

22 July

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10:05

PB further X-Exam of Mr Chadwick

PB	APP144 tells us there were centroid connectors from the Railway stations and the question was whether there would be an exaggerated switch from rail. I think it was still exaggerated because of the penalty. If you can tell me what the intermediate boarding penalty was...? Not the vehicle penalty of 5.5 but the "boarding" or "station" penalty.
Ch	I will have to get back to you in writing.
PB	The coefficient in Table 1 of APP155, fourth from bottom, first column is -0.578. That translates into willingness to pay of 2.76p per journey- column 4. I.e. It showed people were willing to pay less to go on a trolleybus than bus.
Ch	If it was statistically significant, yes.
PB	Not statistically significant, so it shows no statistically significant willingness to pay more for a trolleybus?
Ch	In terms of the attributes tested - not vehicle comfort and ambient noise, etc.
PB	You chose to ignore the result?
Ch	I don't think we "ignored" it but as it was not statistically significant we sought to fit a model that had a better statistical fit.
PB	You did ignore it, that figure.
Ch	We set it aside.
PB	When I cross-examined on Day 26 you said modes were included to explore attitudes,
Ch	We wanted to see if modes [???? 10.10].
PB	Why new bus vs old bus?
Ch	Because we were conscious that there is a difference in quality that the user perceives and is prepared to pay for ad is statistically significant.
PB	What was the intention of the survey?
Ch	To seek to capture willingness to pay for different attributes of the service but w were conscious there were some attributes w couldn't reliably capture in the survey- noise, comfort.
PB	Why?
Ch	One, we knew there was a quality difference and wanted to see whether it could be explained by other variables. Secondly while the Standard Preference work was being done, while the preference [of Promoters] for trolleybus was not confirmed until October 2009, so it was still possible that an alternative mode would be chosen. In January 2008 it was possible, though not probable, that the Promoters would have chosen to pursue an alternative technology.
PB	It is of relevance to the LCA if it were designed to be a new bus?
Ch	Possibly.
PB	The message was clear- there was no significant preference indeed an aversion. Why did you ignore it?
Ch	We presented them with a picture. We didn't tell them about comfort it provides different ambient noise, acceleration/deceleration profiles.
PB	If it had revealed a preference as significant as for "very new bus" you would have included that?
Ch	An interesting but hypothetical question. I suspect we would though it would have posed a challenge...Probably the inclination would have been to say yes we'd have used it directly, but it could be rightly challenged.

PB	What about if it had been half as great?
Ch	Well that's hypothetical.
PB	Why ask the question if you were going to ignore it?
Ch	We wouldn't ignore it - we could have used it but it be subject to challenge.
PB	Why would you use a figure you knew could e subject to challenge?
Ch	All these SP results need interpretation- there's the context of the attributes we pt to people and wider attributes we didn't put to people.
PB	You said if it had been a high value you'd have used it directly.
Ch	I said my inclination. You are asking a very hypothetical question about something that happened 6 years ago.
PB	You expected it would be a reasonable value- higher figure?
Ch	We didn't have an expectation- didn't know.
PB	I was lower than you expected?
Ch	I just said, we didn't go there with an expectation.
PB	Why didn't you use it- it might have been right?
Ch	The intention was to see if we could explain the choices...we hoped that we could explain the choice without reference to a constant but there was the possibility that it was important so we had to include it, but what we found out, is it's statistically insignificant and in that case it is right to drop it from the model.
PB	Para 7.46 of C-2-24 you say you had ignored it because you ad explicitly accounted for the service attributes. [Ch: in the context of the experiment, not necessarily in the context of trolleybuses]. You say having done so, there was no further preference to account for. Why then did you add in a further preference for trolleybus in the form of the 5.5 minute penalty that you applied to other forms of PT?
Ch	As I've already set out, there were some attributes not accounted for in the experiment not because we didn't want to but we couldn't do it reliably.
PB	Can't have it both ways - either the preference is captured by the attributes you tested in the SP experiment or not. If it is, then you can't ignore that it's minus 2.76?
Ch	Well we can because the participants were not told about noise, acceleration/deceleration, internal layouts, 3 doors and the implications of ease of access and egress. So the constant cannot represent them and there was no way they could have experienced them. By contrast with FTR and new bus which are operating in Leeds and we know because we are surveying users, we know they would have travelled on a new bus, that a certain segment of respondents had used FTR, so it as a different situation.
PB	Either they are the relevant characteristics or they are not. You are now saying they are not relevant characteristics
Ch	They are relevant but not complete.
PB	Those are not specific to a trolleybus? So it can't be a reason for ignoring the ASC. That's why Johnson et al described your argument as "rather dubious".
Ch	No, they're not.
PB	You shouldn't have ignored the results. It shows a strong preference for New Bus to old bus; smaller preference for newer articulated vehicle
C	FTR vehicle.
PB	No preference for trolleybus.
Ch	Yes - not minus, not significant.
PB	Do you believe the results of your SP study?
Ch	Yes
PB	Why did you not tell Mr Hanson to apply no penalty to trolleybus?

Ch	Reasons I've previously outlined.
PB	And why did you not tell him to apply a bonus for people using the new double-decker bus?
Ch	Because there is no scenari where I'm modellin people using a new double-decketr bus in the way that you've outlined it.
PB	Not in the LCA?
Ch	Over the lifetime I' happy we've modelled it appropriately. We're looking over a long appraisal period and e think treating LCA as an average bus over the period is the right thing to do.
PB	Why is it appropriate to use the preference for "very new bus" rather than "bus with advanced technology like FTR"?
Ch	We believe those atrributes we're talking about were best reflected by the preference for very new bus and if anything a trolleybus would be even better than that.
PB	Why is "very new bus" a better substitute than "new bus articulated with new tech like FTR"?
Ch	We're trying to capture there...attributes of quality such as ride quality, noise and comfort and in our viw what FTR experienced, wasn't delivering that in the same way as very new buses.
Insp	You said you applied that additional factor, penalty to take account of the ones you'd not modelled and now you're adding them again to take account of the preference for the new bus. Because that was why you chose the preference for the very new bus over the old bus as opposed to the FTR and then you say you applied the penalty. What attributes were there, what other attributes that made you choose the very new bus?
Ch	We know a new bus is more comfortable, quieter etc and we expect the uplift in quality from an old bus to a new bus to be at least the uplift in quality fro a new bus to a trolley bus.
Insp	Double-counted. I don't understand why, how it can be counted as a penalty and as a reason for including this when the other one would have been an articulated bus that was possibly more similar to what he trolleybus would be?
Ch	The articulated bus would be more similar in outward appearance but it's not outward appearance we are trying to capture through the penalty. What we are seeking to capture is those features of ride quality, comfort etc...simply because it has the appearance doesn't actually reflect the user's experience of those quality attributes we are seeking to capture and in our view the difference in attributes between old bus and new bus was at least as great as the difference in experience from a n average bus to a trolley vehicle.
PB	What do you think should be deduced from the fact the SP showed a stronger preference for "very new bus" over articulated FTR like vehicle?
Ch	People prefer the new buses to an FTR like vehicle or have a greater willingness to pay.
PB	Double decker?
Ch	New buses tend to be double decker and the picture shows a double decker.
PB	Just shows a double-decker bus. Dosn't include the other attributes so how can you say that it captures the other variables?
Ch	We knew becaue the survey was of bus users they will have experience of travelling on a new bus- lots of people were travelling on an FTR.
PB	Some will have travelled on a tram and not liked that?
Ch	We didn't ask about them. But will be a small fraction as we asked about travelling in Leeds.
PB	Para 1.5 of APP155. Seems to say that since "trolleybus vs bus" comparison there's no preference for trolleybus we have to conclude that the pictures didn't capture the essence of the vehicles and then we can't believe the answers to it, or to "New bus vs FTR".
Ch	Some attributes we couldn't include. But we did know some people had experienced FTR but not trolleybus.
PB	You say we can't believe "trolleybus vs bus" or "tram vs bus" or "FTR vs new bus" but we can believe...

Ch	That's wrong - we can believe FTR vs new bus because that comes out as a statistically significant value. That's not the question, the question is why we chose to apply the improvement old bus to the new bus.
PB	The graphic didn't allow you to capture the attributes?
Ch	In respect of trolley bus, no.
PB	But you knew that in advance, so why ask the question?
Ch	There are always things you would have done differently. If we were to do it again, we would give people at least a textual description of the experience on a trolley bus. But we didn't do that, so we couldn't capture that.
Insp	If you are so uncertain of the results, why didn't you do it again, with what you suggested?
Ch	2 reasons for that. First is in 2 sentences of APP155- which is we discussed the approach with the Dept at SP Pilot Stage, at SP stage and when applying the SP work through 209 MSBC and subsequently in 2011 and 2012 BAFB and Prog Entry BC. They were content that the approach we were taking was appropriate given the circumstances that we were in. That's 1 side of it. And given that the cost of undertaking these exercises is significant and they take a long time. Undoubtedly, if the Dept had come back to us and said we're not happy, this isn't appropriate no doubt we'd have gone to the promoters and said we need to go and do more work. But they didn't say that, they were content.
Insp	You're really going on what Dept for Transport, their reaction, isn't it?
Ch	I think it is a very important consideration. Clearly our recommendation to the Promoters was that the survey was useful and appropriate in testing this scheme.
Insp	Did they [DfT] test it? Question it?
Ch	Oh, intensely.
{PB	Could have looked at studies elsewhere?
Ch	Costs of professional time and elapsed time. If there is no necessity to do that, it is disproportionate to do so.
Insp	Can I explore that a bit further. When you say there's no necessity to do so, when you are not sure about the results being acceptable anyway because you're not able to use some of the results the costs of getting it wrong could be enormous/.
Ch	Absolutely,
Insp	You've already accepted you're not believing some of the results and you would have done it differently. It all sounds to me as though you were trying to cut costs at what could be enormous expense if you got it wrong.
C	Oh absolutely but I don't agree with that suggestion that we are going down this approach to cut costs. What we are adopting in line with guidance is a proportionate approach to the project and we tested that approach with the Dept as we've gone along and they are not shy in coming forward and telling us if they think something's not appropriate and if they thought it was not appropriate they wouldn't have accepted the business case and awarded programme entry. I don't accept Sir the suggestion we've done a cut-price job.
Insp	I've not suggested that, I'm just looking at what you just said. You've just given your evidence that you're saying you didn't want to spend any more money on it because you wanted to keep the costs down. That's what you were saying basically.
Ch	Well no, part of our role is to help the Promoters find a proportionate approach for this particular scheme and an inherent part of that is balancing the time and effort that is put into all modelling and all appraisal with the scale of the project and ...we've tested that with DfT at every stage and by the fact they've awarded Prog Entry we're confident that the approach is considered by them to be proportionate.... We are confident, absolutely confident that we've adopted an approach that's proportionate and that's witnessed by the fact that the Dept has awarded us Prog Entry for the scheme.
PB	You justify substitution of ver new bus when saying "it is considered" the uplift is at least as great. Who is "we"?
Ch	The promoters, we SDG, and the Dept were convinced so they do to.

