sensitive and which least sensitive?
Mw	Yes I'm having a job understanding what's meant by lambda and theta?

PH	The first table is how sensitive the model is to changes in journey time. The higher numbers are more sensitive.
B	My question is which ones are likely to be most sensitive?
PH	I'm hesitating as trying to multiply 2 numbers in my head. I think business trips will probably be at the upper end of sensitivity - non-home-based business. These numbers are taken from guidance docs.
B	These are not locally-calibrated but straight from guidance?
PH	Have been subject to local calibration but predominantly from guidance.
B	Mr Cameron got you to answer whether moderation of total trips was more than changes of time or route. No suppression of trips?
PH	No suppression of trips.
B	So when in NWLTF there are reduced trips what accounts for it?
PH	Travel in evening and early morning.
B	In another do we asked you for all time periods and you said the total trips changed. Why?
PH	Which doc.
B	We did an Fol request on the first day of the inquiry and you responded I think at APP103. Answer 8.
PH	What you asked us to do was separate P&R trips. So P&R trips are counted twice in the highway category.
B	Not appearing because for example, sucked in from Manchester to have a leg in Leeds?
PH	If we're looking at trips in the matrices there's no suppression. But individual areas...
B	If I find a different total other than P&R trips, that's an error.
PH	There are other P&R trips apart from NGT P&R that will be counted.
B	Intra-zonal trips are not included in some tables but not others. Are they always included in the numbers of "total trips"?
PH	Would depend on what we pulled out of the model?
B	The numbers you gave to Mr Chadwick would have been?
PH	That's very generic. I gave the trips that were appropriate for the appraisal.
MW	I can't follow.
PH	The zones cover about half a km. Trips within the zone, most are walking, are within the demand model. But in the assignment model s if they don't travel anywhere else, not included in the models.
B	When you gave the trip numbers to Mr Chadwick, was P&R sent as 1 trip or 2?
PH	P&R would be recorded on public transport where relevant and on highway where it is relevant.
B	So as 2.
PH	To assess impacts on highway and public transport yes.
MW	So counted under both headings. In effect it's double-counted.
B	That's sufficient for m purpose. I have difficulty whether the "AM Peak" means a 3hr peak or average hour, or the peak hour within those. For instance in table at C-1-8, 58, boarding and alighting.
PH	I understand the point you bare making. I apologise it won't in all cases be clear. I think it's referring to an average hourly flow.
B	It's important to know which it is. Is there a way of clarifying it, to be sure.
NC	If it's necessary to provide clarification I can take instructions.
PH	Table 52 says "hour".
PB	What does that mean?
PH	An average hour in the period.
B	Thank you.
	If you divert people onto other routes or times of day, you reduce congestion and people will

	say "actually it's quite nice". How do you move towards a convergence? Does Insp understand?
MW	No
B	Model predicts how people choose partic routes times of day or destination depending on the conditions. But the fact they have done that will affect the choices people will make. My question is how does the model resolve it?
MW	You mean a balance between the two?
B	Yes, convergence is a technical term.
PH	The model seeks to represent the balance - it iterates until it converges.
B	You do that every time you run the model?
PH	Yes that's why it takes time.
B	Even when you do a sensitivity test?
PH	Er...yes.
B	Hesitation?
PH	Well some with journey time.
B	Your 3.10 in Proof outlines the demand model. More detail is in C-1-3. I'd like to go to it.
PH	We may need 3-2-6.
B	C-1-3 will do.
	You'd agree that the generalised cost is the thing that ultimately determines whether people choose 1 mode of transport over another?
PH	Yes but I'd add the word "change" because we are comparing with he existing position.
B	Often called "generalised cost" but can be "generalised time"?
PH	Yes
B	Higher, less attractive?
PH	Yes
B	A weighted number representing all the unpleasantnesses and inconveniences?
PH	Yes
B	Don't mean money or time?
PH	Yes.
B	So in 4..1.1 where are the "quality factors"?
PH	Are in the time factors for public transport?
B	Are "hidden within" the figures for vehicle time or travel time?
PH	Are already in it, an aggregation. The t_t or t_a in the formula.
B	They are "quality penalties" for inconvenience?
PH	That's fair.
B	If we remove the penalty, then an increased use will be predicted in the model?
PH	Yes.
B	Average penalty applied to bus trips is 11.3 minutes higher than the trolleybus representing the bus journey (5.5)and bus stop (7.1) [minus NGT penalty]?
PH	That's my recollection
B	Other things being equal, if a bus tri were 10 mins shorter door-to door, addition of quality penalty would cause you to predict most people would use trolleybus. A bus trip with same fare, 10 mins shorter but the penalty means most will use trolleybus.
PH	Half at 11 minutes. 10 minutes, more than half. Maybe 52%.
B	Value time of about 6p per minute?
PH	Values increase over time. 10p may be more sensible overall.
B	So the penalty would be equivalent to 113p?
PH	Correct.