PB	The demand and revenue stream predicted by the LTM is wholly dependent on that assumption.
Ch	It's an important part of the benefit and revenue projection. But it's not entirely dependent on that.
PB	We don't actually know- no sensitivity work to show what would be the outcome if the result of SP were correct (no preference)?
Ch	Correct.
PB	You describe the approach as "prudent" - can understand why others wouldn't?
Ch	No- given the other attributes, anyone who's been in an electric vehicle would tell you.
PB	Not prudent even to fail to do a sensitivity test to see what would happen if the SP were right.
Ch	You say that but the DfT thought it was.
PB	I would remind you that there is a verbatim recording. Did you ever tell DfT that SP had revealed an aversion, albeit a small one to travel on trolleybus?
Ch	[pause] I don't know- I mean there were a number of presentations to the Dept about the SP work, some of which I was at and some of which I wasn't at. They would certainly have identified the statistical insignificance of the, um, trolley vehicle parameter because that was an important thing. Whether they said that it came out as a negative sign, I just don't know.
PB	When I originally asked you about this parameter you said it had never been published and you didn't know what it was. Now we've unearthed it. Did you ever give the DfT the equivalent of APP155?
Ch	No.
PB	So they didn't know.
Ch	But ...there were several presentations about SP work whether in the course of those presentations we told them the sign was negative...- I can't say, I'm just telling you I don't know.
PB	It's nowhere in C-2-4 which you described as the bundling together of the info you gave them? So can assume you didn't tell them.
Ch	Can't say that.
Insp	Sorry, is there anything in the evidence showing you did inform them?
Ch	No.
PB	Did you tell them there was no sensitivity test what would happen if SP work were correct?
Ch	Probably not in those terms but we showed them what tests we have done, they are set out in the docs before the Inq
PB	Did DfT ask you the sort of Qs I've just been asking you?
Ch	Well there were several of presentations- can I remember what we talked about in those meetings 6 years ago, no I can't. So I can't recall.
PB	They were in a hurry to complete their consideration of your proposal and they didn't get down to the level of detail we've got down to in X-Ex?
Ch	I don't recognise that to be the case.
PB	If no preference or aversion to trolleybus who would be faced with the debt liability?
Ch	West Yorks combined authority?
Pb	Did you ever tell Mr Haskins that SP work revealed an aversion to travel on trolley buses?
Ch	Reps of Metro were present at the presentations with DfT and we've had discussions with them- whether in the course of those we told them the parameters were negative I just don't know/
PB	Isn't it important to have warned them that SP work was going to be ignored and instead you'd imported a whole new parameter for v new bus?
Ch	I'm confident we fulfilled our duty of care to the client to inform them about the strengths and

	weakness of the SP work and its application through the modelling.
Pb	Did you alert them to the fact that if the finding was correct, the predicted revenue stream would fail to materialise?
Ch	I think, I know, the Promoters are fully aware that the predicted benefit and revenue streams will only be realised if they deliver a system that has the runtimes and quality attributes we have assumed.
PB	More than that - will only materialise if they actually do have a preference for trolley vehicles.
Ch	For the reasons I've previously set out I'm confident there will be a preference for trolley bus.
Insp	Did you ask people about distances between stops and frequency of services and other things the objectors have suggested are not attractive about the trolleybus?
Ch	We did present to people scenarios for different frequencies of services and that allows a valuation of headway or frequency. We do capture a valuation of walking time as part of SP work so if people were travelling further that additional time is reflected in the modelling.
Insp	So that's been taken into account. How has it been taken into account?
Ch	The... generalised journey time is made up of a no of components- time it takes to walk to your stop, waiting time at the stop, in vehicle time and time it takes to walk to destination.
Insp	Taken into acct in the journey time?
Ch	Yes in generalised journey time and what we find is people have a greater cost in walking time than they do for travel time so if they were walking further to NGT stop that would have a disproportionately greater cost than if they were to walk to a closer bus stop. In the choices model that is weighed against other attributes inc the in vehicle time for NGT and the quality attributes for NGT.
PB	Do you agree the business case depends on the willingness of politicians to raise the debt of £77m?
Ch	Ukm ...£35m but you are right if politicians were not willing to borrow that amount of money then there would be a funding gap and the scheme would not proceed.
PB	The willingness to borrow so far has been based on assumption the debt would be paid off using the predicted revenue surplus?
Ch	I think they've taken comfort that the revenue surplus would be in excess of the repayments. They haven't been posed a scenario where it isn't so we don't know what their attitude would be if it weren't.
PB	Wouldn't it have been prudent to do a sensitivity test to see what would have happened if the SP work were correct and you could have worked out whether the politicians were prepared to take on this debt?
Ch	If that were considered a likely scenario. But for the reasons I've set out repeatedly I don't accept that is the case. ...it is a minor detail in this context because we just do not believe that is the case and neither do the Dept.
PB	APP156- draws attn to results and concs in the Johnson et al paper- you call it the ITS Paper. A prime aim of Johnson et al was to determine if an Alt Specific Constant is required when modelling for trams. In addition to other factors. Given that that's what the whole study was about don't you agree the comment on your dismissing the low value for ASC deserved to be taken seriously - not a throwaway comment?
Ch	Yes but... they say, a dubious claim given potential differences in ride quality and comfort and noise levels but this was something not considered in the SP experiment. What they are saying is there are things we'd not considered that we ought to consider and we sought to consider those factors and associate a value with them that we can use for the modelling.
PB	That's not what they are saying at all - talking about your reasons for saying the small value of that ASC could be ignored. Say your reasons are rather dubious.
Ch	That's a direct reference to para 7.46 and has to be taken in the context of the report as a whole. It's saying that given the attributes we presented to people there was no need for a constant. And there were other factors- comfort, noise levels that weren't taken into account and I agree with them.

PB	Are you disagreeing with them that your reasoning was "rather dubious"? You seem to be saying it's not dubious at all, it's perfectly right.
Ch	...They're saying if you'd included things you didn't include you might have got a different result. And they're quite right.
PB	No, no no. They are saying a reason for getting a low ASC is if you have got all those other factors in. But you didn't have all those factors in so you haven't a reason for it being a low ASC except for the fact that actually people don't like riding on trolleybuses.
Ch	I don't agree with that interpretation.
PB	Secondly they thought your high value for lighting was that the survey work was done in winter- anything further to add?
Ch	No.

PB	Table C-2-4, table 1, page 1 of appdx.
NC	Can I confirm you are asking about a point set out in APP156?
PB	Yes- first para on the second page. [11:06] What we're going to look at is what the capping does. Good shelter, lightng, display and simply lacks CCTV?
Ch	Not off the top of my head.
PB	11.42 value in bottom of table. Right?
Ch	Yes.
PB	My understanding of the capping is, we take first 10 mins whole and halve the second 10 mins?
Ch	Yes,
PB	That means we get 10.71 b/c we take the whole of the 10 and halve the 1.42?
Ch	Yes.
PB	Virtually no impact?
Ch	A small impact.
PB	Can we be absolutely certain this is the correct CCTV parameter? Is this the correct CCTV parameter?
Ch	Well its a table....
PB	Is this he parameter you suggested Mr Hanson should use in the LTM?
Ch	Well we gave the values post the capping - we worked it out.
PB	You are absolutely sure that's the right parameter - you started with that value 11.42.
CH	Well it'll take some time to cross-check it?
PB	Table 2- 34.175 divided by 0.92?
Ch	Yes.
PB	This parameter is supposed to be applied when there is no CCTV on the bus or at the stop?
Ch	Correct.
PB	This is the parameter you applied?
Ch	Yes.
PB	Did you not know buses had CCTV on them?
Ch	Yes
PB	So why did you use the whole parameter?
CH	I'd have to consult with colleagues.
PB	Do you agree you were wrong to use he whole parameter?
Ch	I'm saying I can't explain it.

PB	Look at paragraph 3.8 of the same doc -says "demand forecasts will need to be adjusted in case of partial improvement" - as that done?
Ch	You are asking the same question in the same way - I can't explain it now - I'd need to consult with colleagues and we'll revert.
PB	You accept that application of the full penalty would be an error?
Ch	I accept that the way we've applied it we split the penalty between stop and vehicle so on the face of it the stop value would be half.
PB	If you had applied it, would be an error?
CH	Yes.
PB	Would have inflated the revenue forecast b/c better CCTV on the stops of NGT?
CH	On balance [11.13]/
PB	How carefully did DfT look at this ?
Ch	With considerable care.
PB	Do you think
Ch	In some respects it doesn't matter- they thought the parameters post-capping were reasonable attribute of this system and on that basis they took the scheme through to programme entry. And when they made adjustments to BCR, none of those were related to the quality parameters,
PB	What they heard from you was that the capped package was only about 20% higher than their own package?
Ch	Yes -appdx A.
PB	So they took on board your evidence that your capped package was only about 20% more than the capped package done using their own research?
Ch	Well would have done whatever research they wanted.
PB	Actually it's 23% above theirs. What you need to lose sleep over is that if you'd taken out of their package the CCTV on bus you'd have been 68% higher. If you'd told DfT you were 68% higher would they have agreed with you?
CH	Yes because they were not looking at the percentage but at the absolute value in terms of minutes of the quality package. If they are content that that reasonably captures the attributes of NGT that is an important consideration to them.
PB	Decision they could take your parameters would have been informed by your assertion that your parameters were 20% higher than theirs but to tell them that was wrong as your parameters were 68% higher.
CH	Well I don't know what they are but ultimately it comes down to the magnitude of the overall package.
Insp	Professor can we have a break? How much more?
PB	Perhaps quarter of an hour-
Insp	[11:18] Adjourn till half past.
Insp	Inq is resumed/
PB	Final page of APP156, first bullet on that page. Johnson et al say diffs may reflect differences in attributes or way the question was put. Do you agree?
CH	Yes.
PB	So you accept some of the diffs may be due to your survey and timing rather than results in Leeds?
Ch	It's your assertion that the results were out of line with results elsewhere but all I'm saying is a degree of caution is required.
PB	Well they say the explanation is either that there are real underlying diffs between Leeds and elsewhere or the Qs asked?

Ch	It could be.
PB	Page 41 of Johnson et al. NWLTF-119. Section 4.7 on this.
Insp	It would be helpful if that doc can be provided to the SoS.
PB	It's talking about some results from Bus Rapid Transit schemes and they refer to some SP work in Birmingham and they note the values put on CCTV at stops and on buses - had the lowest value of all the attributes tested and that the value was 5.7p.
Ch	Yes [reads].
PB	This compares with your value of 34 pence per trip.
Ch	Yes I'm confused with it because I'm not sure how they derive that value.
PB	Nor am I but if they were right yours would be out of line?
Ch	As the Leeds study was this particular piece of work and it's not clear how they derive that. And also say that attributes related to safety and security can be high values. It's just highlighting how the range of values between studies can differ.
PB	It's not your study but the UK Bus Priority Study.
Ch	Sorry, I misread that.
	We don't know the balance between the studies in Birmingham, and Leeds - could be 90% Birmingham.
PB	Another study in Leeds- doesn't it show your value is far higher?
CH	Depends how the study was designed, how the attributes were presented and what you do with the results.
PB	They highlight that it suggests that in Leeds because there is a difference it must depend on how the survey was constructed.
Ch	Yes in one or other of the surveys.
PB	Difference large because yours was conducted in winter?
Ch	We've been over this.
PB	Ythey say, "actual preference for a mode is small" -so you should have accepted that there is no significant preference for trolleybus and should not have included a 5.5min penalty for modes other than trolleybus.
Ch	Well we've been over this- other factors not here - they ay if you had theoretically captured them the difference would be small and that sounds theoretically correct but there are factors we haven't captured.
PB	The extract from Johnson et al in APP156 doesn't answer the point that particularly high values in your survey were done a winter after a spate of stabbings?
Ch	...A general comment..
PB	And they <i>did</i> refer to your study in particular to bring that out is odd. Let's move on to penultimate para which refers to second bullet in p.54 of Johnson et al. You refer to 3 of these factors, ride quality comfort and noise -and a fourth reliability. The fifth factor they mention if one looks at the full quote is seating availability. Sir if you don't have the full copy of Johnson et al, refer to "ride quality, noise, comfort and seating availability". Why did you leave that one out?
Ch	I listed 3 of the 5 because those are the ones that have not been valued. In the case of punctuality and seating availability we do have values for them. It's to highlight the values we've not got quantitative values for. You may not agree with them.
PB	Sir that concludes my X-Ex apart from the question of the CCTV values. 2 numbers needed - intermediate value for rail boarding penalty parameter and the value actually applied for the CCTV.
Insp	I'm sure they are probably working on it already.
NC	We are working on it.
Insp	You assumed you used the whole parameter in answering the questions so just to let us

	know if that wasn't the case.
	Mr Jones
	X-EX of Mr Chadwick by Mr Jones
GJ	Can we agree some matters of basic principle. Robustness of any model depends on the quality of the data that's fed into it?
Ch	Yes.
GJ	Where one is dealing with assumptions, one expects for a competent form of modelling or report for the assumptions to be set out so the reader can really gauge on what the model has been based?
Ch	Yes.
GJ	One would expect if there was an empirical basis for the assumptions that would be set out - the sources of data that's been drawn in?
Ch	Yes.
GJ	Where the assumptions are based on someone's expertise and judgment, that expertise and experience should be set out? Diff between a junior office boy and a professor?
Ch	In principle the answer is yes but then the question becomes how that is done - what is the appropriate way of doing that.
GJ	The appropriate way is that the reader should be able to understand when a judgment is being made or an interpretation, it's clearly imp't for someone weighing up to know - that's why we have expert evidence?
Ch	Yes.
GJ	Where there are reservations or evidence that is unhelpful in the opposite direction to the views expressed in the report or model, that should also be set out with reasons or explanations why the model differs - not just to be omitted are they?
Ch	Not just omitted but the question is whether they are relevant to the decision,
GJ	Your PoE at 7.29 "my PoE contains all facts which are relevant to the opinions I have expressed". Doesn't just mean evidence in support of your opinion but you have to deal with both sides if it is relevant?
Ch	If it's relevant yes.
GJ	On a number of occasions in X-Ex he said "that wasn't included" and you said, "well the Dept was satisfied". You remember?
CH	Indeed.
GJ	So far as the evidence that's before this Inquiry, the only written evidence we have as to what's before the Dept was the bundle - the evidence submitted in support of business case - and correspondence. Nothing hiding in vaults you are aware of in SDG or in Metro?
Ch	There's an extensive series of docs if you look at the C-series. But there is much more corresp between the promoters and the Dept in terms of presentations, letter exchanges etc.
GJ	Insp can note you've been asked to give evidence. The Insp can note that if there was in the vaults docs that showed for example that Metro had expressly been told the results of SP was no preference, you would have put it in front of the Inspector?
Ch	Not necessarily. There's a whole series of docs that's already been deposited.
GJ	I'm not asking about the docs already submitted. I want to establish what there is. We know that none of that documentation deals with particular questions where Prof Bonsall asked, "has this been disclosed to the Dept". I was assuming that if there were docs that provided an answer, helpful or not, the Promoters would be open and transparent about it and have provided those docs. Am I right or wrong?
Ch	Well what we've tried to do is answer particular questions that have been put to us.
GJ	Not an answer those APPs are ex post facto docs - I'm asking about contemporaneous docs. My understanding was that if contemporaneous docs existed they would have been

	disclosed to Prof Bonsall. Am I right?
Ch	No.
GJ	Insp can't be sure that you are sitting docs that are relevant and you are not disclosing?
Ch	We've provided note and there's lots of other material that's not been provided as it's not relevant.
GJ	I'mnot asking about that. Can Insp be sure you have disclosed the corresp with the Dept?
Ch	What we'e sought o do is look at the correspondence and answer the questions and once we've found the answer the stop - not looked at every document.
GJ	Your APP docs don't provide answers to Prof Bnsall's Qs on what has been disclosed - so Insp can't be sure that relevant docs have been disclosed.
Ch	We've not gone through every document but I can assure the Insp that we're not trying to hide anything. I'll repeat my view that this Inquiry has had at least as much info as any other inquiry elsewhere, if not more.
GJ	Well that's your opinion and we'll give it as much weight as it deserves based on the quality of the witness.
NC	Can Mr Jones refrain from making statements?
Insp	Well it's wasting time- I'm not noting comments.
GJ	We've just wasted 15 minutes not answering a question. We have no minutes do we in evidence of meetings between you individualy and SDG and the Dept?
Ch	Correct.
GJ	When Prof Bonsall pressed you, on every occasion you said "I don't know".
Ch	I don't accept it was every occasion.
GJ	When you did say, "I don't know", no evidence from you. Nothing in the documentation. Not recorded by minutes. It would be wrong therefore to suggest the Dept must have known something if there's no evidence that it knew it at all?
Ch	In that hypothetical scenario, yes that's right.
GJ	You as lead man for SDG are unable to give a completely definitive answer in respect of para 3.8 as to whether CCTV penalties were applied in a whole or partial basis?
Ch	Yes at the moment but we will provide a definitive answer.
GJ	A wrong assumption to make that Dept were aware of something where no evidence they did.
Ch	Well I believe theydid understand it.
GJ	Well I've given just one example but if you don't understand it we can't assume the Dept knew.
Ch	No I'm saying I can't remember what was in a doc written 3 years ago. We need to check it.
GJ	Exactly - we need to check it - it would not be prudent to assume that the Dept's attn was drawn to a matter where there was actually no evidence as to whether it was?
Ch	It would depend if it was a relevant matter- my opinion is that the Dept's attention was drawn to every relevant matter.
GJ	With all due respect, it's not a matter of opinion it's a matter of fact.
Ch	You can have a view on what's relevant and my view is that the Dept's attention has been drawn to every aspect.
GJ	So you now say that in respect of every matter that PB has taken you to and asked whether it was disclosed your position is that all those matters are irrelevant?
Ch	Irrelevant to the Dept.
GJ	Insofar as it affects the Dept's ultimate decision to und the scheme?
Ch	Insofar as it affects the Decisions that the Dept will be taken.
GJ	Hold on. One matter you give evidence on is the likelihood of the Dept awarding funding. If