B	So if the bus trip were £1.13p cheaper the penalty would cause most people to go on the trolleybus.
PH	Correct. That's what the research shows.
B	You say it's justified but there's an inbuilt advantage for trolleybus.
MW	Is it a sudden leap between 10 mins and 11 mins?
PH	Not a sudden leap.
B	Without a calculator we can't put a figure on it. But the existence of the penalty changes us from a position where most people use a bus to where most use trolleybus.
PH	Any improvement would make a change.
B	Yes- all I wanted to establish was the built-in advantage worth 11.3 mins. You say you are satisfied these penalties are within the range established by indep research.
PH	Yes.
B	Higher than Johnson Abrantes and Wardman, review for UK Tram, which DfT looked at, and id'd an average value...the median value 3 minutes lower than the 11.3 minutes you looked at for the trolley bus.
PH	I looked at the guidance/values in WebTAG and took my own judgment of the attributes/view of the benefits the trolleybus offers and came out at 12 or 13 minutes. A very high level review. The extent of my review was to look at WebTAG guidance and didn't look at the research, although I was involved in that study.
B	E-3-17 table 2, page 19; was something you looked at?
PH	Yes.
B	Some numbers for vehicles and some for bus stops. Number for CCTV overall - 2.54. Bus stops 2.91 [PH confirms]. Do you know the value used in LTM?
PH	I'm sorry my assessment was an overall one and wasn't trying to disentangle the different elements.
B	Well, the value that would be applied to a commuter using a stop that simply lacked CCTV would be 11.4 minutes. That come from C-2-4, p.1, tble 1. What we see is CCTV at bus stops, WebTAG says overall, 2.91 minutes but the value you've used is for 11.42 minutes.
MW	Yes I follow that, can see that. Can you see that, Mr Hanson?
PH	[silent]
B	Came from your colleagues. You use a value which is about 4x greater.
PH	Well the rest of this note describes the interpretation. I suspect this question should be directed at Mr Chadwick. I would need a lot more info than I've looked at to understand the individual elements. To understand these attributes, we need to look at the nature of the errors to understand how they have arisen.
MW	Are you responsible for these?
	Mr Chadwick is Steer Davies Gleeve. Not your responsibility and you've been recommended that figure?
PH	Yes.
B	You said you'd satisfied yourself that the figures were within the WebTAG guidance and the values were appropriate. I'm pointing out that you are using a value 4x higher.
PH	The extent of my analysis was to look at the overall package not individual elements. But if I were looking at those I would need to look at the extent of errors or inaccuracies.
B	You say you only looked at the totals and not the components?
PH	Correct- to look whether the overall cost of NGT against bus was within tolerance. Within the bounds of guidance. Plausible.
B	You say you didn't look at that on CCTV?
PH	I'm satisfied we have represented a reasonable...the change in quality over time, and that the overall quality of NGT relative to bus is appropriate.
B	I'll not go further. You'd agree the individual values are higher?
PH	I haven't reviewed each indiv value. The values you've taken me to, I agree.

B	Also, "real time info": 1.69 in WebTAG but you've got 10.18 for commuters?
PH	I agree you've pointed out the numbers.
B	Can we go to the formula for generalised cost in C-1-3. Generalised cost -comment on the 't _h '?
PH	Where the model forecasts an increase in car travel time, that travel time is applied to buses, because buses are slowed down by congestion. That is the general mechanism.
B	Is it still used?
PH	On all services outside the corridor of NGT.
B	Inside the NGT corridor?
PH	I've taken info from the runtime model.
B	An inconsistency in the model?
PH	A difference.
B	When was it introduced?
PH	The end of 2013.
B	Where does it say, in this doc, that you are not using 't _h ' in the NGT corridor. This is the definition of the model in section 4.2. Where does it say that?
PH	I think its set out in C-1-8.
B	Doesn't separate estimation of NGT run times remove an important element of the original model?
PH	No because the runtimes take into account the congestion in the model.
B	If there is increased congestion then there will be increased runtimes?
PH	In principle yes.
B	In each run, the runtimes are fixed?
PH	Yes.
B	All the NGT tests draw on the runtime model, do they not?
PH	Correct.
B	A fixed set of run times established in a way I'll explore with Mr Chadwick. And used for every run done for NGT?
PH	In every test we've done at this stage.
B	This stage?
PH	If we thought there was a material difference we could rerun it.
B	There was an increase in congestion in the period up o 2013?
PH	Yes.
B	What figure was used for congestion?
PH	We interpolate to 2020.
B	The runtimes remain the same in 2016 and 2031 even though the model is predicting an increase in congestion?
PH	Yes.
B	NGT is segregated but the same is true of bus journey times- same in 2016 and 2031?
PH	Yes.
B	So no link between the congestion you're predicting and the
PH	There's a link but no direct linkage.
B	You say, he estimate originally had some linkage with congestion but then stayed the same?
PH	Yes. Not then varied.
B	So when you want to test "High growth" you assume run times remain the same?
PH	Haven't tested variations, no.
B	So one element that NGT would reduce congestion, you don't represent at all - don't represent how changes of congestion affect run times?
PH	A fixed number but derived from changes in congestion.

B	Derived from something but you assume it remains the same.
PH	In the business case yes. But if there were material changes we'd redo it.
B	We have to take the model you've produced for the inquiry not some other model you produce later.
PH	I agree with the points you're making. For the period we've done.
B	For the appraisal period of 60 years? You predict that the runtimes will stay the same regardless of what happens to congestion on the road.
PH	Yes. But most projects look at 15 years but extrapolate throughout.
B	Most models would keep the "t _n ". I'm sure one of the things DfT liked about your model was 't _n '.
PH	It's fixed but it's derived from forecasts.
MW	How far through are you Mr Bonsall?
B	A quarter.
MW	We'll adjourn till 10 o'clock tomorrow.