	right, it's wrong to limit yourself to what was relevant to first -stage funding. The key point is what the Dept would need to sign off on the scheme isn't it?
Ch	At that particular point in time. We've given them the info that they require for the full approval stage but as it sets out in the Prog Entry letter there are a certain set of conditions around that and therefore when we get to conditional approval we have to provide them with info about whether the conditions are met. We can only do that in the future.
GJ	I'm not asking about that. I'm asking about the likelihood of securing funding. You say they are irrelevant to first stage unding?
Ch	Yes.
GJ	The only relevance of first stage funding is that it's relevant to whether the scheme will get funding in the end- is not determinative and at the end of the day the Insp will need to make a judgment how likely it is the Dept will fund it?
Ch	Absolutely correct but further work will be done subsequent to where we are now.
GJ	If it's shown that work that's been relied upon to secure first -stage funding, if analysed later at a higher level and found to be wrong then the weight you can give to first -stage funding will be less?
Ch	That's not the case. We only have to show that the conditions are met. At conditional stage there's no requirement to repeat the full extent of the business case work that's been done.
GJ	They are not limited to those matters and can look at any mater these choose.
Ch	They are not limited and the funding is not certain until it is finally approved [12:17] but the presumption is that so long as those conditions are met, the scheme will be funded.
GJ	Where is that set out in guidance or letters?
Ch	It's the general understanding that they are minded to fund the scheme subject to compliance with those conditions.
GJ	Doyou want to take us to a document that shows us this is a general understanding rather than your own? [ch: Would take up time] Don't want to shut you off.
Ch	I don't wish to refer to a doct.
GJ	[???
	Leeds Supertram an example of that?
Ch	We do.
GJ	Which your company was involved with?
Ch	It was
GJ	South Hants. Was SDG involved in that?
Ch	It was.
GJ	Mersey tram. SDG involved in that?
Insp	Are these ones with DfT approval?
GJ	These are ones with First Stage funding but didn't...
Ch	There was a change in the system. Not in the way NGT has. There were a number of schemes that were developed in the early 90s. The South Hants Rapid Tram scheme, Leeds Supertram, they were developed prior to the intro of the stage process that NGT was subject to and one of the reasons the Dept introduced the staged process was to reduce the instances where schemes failed subsequently to draw down funding and be constructed. So you're right at the time it was appropriate
GJ	There was prior financial approval for those projects?
Ch	There was but not the same.
GJ	They had to make a provisional funding case to the Dept?
Ch	There was but it was not comparable
GJ	Mersey tram. Then the Manchester Metrolink Phase 3?

Ch	Which was fully funded and built and my firm was involved with.
GJ	Edinburgh
Ch	And others too.
GJ	Would it be unfair for me to ask whether those came in under budget?
Ch	Not a matter for the business case but the engineers - Mr Smith could have answered that.
GJ	I did ask Mr Smith.
	You say those examples are not relevant?
Cjh	I believe that through the core docs the Promoters have set out the funding regime that pertains to NGT but don't see that it's necessary to refer to previous funding regimes.
GJ	I'll be suggesting it's relevant that one can't repeat the mantra that first -stage funding is any guarantee. And if the response is that funding arrangements were fundamentally difft we look in vain to see in any of your notes to see evidence about that?
Ch	You do but we - the promoters have learned lessons from that in terms of the level f detail of the work they undertake in promoting the scheme and that's why DfT changed the process.
GJ	You are on record as having been involved in Edinburgh Tram.
C	Our firm was.
GJ	You were on record as describing that scheme's business case as "robust".
Ch	At what date?
GJ	2001.
Ch	That's not the same scheme- a different scheme altogether.
GJ	Significantly over budget?
CH	I believe the First Minister has ordered a judge -led inquiry.
GJ	Yes and also legal proceedings against DLA Piper who were the solicitors.
Ch	I didn't know that.
GJ	Are SDG involved in those proceedings.
Ch	I don't think so- will check but unless I do come back to you you an take it that we are not involved.
GJ	It's very important in principle that business case assumptions are correct?
Ch	In principle yes but the question with respect to other schemes that failed the question is whether the business case was wrong- In South Hants and Merseyside it wasn't the assumptions about costs and benefits that were wrong but the capital costs.
GJ	Your PoE at para 5.7 [12:30]- you say it has good VfMan warrants central govt funding.
Ch	Correct.
GJ	One of the factors depends on patronage and whether that's sound?
Ch	Yes
GJ	From that is derived the revenue forecasts?
CH	Y
GJ	And the West Yorks Transport Authority whoever holds the can a the end of the day is looking at the revenues as a principal means of securing the loan or paying off the loan?
Ch	Not looking at revenue streams to secure the loan but is looking at its creditworthiness as a public body but it is looking for reassurance.
GJ	At the moment if the forecasts are wrong, there is no "plan B" and no consideration what would be done if the business model doesn't prove to e accurate?
Ch	Um well the Section 151 Officers have signed off the submission as they are required to do - I can't speak for them but I would presume they ahve plans for how the loan would be repaid.

GJ	Well we heard from Mr Haskins- no funding has been set aside to make up the deficit.
Ch	So far as I'm concerned, no plan B. That wouldn't happen because local authority budgets are not set so far advance -we are taking about a scheme that would go ahead in 6 years time and I wouldn't expect that.
GJ	No consideration of what has been done so far as you are concerned if the business case is wrong?
Ch	No - but wasn't present at the meetings held by the Council or read the [papers that were put to them- I don't know if there was any debate, I don't know.
GJ	So far as you know, no evidence of consideration by local authority on what would happen if the business case was incorrect. Doesn't that indicate the need for prudent assumptions in the business case?
Ch	Yes. I believe we have taken a prudent view in particular the financial case and that the business case is evidenced.
GJ	It's critical isn't it that any weaknesses, assumptions based on judgment are set out so the politicians can make an informed judgment?
Ch	If those are relevant, yes.
GJ	PB asked you whether you expressly told Mr Haskins that the SP report had indicated no preference and insofar as it did , a statistically insignificant aversion to trolley bus?
Ch	I can't recall whether that point was specifically told to Mr Haskins but I believe the Promoters have been made aware of the criticality of our assumptions.
GJ	You don't know?
Ch	I can't recall.
GJ	Can we go to the Stated Preference (SP) report -C-4-24. We just looked at para 3.8 and you are waiting to check whether or not there has been a halving of the penalties. In terms of the modelling that's presented, there's an interrelation with Mr Hanson. We've gone through our note and there are 12 or 13 admitted errors. I'm not asking you to agree that number or the relevance of it. This question is on an assumption. If the Insp takes the view that the admitted errors are relevant, this must undermine the assertion that you can give weight to the DfT's approval of funding?
Ch	Yes.
GJ	I want to turn to the SP study. It's right isn't it that when we lok at the Stated Preference study we don't find in it a clear statement, the results of the SP study in respect of trolley bus- established that with PB?
Ch	We have [established that].
GJ	You couldn't give an answer- nobody could know reading this report give an answer if we go to Appdx A, second page in, that the stated preference was no [reference for a trolleybus?
Ch	The immediate answer to the Q is "no" but I don't necessarily accept the premise that there was no preference.
GJ	I'm not putting to you that there was a dislike.
	You wouldn't know that the stated preference was that there was no preference?
Ch	They wouldn't know that.
GJ	I'm not going to ask you about the aversion. But the "no preference" shown IS statistically significant isn't it?
Ch	That's right. That was the result that was returned but we now that here were other factors and we adopted an approach that made sure that they were reflected appropriately in the demand forecast and that's what we discussed extensively with the Dept.
GJ	Isn't "Stated preference" the preference people stated?
Ch	Er well it is.
GJ	Then why is the fact that it's statistically significant that they don't state a preference for it not recorded?

Ch	I've given the answer for it.
GJ	I want to explore that because frankly we don't find your answers credible as a professional and
Insp	Mr Jones you are asking about the guidance and have become distracted away from it?
GJ	No support in any guidance for the approach in APP155?
CH	That's correct- so far as I am aware, no guidance on conducting SP works - that's why we sad precedent and practice, wile there are textbooks on practice the particulars are developed in precedence and practice.
GJ	What precedent do you cite for where you ask people's preference for 1 mode of transport, ignore it and use a value for a different mode of practice.
Ch	There's plenty of precedent that you exclude statistically insignificant values from a model. And secondly it's how we actually approve those through the packaging approach - if you pick up C-4-24 that's picking up precedent and practice from London buses.
GJ	First you agreed with me that the fact it showed no stated preference was statistically significant?
Ch	Correct but there were other factors...
GJ	I was asking why you excluded from the report the finding that the SP was no preference.
Ch	No we're talking at c ross-purposes- when designing a model it's right that you exclude statistically insignificant values [to get a model with a good fit] [??? 12:55].
GJ	Should not be excluding evidence to get a good fit with client's case?
CH	Correct.
GJ	Decision taken that descriptions be kept short in SP survey?
Ch	Yes.
GJ	In the report - was produced after the results had come back and been looked at?
Ch	Yes
GJ	Description of the approach all written after you'd received the results and analysed them?
Ch	Corect.
GJ	Intro at 1.5: "generally...methodology is sound" and 1.3 the purpose of the survey. And 1.2 [reads]. And 1.3- the SP survey-so e're not talking about the subsequent manipulation or analysis?
Ch	Yes
GJ	"had to be designed to support a major scheme business case" -presupposes to some extent...but let's move on. We see overall approach - page 3. Says surveys are "powerful" - agree that uncertainty affects reliance on results?
Ch	Yes.
GJ	You set out means of avoiding bias. Then at 2.8: "since some of the service attributes do not exist...one alternative includes features that the respondent knows better...o reduce the tendency to choose the new service type, it is defined so some of the features of the new service are defined at a more basic level". So you there say there is a bias for people to favour new services they don't know about over and above what they already know?
Ch	Yes
GJ	The purpose of the other ones is to offset that bias?
Ch	That's what it says and it appears the outcome has been achieved as no preference stated for trolley vehicle.
GJ	At this stage it's saying it will give a more accurate result - put tram or trolleybus in a more basic form precisely to take out any bias that it will be more comfortable, more speedy.
Ch	Yes and we'd really have liked to test those things individually. They are impnt and we know they are important.

GJ	So here we are at 2.8 saying you have to adjust for a bias for new things?
Ch	Yes- didn't want to say it would be more comfortable, quieter and have a better ride quality than an alternative because how much better and you'd be sitting here criticising us.
GJ	What you're telling us is worse - the manipulation is not based on any stated preference at all but assumptions you and your team have made when you get results that you don't want?
Ch	No and no. It's about getting results we are comfortable with and not that we don't want them
GJ	If you knew all that why did you put in a question on trolleybus?
CH	We've covered this.
Insp	I don't want to go back over
GJ	I don't accept the answers and our case is that we don't believe your answers and I'm going to be less restrained than Prof Bonsall.
Insp	Don't want you to be aggressive or bully the witness.
GJ	I need to put our case that we don't believe him - won't be aggressive.
NC	Mr Jones is right that i he wants to make those submissions he does need to put that to te witness but he can do it in a polite way.
Insp	Is that a convenient time to break? Adjourn for lunch [13:08].
[2:07]	Inq is resumed- any matters arising?
NC	Sir before lunch Mr Jones said he was going to put the allegation that Mr Chadwick was not to be believed and that's a very serious allegation and e would need reasonable grounds.
Insp	Are you questioning Mr Chadwick's professional integrity?
GJ	We'll see. That's right and even if I am considering making those submissions, I do have to establish reasonable grounds and if that is contemplated it's not to be done lightly.
Insp	Any progress on the 2 points asked for?
NC	NO I have sought to clarify what the things were.
Insp	Time estimate Mr Jones?
GJ	Still a day and I got on at a quarter to twelve, Sir.
Insp	Very well- some time on Thurs
GJ	Was this [SP report] one of the docs sent to DfT?
Ch	Yes it was- all of the C-series docs were.
GJ	We were looking at SP survey and para 2.8. It's right isn't it that no -where is it set out in that report, if you take up APP155, it's not suggested in that report is it that in some way the responses in respect of trolleybus were improperly influenced bc you hadn't described it as being comfortable, journey times etc?
Ch	No
GJ	And when we see the concs of the report at page 71. Presented on basis at 9.1 that "included 12 choice exercises, 1700 respondents, detailed design with great care and most findings have high levels of statistical significance". In this report, notwithstanding that the authors were aware of what had come back in respect of trolleybus, it says the design of the survey ere good - suggested it took into account on board conditions and reliability?
Ch	Yes
GJ	But now we're told in respect of a key issue in APP155 that it's not right?
Ch	I don't see those things as inconsistent. Sets out that from the survey values were generated that could be used as part of the overall modelling of NGT. It's not unusual that some of the attributes come out as not statistically insignificant and are not carried forward. I don't see a contradiction.

GJ	Bu it wasn't insignificant that it showed no preference?
Ch	Well we established that this morning.
GJ	Should have set out all the figures so people could judge the weight to give to the report?
Ch	Well my view at the time was that it was fair and transparent and my view now is it is still fair and transparent because there were lots of discussions with DfT and had ample opp to ask questions.
GJ	I asked and you said you can't recall whether they were told that there was a result there was no
Ch	Doesn't change the point that they had ample opportunity to ask any Qs they wanted.
GJ	Doesn't answer my question whether the report is fair and transparent.
	My understanding from your oral evidence this morning was that survey wasn't as robust as you would have liked for the reasons set out in APP155 but that's not set out in this report?
Ch	I didn't say the survey was inadequate I said it was incomplete. The decision was taken at the time that minimal description would be give seeking not to bias people's responses. What I said this morning, with the benefit of hindsight would it have been preferable to do it yes it would have been nice to do that. But as with all of these things there's a limit to how much info you can give and still get people to make representative choices.
GJ	Until X-ex there was nothing said to suggest that the survey was in any way misguided or couldn't be relied on?
Ch	That's right and that's still my position.
GJ	Para 2.8 explains what's bee done and says its to avoid a false answer. To avoid a bias that people favour new services- to remove smth that would otherwise make the results less reliable- a bias?
Ch	Potentially yes.
GJ	One of the criticisms made of SP is the hypotheticalityso this is one of the reality checks?
Ch	One of the ways to address the potential biases - wouldn't use the word "reality check".
GJ	Well to make it more realistic.
Ch	Well realty check is more colloquial.
Gj	Sorry. We're told it's a well-designed survey but what we get is people - don't know whether it's you or others- sit together in a room and say ooh, they didn't take account of the factors like comfort which acc to para 2.8 were deliberately removed to avoid bias?
Ch	That's right.
GJ	So because of a fear of bias you take them out but effectively, not by looking trolleybus but a different comparator, you are looking to put the factors back?
Ch	That's right.
GJ	You can see why that seems bizarre?
Ch	To the uninitiated?
GJ	Yes but also to the initiated like Prof Bonsall?
Ch	Well he has an agenda?
GJ	And you don't?
Ch	Yes.
GJ	And do you have any rational basis why these should be taken out to avoid bias but then ut back, not on an empirical basis but people sitting in a room?
Ch	They are impt and not just us saying that- the Johnson report says that too and we're seeking to reflect that and there are other factors we'd not specifically considered so we considered what was the best way to represent them in the demand modelling.
GJ	Exploring these assumptions. Go to Appdx of Stated Pref Study. As I understand from your oral evidence - in essence a choice between old bus and very new bus?

Ch	The vehicle quality factor applied to the trolleybus is the value of the preference from old bus to new bus.
GJ	Justification is, you say that recognises the missing qualities left out like noise, comfort, improvement of electric bus over old diesel?
Ch	The way you've described it isn't how I would have intended to set it out. I wanted to say there is an improvement of old bus over new bus and we considered the improvement for trolley bus over an average bus we see on the street is equal to if not greater than the improvement between old bus and new bus.
GJ	Can we look at the actual SP study and Appdx 1. Can we look then at the very new bus and the bus? First, no suggestion the new bus would be an electric bus?
Ch	No.
GJ	No suggestion therefore that it would be quieter?
Ch	No but people who responded will have been familiar that a new bus was quieter than an old bus.
GJ	Quite an assumption b/c not in the description. That's why you pared down the description to avoid that bias.
Ch	What the SPs tell us is people had a preference for new bus over old bus. We were asking ourselves what explained that- and one point was the bus was quieter.
GJ	That's an assumption. You remember that Prof Bonsall took you through "ACORN" - comfort, friendly bus driver.
Ch	Noise is included in comfort.
GJ	So let's see what you are doing - saying the difference can be applied between 2008 bus and modern trolley bus.
Ch	That's right.
GJ	Making assumptions applying it as something analogous - whole bunch of assumptions?
Ch	Yes
GJ	And same SP study so the reasons apply why you said couldn't use trolleybus figure is that you had pared down the descriptions?
Ch	No I don't think it is. The SPs are free of the quality factors. However we do know there are some important attributes we didn't capture effectively for the trolleybus. And there is a quality diff between new and old bus.
GJ	You are taking diff forms of transport. And just as for trolleybus you've not included in description of trolleybus you haven't included any particular features and when you look at them they are
Ch	Yes but the people taking part know the diff between old and new bus. They have that experience
GJ	It doesn't say "old" bus. It says "bus". Have you set out what proportion of respondents in your survey had experienced different buses on different routes?
Ch	We didn't ask them to my recollection but it would be very difficult to see how we could have done that.
GJ	Why because it was difficult to define what you meant by "new" bus?
CH	No - because of survey overload - a limit to how many things you can ask people.
GJ	No empirical evidence what was understood by "new bus" and "very new bus".
Ch	No but we interpreted it
GJ	Stated preference is what the people think not what you think. The only evidence is what is on this page?
Ch	[???] [14:41]
GJ	Overall result?
CH	People preferred it less than very new bus.

GJ	And preferred trolleybus less than very new bus?
Ch	Yes.
GJ	One common feature between trolleybus and FTR is articulated
Ch	Yes well I'm no sure if the trolleybus shown is articulated.
GJ	Common feature of "new bus" and "very new bus" is double -decker.
CH	Yes.
GJ	DOC? Page 22 - March 2009 a few months before the Oct 2009 business case. Illustrated, an articulated bus isn't it, no a trolley bus? Not much diff to one in your survey?
Ch	Yes - just a photograph not used in stated preference work at all.
GJ	Not suggesting it is. But when Prof Bonsall tried to explore why it was suggested for "very new bus", apart from being double -decker it's not clear what "very new bus" has which "very new bus with advanced technology" doesn't have. On its face, why do you think the result came about that anyone could possibly prefer "very new bus" to "new bus with advanced technology". Is there anything else apart from double -deck vs articulated?
Ch	The difference between FTR and trolleybus is people in Leeds have experienced FTR.
GJ	I'm not asking about trolley bus.
Ch	Fact we didn't set out a descriptor doesn't mean you can disregard that people preferred a very new bus to FTR.
GJ	Why?
CH	Why? I don't know. Well what is it? It's about the quality the vehicle offers to them, whether it's the comfort or the ride quality or whatever.
GJ	But what is it? Elsewhere you've over-interpreted things and here I'm asking you to interpret and say what's the difference. No suggestion the engines will be noisier?
Ch	I think it comes down to the FTR has not produced the step change in user experience it was supposed to and people did not regard it as having done so.
GJ	You think people might have regarded a very new bus as a step change?
Ch	No I didn't say that. Higher willingness to pay.
GJ	It's the only bus, the FTR that you've put "like FTR" -a specific single bus company. Inconsistent with the rest of the generic survey approach?
Ch	Well we can't ignore that people have travelled in Leeds - if we put a picture, people will ask "like FTR?" - so it's easier and we put that.
GJ	You are then introducing into people's mind lots of thoughts about FTR and what routes it was on as opposed to its mode?
CH	I don't see what's wrong.
GJ	If that's right, could have put "very new bus like [smth]" so people wouldn't have had to speculate about its attributes.
Ch	Well that's not what we've done/
GJ	Well I'm putting to you, the reasoning is inconsistent. It may be suggested one of the reasons was you were worried that rapid bus transport would be a greater rival and by putting in FTR which had negative experiences was to produce a different result?
Ch	It my be suggested but I don't accept it as a suggestion. Also as I said previously we know people are aware of FTR operating in Leeds and that's why we used the description bc people were aware of it.
GJ	We know that at the time, by March 2009 NGT still envisaged the possibility of a rapid bus with advanced technology?
Ch	Electrically powered.
GJ	Not necessarily. C-4-2. Page 22- "key features", "could" be electrically powered.
Ch	At that stage this was a publicly facing doc. As I said the decision was not made until Oct

	2009 wit submission of the business case and it's quite right that in a publicly facing doc that reflected that at that time.
GJ	So the bus shown could have been electric?
h	I don't think anybody walking away could have been left with that impression.
GJ	Or hybrid?
Ch	No neither.
GJ	So you are confident none of the respondents envisaged hybrid or electric propulsion?
Ch	At that time I don't think any of the respondents would have been aware of types of technology like hybrid or full electric. The assumption would be that it was diesel powered bc I don't think members of the public would have been sufficiently aware of hybrid or electric vehicles.
GJ	The position is different now- hybrids on the road and electric and all sorts/
Ch	Indeed.
GJ	So Insp can note that so far as SP study is based in 2008 it's based on technologies where these responding couldn't have envisaged anything other than diesel for bus.
Ch	I believe that's the case.
GJ	Are you content that now making a decision in 2014 or 2015 when bus technology has moved on that the SP Study that underpins the business case and never examined the possibility of hybrid or electric technology is still robust?
Ch	Yes.
GJ	Despite no update that shows how the people of Leeds would respond to hybrid or electric buses.
Ch	Well trolleybus is an electric bus. But have we done an update no.
GJ	You are content?
Ch	Yes but that's because if you go on a bus today we don't see any marked shift in the comfort on the bus.
GJ	Where's the evidence?
CH	It's my own view- these hybrids are already operating on the street and it can be tested by anyone here - no significant benefits over existing buses.
GJ	Well part is the improvements on bus stops and CCTV?
Ch	That's the LCA.
GJ	Well we'll look at that b/c you were limiting yourself to looking at it for funding purposes.
Ch	Well the specification is the same.
Insp	[15:02] Mr Jones I'd like to break a quarter past 3.
GJ	On SPs then, you are content for Insp to rely on 2008 SPs w/o amendments having been made in particular for hybrid or electric?
Ch	Yes- we have applied them in C-2-4.
GJ	The SP has a very important part to play in the forecasts that are in the business model?
Ch	In aggregate.
GJ	Can we agree this- the more one has to transfer the results to other modes of transport the more we have to make assumptions. E.g. Bus, v new bus less than "existing 2008 buses to trolleybuses"?
Ch	That's right.
GJ	With more assumptions rather than empirical data the less certainty you can have?
Ch	In principle that's right.
GJ	One thing is shingly clear - the top thing from Leeds public that they prefer is "bus" to "Very new bus".

Insp	Is that correct- thought we were talking about "Old" bus.
Ch	In 7.3 says "old" bus. In Appdx says "bus".
GJ	I understood from the evidence it's the appendix A that's what was given.
Insp	There's a previous page. Says "bus type "old bus" - so I was led to believe...
GJ	The top preference is "old bus to very new bus". Bt looks like a 1970s bus.
PB	Fig 4.7 page 19
GJ	Yes Sir says "old bus" on the page before. Does look like a 1970s bus - obviously intended to look diff to new and very new bus.
Ch	A bus spotting geek would recognise whether it was 1970s bus but the point was to see whether it was a preference for new bus over old bus.
GJ	Yes but these were carefully chosen - given that only 2 words the graphics were impt?
Ch	Yes but point was not to say a particular make or type of bus.
GJ	Except FTR?
Ch	Yes.
GJ	It's got to be assumed all these were in operation not an antique omnibus but the most powerful thing to come out of it is a preference for new buses?
Ch	Yes but then you have to ask why- because of comfort and quality factors.
GJ	That's what seems so odd. Chosen carefully the methodology and the survey and comes out with a result that would have gone down badly with your clients?
Ch	No - wanted us to come out with a survey that broke down the attributes e.g. On board or off board ticketing so they could help design the scheme.
GJ	Where are they all set out then?
Ch	Table 7.3 includes shelter types, ticketing, information and it explains how much money to spend on what elements.
GJ	If this is to be believed why did you bother asking about trolleybuses as it did?
Ch	Even though we set out with the SP with the hope that the choices would be explained by those systematic attributes w could identify explicitly so the sheltered envt CCTV etc we recognised that might not be the case. We say that at 3.14 in the report.
GJ	You see the suspicion is you are cooking the thing to favour the case?
	If you'd got a positive result you'd have used them.
Ch	Well I expect the inclination would have been to use them,
GJ	You included them to see whether there was a stated preference for a means of transport. If never going to rely on the stated preference why ask the Q?
Ch	We hoped the survey would show we didn't need mode constants however the choices wouldn't be explained by the attributes and there had to be mode constants. The trolleybus couldn't be.
GJ	That's a gloss on it not getting the result you...
Ch	No! No!
GJ	Let me ask the Q.
Insp	Let him sk the Q
Ch	He keeps saying we didn't get the results we wanted and I refuse that absolutely.
GJ	At the time you didn't question the methodology of the survey?
CH	Yes.
Gj	Only later do you criticise the deficiencies o the survey?
Ch	Limitations. I don't accept it is deficient. Incomplete, I will accept.
GJ	I'm not going to debate with you whether there were limitations or deficiencies but they

	only are explained later on?
Ch	That's just the sequential development of the application.
GJ	If you say the limitations were nothing unexpected they'd have been know to you before you carried out the survey?
Ch	Not necessarily- could have had results that showed the diffs could have been explained by the attributes.
GJ	We see at 2.8. It wasn't concern that you hadn't been able to model these factors like comfort ad noise but it was a deliberate scheme design?
Ch	Yes.
GJ	If that were the case, the suggestion afterwards when you get a statistically significant "no preference" that's not a limitation but an intended consequence of the design that we don't make assumptions?
Ch	Yes it's still a consequence. I's an internally consistent approach but still doesn't take account of the fact that those attributes do exist.
GJ	IT's said these factors may lead to bias but then we discounted the factors we didn't put to people bc they may have a bias to overvalue new techs - to improve the realism. You take it away and then that's why you get the results you get. But then you put back attributes you haven't asked them about by transferring assumptions from another mode. If para 2.8 is right, that's undermining the integrity of the survey?
Ch	I don't agree- the survey results are internally consistent and what we've done is what we consider a reasonable approach. That's what we've put to the Dept and they've given us Prog Entry and made no adjustment.
GJ	Okay so apart from FTR the modes have no descriptions about what attributes they have.
Ch	Correct.
GJ	You then say these factors need to be taken into acct. You don't go elsewhere but go back to SP and go to diff between old bus and very new bus.
Ch	Correct.
GJ	You say one of the difficulties is people didn't have descriptions of attributes of trolley bus. That applies to all the modes?
Ch	There was not but people did have experience of bus.
GJ	No record of what experience people had of "old bus" and "very new bus"?
Ch	No [don't].
GJ	No idea what they understood by "old bus" and very new bus"
Ch	No.
GJ	So even if that were permissible, against background that there's no description of the qulities between old and very new bus?
Ch	That's right and we set out ourselves what the differences would be.
GJ	So a large part of the conclusions of this "stated preference" survey is not based on the answers of the people of Leeds but you assumptions of what must have been in their minds?
Ch	Correct.
GJ	Incredibly flimsy basis unsupported by empirical evidence?
Ch	Don't agree-talking about vehicle quality which is a significant but not all the preference for NGT - it's about half or less than half. And where we have predictions we have confidence the case is robust for a number of alternatives. That's one part of it. And throughout the process we engaged with the Dept about how we did SP work and they reviewed that and came to the view the approach we took to modelling quality in terms of its overall effect on the business case was appropriate - when awarded Prog Entry they made changes adjustments downwards but not in respect of that.

GJ	[15:33] That's a convenient point to break.
Insp	Will adjn to quarter to four.
Insp[15:45]	Inq is resumed.
GJ	I'm not intending to go back over SP. Now In your Proof of Evidence you say you address Matters 2 and 3. Mater 3 is alternatives in alt modes of transport. And Maer 12 whether reasonably capable of attracting the necessary funding.
	I want to understand hw you see your evidence. Last time you rather admonished Prof Bonsall when he was asking you about the LCA and you rather got exasperated and said it's all about the DfT funding model and not intended to explore all the alternatives. Before the coffee break you relied on the work that was done on LCA. So do you accept that when we are looking at alts we look to see for instance how you approached the LCA?
Ch	Yes.
GJ	So it's not restricted simply to Matter 12 and whether it's met the particular reqts of DfT funding. It goes beyond Matter 12 as you are giving evidence on Matter 3?
Ch	That's right.
GJ	Though we'll not go back to SP, the clear message we get from SP is "old bus to very new bus"?
Ch	Yes within the attributes we looked at.
GJ	What you did was what you thought appropriate and necessary?
Ch	Yes.
GJ	When we come to look at LCA you are looking at circa 2008 buses?
Ch	Um we're assuming there's no improvement between the LCA and the "do minimum" so relatively the "do minimum" and "do something" are the same. I don't think that means they are circa 2008 buses but it's the buses that are in operation at the time but the relative difference between "Do smth" and "do min" is the same.
GJ	Let's un[pack that. The diff from "Old bus to very new bus" in SP becomes the diff from "contemp bus" [??15:49]
Ch	Yes
GJ	No improvements to stops and CCTV?
Ch	There is some within the constraints o the LCA.
GJ	Limited improvements isn't it?
Ch	Yes.
GJ	Want to see how robus the asumption is. A number of diffs above the 19-whatever bus, whatever it conjures up in someone's mind - are "Low hanging fruit" - quieter engines?
Ch	Yes
GJ	Cleaner and very comfortable seats?
Ch	Yes
GJ	What else?
Ch	A new bus will have step free access to a limited area.
GJ	These are the assumptions you've made.
GJ	The picture doesn't show the new bus with any particular "step-down" facility so the Insp can record that was an assumption?
Ch	Yes. Anyone who saw it would have had experience of old and new buses in Leeds.
GJ	Anyway those are the 4 matters that account for the gap in preference. Those are matters that are "low hanging fruit" and would disappear. Are you seriously suggesting that a very new bus in 2016 will have the same diff btwn that and a trolleybus as between an old bus and that bus?

Ch	Well essentially we are saying that. There's only so far you can go with diesel tech -yes they will become a little quieter than they are now but not much.
GJ	You are saying they will remain as diesel buses?
Ch	No but there wil b no significant dif between "do min" and "LCA".
GJ	Well this is where I don't see there is any empirical basis for it. Have you taken into acct that the buses will be quieter?
Ch	Are we in the Low Cost or Do-Min or the gap?
GJ	That the Insp can assume the dif between old buses and very new buses will always remain the same as gao between bus and trolley bus.
Ch	The assumption is that the gaps will remain the same on average over the appraisal period. That is no diff to the assumptions made in forecasting other schemes - same as Mancs Metrolink or Cambs bus.
GJ	Don't put fwd any o these as precedents I can cross-examine you on?
Ch	No but the Dept is aware of them and have approved them.
GJ	With all due respect, has to stand or fall in the openness of a public inquiry. None of those precedents are exhibited so I ca ask questions on them.
GJ	Didn't take acct in SP hybrids, electric, methane - all improvements in noise?
Ch	That was my evidence, I think it's moot whether they are improvements in terms of comfort. Don't think the hybrid vehicles in Leeds do represent a marked change, but I do think electric vehicles in operation elsewhere in the country deliver a step change.
GJ	Are you saying hybrids are not an improvement?
Ch	I accept totally that they are an improvement environmentally but not in my mind a worthwhile change, something worth including in the modelling.
GJ	Electric buses would be?
Ch	Yes.
GJ	And would be prepared to include in modelling hybrids on envtl grounds?
CH	Yes that's why the govt has encouraged them.
GJ	They would be included in the LCA if you did it now.
Ch	Yes
Insp	On hybrid bus don't they use electric power some of the time so they would be quieter some of the time? An improvement.
Ch	Yes but the time operating under full electric power is at low speeds and so limited.
GJ	What are the ratios of electric to diesel on the current hybrid buses in your understanding?
Ch	I can only go from my experience but have I taken any measurements I can't give an estimate whether 10, 20 or 30% of the time but in my experience of riding them it's a minority, certainly less than half and I'd be surprised if more than a quarter. I've ridden on Route 7 and as I appreciated this would come up as an issue I've ridden on them.
GJ	Have you ridden elsewhere?
Ch	London buses.
GJ	Is that an improvement on envt, comfort and noise?
Ch	Certainly an improvement on the envt. On the others I can only go on my experiences and I was unimpressed with the noise and ride of the vehicle.
GJ	And other improvements - ticketing and low entry, multiple entry are capable of being addressed with contemporary bus technology.
Ch	In theory they could and at the mo we don't think there is a likelihopod it would change in a way it would be worthwhile bringing it into the modelling.
GJ	Do we see anywhere in your evidence those assumptions and why they were arrived at?

Ch	No - we have set out an explanation for what we <i>have</i> assumed....the LCA and NBA in C1 are not the same as LCA and NBA in the 2009 Business Case.
GJ	The lower-level that's perfectly doable even now?
Ch	Yes and you see that in new buses that were in operation in 2008.
GJ	In 2008 not so widespread?
Ch	Probably fairly limited across Leeds.
GJ	We can make a judgment on improvement in bus stops and real -time info and that sort of stuff. What's the evidence of the great leap forward in trolleybus technology?
Ch	What?
GJ	Yes. You make suggestions. None of them are fanciful suggestions for buses. To keep your gap there's got to be trolleybus improvements so what's suggestion for technological improvements even on the horizon for improved trolley buses?
Ch	There's no specific suggestion of advances in technology either for 2008 bus or trolley bus.
	The exact same improvements for bus other than around the engine can also be applied to trolleybus.
GJ	They are already in there - what are the improvements?
Ch	Take comfort in ride for example - any advances in suspension technology that can be applied to a diesel vehicle can equally be applied to a trolley vehicle.
GJ	Our point is precisely the point you are making. The new buses will have the latest forms of suspension, a trolley bus is just another form of bus.
Ch	If you are prepared to pay for the suspension yes. We're specifying the top -end specification vehicle so if you were prepared to pay for that and there was a commercial case for that, that could happen.
GJ	You've said better suspension- what else?
Ch	It will take advantage of improvements of technology whatever they are. It doesn't matter whether we can identify them. There are significant sums devoted to refreshing the fleet - a renewal programme - refurbishment over 12 years and replaced every 12 years and each time that is done they will be refurbished to a contemporary standard and replaced to contemporary standard. For purpose of appraisal you don't need to identify and define what they are and the assumption is made everywhere else that the quality differentials remain the same.
GJ	You are saying everywhere else the diff is the diff between old and very new bus?
Ch	No but that's a diff point.
GJ	Important point. Are you aware of any other infrastructure scheme based on gap btwn old bus and v new bus and LCA and trolleybus?
Ch	No.
GJ	Insp can record that this is a unique assumption?
Ch	Yes
GJ	Need to explore and see if it is a sound one.
Ch	We don't know what a bus will look like or what a trolley bus will look like at any point in time?
	It's reasonable to assume they will develop and advance in parallel. It's a reasonable assumption because no evidence for any other assumption.
GJ	You assume the gap is always going to be exactly the same.
Ch	The Dept accepted it.
GJ	You have to justify it here, can't just rely and say the Dept accepted it. Not any justification. I'll put to you why it's unreasonable. First, we know don't we that there are going to be improvements in bus technology.

Ch	We do but we don't know the extent and how far they will go and can't put a value on them.
GJ	What's the evidence for it before this inquiry?
Ch	There isn't any but if you go to a city like Geneva you can see an improvement in bus technology and trolley technology over the last 20 years and you project that into the future.
GJ	There is nothing in your written evidence about Geneva or elsewhere?
Ch	Correct. But some things are so blatantly obvious you don't need any empirical evidence.
GJ	I'm not inviting notes coming in or any further evidence - you've had your chance to do that. If we look please at some of the assumptions that have been made. Are you content with the evidence Mr Haskins gave when I asked him about alternative technology - anything you take issue with?
Ch	I wasn't present and no-one has reported back to me anything I should be concerned about.
GJ	Wanted to ask you about some assumptions that have been about rationalisation of bus services. Mr Henkel gave some evidence on that and I cross-examined on that. Your PoE page 18, para 3.42 bullet one, "The team has also developed..." Is there any evidence as to who the assumptions were arrived at before the Inquiry?
Ch	Um I suspect beyond what's in the business case there is nothing.
GJ	It says what the assumption was but not who was responsible and what was taken into account or anything else. Is there anything?
Ch	I don't think I could take you to anything.
GJ	There's nothing set out on empirical basis set out in the documentation?
Ch	That's right.
GJ	And no consultation with the operators
Ch	That's right and Mr Henkel's explained why.
GJ	Yes and I asked for the legal advice and if it's not produced I'll comment on it.
GJ	You don't claim any expertise in bus operation?
Ch	Correct.
GJ	There is no evidence at all setting out who made the assumption and on what basis the assumption was made and the qualifications and experience of the person who made the assumption?
Ch	Correct.
GJ	Nothing in the evidence that indicates whether the assumption is a sound one or a robust one?
Ch	That is true but it doesn't mean it isn't.
GJ	This is quite an important assumption from Promoters' assumption because the assumptions made impact directly on the assumptions made of how much patronage can be expected and goes to revenue?
Ch	Yes and we made the assumption set out in the business case and undertaken a sensitivity test that shows no rationalisation.
GJ	Do you agree with me it's an important assumption.
Ch	I agree it's an important assumption that has to be sensitivity tested.
GJ	And SoS and Insp need to be able to be in a position to form a view whether they can rely on that assumption?
Ch	Yes but this one is unique because it is commercially very sensitive.
GJ	The assumption is commercially sensitive? But it's been revealed!
Ch	The consequences of the assumption is commercially sensitive for promoters and also for other operators.

	So while other alternative rationalisation options were considered before 2009 but a conscious decision was made not to disclose them in the public domain - both the current operators and other operators would find them sensitive.
GJ	First time we've heard that.
Ch	In my opinion it is commercially sensitive and I would give the advice...
GJ	You said a conscious decision was made nt to disclose them by your clients. Is that true?
Ch	I can only say what in my opinion is true.
GJ	Are you saying a conscious decision was made that it was commercially sensitive? I have cross-examined them and I don't believe you.
Ch	I can only say what my advice is.
GJ	Can I have a copy? [Ch: it was not written]
GJ	To whom was it given?
Ch	Some time in 2009 in advance of Maj Scheme Business Case and no doubt Mr Haskins would have been involved -I can't tell you who would have been in the meeting or when it was.
GJ	You knew it's been a long-running issue where the basis was for these assumptions. The Promoter has not been short of coming fwd with APP docs . Promoter has been asked in X - EX. Were you asked whether they could disclose it during the inquiry?
Ch	No.
GJ	We challenged there being no empirical basis and no suggestion other than 10 mins ago that that info was commercially sensitive.
Ch	My advice was and would remain that it wouldn't be appropriate to reveal a lot of the detailed working out...
Gj	We've not got anything. Important advice .
Ch	I t was what Mr Henkel was saying about advice whether he could discuss with operators their reaction.
GJ	He advice was that he couldn't discuss their reaction bc it might prejudice any future tender or procurement. You say it's commercially sensitive bc of impact on the Promoters' case and the prejudice to operators?
Ch	Correct.
GJ	I suggest as it was very impt there would have been a note of that advice?
Ch	There isn't a note. We were having daily conversations on a range of issues in 2009.
GJ	You were here when this issue came up at the computer [at the Inq] and you remained silent and didn't say you had given advice this should remain silent. I'm cross -examining Mr Henkel, Mr Haskins. You are sitting there passing notes to Mr Cameron and you don't pass one saying "I've give advice it's all confidential and commercially sensitive".
Ch	Yes that's right but I'm conscious I'd be giving evidence.
GJ	The right time would be to give supplementary oral evidence in chief and so am I right you kept it to yourself until now?
Ch	No I raised it in 2009.
GJ	But not smth you've raised to your team at the inquiry?
Ch	That's right but there were many things we have discussed in 2009.
GJ	Can you understand why people would be reluctant to believe you are telling the truth Mr Chadwick?
Ch	I'm telling the evidence - whether you or Mr Whitehead believe it that's up to you but I believe I'm giving true and accurate evidence.
GJ	It's not before the Inquiry?
Ch	No.
GJ	Obviously it's up to the parties what they disclose but if they don't disclose it certain

	consequences may follow?
Ch	Yes but that's why we did a sensitivity test. We made an assumption about rationalisation that we believe has the minimum change to bus services while taking account that here will be an abstraction of demand. Now there is analysis that sits behind how we came to that assumption. As I set out it's not appropriate to make it public and it's not in a form that could be made public as there's not a report we could bring to the inquiry.
GJ	Is there a doc at all or is it all in conversations?
Ch	Set out in various emails and notes
GJ	And the sensitivity analysis is only as good as what it's based on - if the analysis is unrealistic may not be safe to rely on it.
Ch	To a certain extent the sensitivity analysis is designed to be unrealistic to see how sensitive the model is to that assumption.
Gj	The sensitivity analysis assumes no fare changes?
Ch	That's right- economic case.
GJ	No increase in frequency of services?
Ch	No but operating them at the current level would result in a loss to the bus co as the operating expenses would exceed the operating revenue.
GJ	Have you never come across a sitn where operations are conducted that themselves make a loss to gain a share of the market?
Ch	Yes but would have to be sustained. The appraisal period is 60years. Could be sustained maybe for 6 mths or 9 mths or a year possibly.
GJ	You're very vulnerable to competition aren't you? Don't have to sustain it for 60 years.
Ch	The sensitivity analysis shows we're not that vulnerable and when we come to get [next stage] funding approval it will be subject to more detailed and sensitive analysis of short term vulnerability.
GJ	Very vulnerable - let's look at financial modelling case. For that to stack up the business case must be correct?
Ch	What do you mean stack up?
GJ	Where is the contingency set aside for NGT to finance loss of passenger revenue in a price war?
Ch	That is not set out in the financial case of the business case document.
GJ	To help you, Mr Haskins said Metro has no money set side to fund NGT if operators were to engage in a price war.
Ch	That's correct because Metro and any other public body has not set its budget for the early part of next decade. Those are decisions that will be taken in 2019 or 2020 not now.
GJ	If we are looking at how robust the assumption is, no -one has come forward to give the Insp comfort that the authority would support NGT with even one penny piece in a price war. So the scheme is very vulnerable.
CH	I don't accept that - public bodies will set out their budget for what they are prepared to fund 1 or 2 years in advance.
GJ	But not all authorities are prepared to underwrite it.
Ch	But in Manchester when they were promoting Metrolink so far as I was aware they were not making contingencies for 9 or 10 years time but were prepared to take the revenue risk for the scheme. There is nothing unusual about this.
GJ	I think it was Mr Henkel who volunteered the situation in Nottingham where there was competition. That's something that plainly needs to be considered. Your sensitivity analysis doesn't contemplate a
Ch	That one doesn't but when we come to conditional approval we have to consider the sensitivity of NGT to its own ticketing and fare assumptions and competition.

GJ	We need to know that now- that Insp won't grant permission for a white elephant where buildings are damaged and then it dies on its feet after a year or two.
Ch	We have a sequential process. Should the order be granted we go to conditional approval stage. There's info on the conditional approval stage that can only be available when the Order is granted. And once conditional approval is granted which is basically whether we meet the conditions set out in the letter then we go to the next stage. You're not right and these don't matter.
Insp	I would argue they do. It's a major scheme I've got to determine, the SoS's got to determine based on my advice to SoS not based on what the DfT says when it's funding -I disagree with what you've just said on that and agree with what Mr Jones has said in terms of being sure it's financially viable in the future. I'm surprised you're saying it's not impt.
Ch	It is important. But assessed in more detail later on. C1 is saying the scheme is financially viable. We've tested what we consider a very extreme scenario which is that there is no rationalisation and the operators continue to operate as they do now. We think that is extreme given the abstraction of demand from NGT. 2 things clear -low impact on NGT and the impact on the operators couldn't be sustained for a great length of time. My advice to you Sir is that it is financially viable. But are there other things in terms of fares that could be modelled yes there are. My advice to you Sir is that it will be financially viable.
Insp	I don't want to continue much further tonight/.
GJ	That's an appropriate time to finish.
Insp	Won't be able to discuss this with any colleagues till after re-exam on Thursday. Mr Jones how much longer do you think you've got?
GJ	I would hope if I had a clear morning I could do it?
Insp	You won't have a clear morning- Mr Natkus with Mr Purseglove. Then re-exam of Mr Purseglove. Then Mr Chadwick, your points and re-exam of Mr Chadwick. Other option is your availability tomorrow.
NC	Sir, first thing we've got discussion on the heritage.
Insp	I don't want any verbal subs from Objectors. A reply from Applicants. Then Qs from me. Opp for anyone to reply on that and I make my subs.
Insp	I've got a suggestion but it depends on your response to the suggestion [to NC]. But I've not made up my mind whether I will suggest it or not because I've not got your response yet.
NC	I've got a lot and Mr Jones has put in a lot of authorities. I could respond to all that but if I keep it brief I won't be able to respond to every point. Certain detailed points are made that are not accepted but I can't respond to them if I focus on the main points.
Insp	That's what I prefer to focus on the main points.
	On X-Ex of Mr Speak then a maximum of 3 and three-quarter hours.
NC	If that's right and we don't go over there might be some chance tomorrow of Mr Chadwick.
	I would suggest Mr Chadwick carries on tomorrow...
GJ	Another way is if Mr Chadwick carried straight on tomorrow.
Insp	If you can pin down [to Mr Jones] a max time for Mr Chadwick I'll know.
NC	Mr Speak is not available on Thurs. Mr Natkus is representing a statutory objector who perhaps should be given some priority.
Insp	I think it'd be appropriate if I could do the main X-Ex of Mr Speak on Weds but then we should have some opp to X-ex Mr Chadwick first.
NC	Sir perhaps step 1 is to find out how long Mr Jones will be and then a time for him to come back.
GJ	I think about 3hrs.
Insp	Thursday as well.
GJ	I've got operating costs, spare trolleybuses, capacity, profitability surplus revenue loss.
Insp	Well if you think 3hrs- and I don't want you to be longer - we'll have to programme for 3hrs.

	I want a realistic amount and I don't want you to say 2hrs and be longer.
Insp	I'd like Mr Chadwick here from 2pm and 9.30 start anyway as you're going to give your verbal response anyway at 9.30. Inq is adjourned [17:19].