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memorandum

To	**Andy Park, Transport Scotland**
cc	**Alasdair Sim, tie**
From	**Les Buckman**
Date	**14 November 2006**
Project Name	**Edinburgh Tram**

Project/Ref no.	**206968**
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Subject	**Response to Query on TEE User Charges**

SUMMARY

This memo is in response to your note contained in the e-mail to Alasdair Sim of 14th November, querying the omission of User charges in the TEE analysis of Edinburgh Tram and the potential adverse impact on the BCR should it need to be included.

We have reviewed the note and our key responses are as follows:

* User charges are zero because of the assumption of fares parity between bus and tram producing no change in consumer surplus for PT users;

* However, as noted, the revenue impact is for total PT trips and hence any additional PT demand gives rise to additional revenue; and

* It is not automatic that an increase in PT revenue be (largely) reflected in User Charges.

Therefore, we do not accept the argument put forward and maintain that the TEE analysis in the STAG report is robust and credible.

DISCUSSION

Briefly responding to the various comments in turn:

As a minor point the impact on TEL revenue and expenditure shown in the PSC calculations should appear under Local rather than Central government impacts.

Accepted, although it will have no impact on the BCR.

The major issue is that in the TEE tables have a zero entry for User charges for both Consumers and Business. This is at odds with the TEL revenue gains and the separate impacts on private sector providers. The Increase in overall expenditure on PT must be reflected in User Charges.

The key point to note here is that fares parity between bus and tram is assumed; therefore the change in welfare (consumer surplus) is driven by other journey attributes (travel time, access etc). Thus when broken down in the TEE table, the net impact on the User Charges element is zero.

The formulae used for TEE calculations is set out in WebTAG, Unit 3.5.3 (see http://www.webtag.org.uk/webdocuments/3_Expert/5_Economy_Objective/3.5.3.htm). Para 3.1.14 sets out the formulae for User charges, viz:

$$\text{user charges:} \quad \tfrac{1}{2}(1+t)\sum_{ij}(T^1_{ij}+T^0_{ij})(M^0_{ij}-M^1_{ij})$$

where t is the rate of indirect taxation[1], T the number of trips and M the charge and the before and after situation being denoted by the suffix 0 and 1 respectively. Hence, where fares remain unchanged (as is the case for Edinburgh Tram compared to bus), $M^1=M^0$ and hence the last term reduces to zero, making the user charges zero overall.

Conversely and as noted, the change in revenue is driven by overall demand as follows:

$$(M^1-M^0)=\sum_{ij}T^1_{ij}M^1_{ij}-T^0_{ij}M^0_{ij}$$

Now, since $M^1=M^0$, the change in revenue is driven purely by the change in demand. The demand forecasting showed significant new PT demand giving rise to the additional revenue reported.

On this basis, it is quite plausible to have zero impact on User Charges with significant PT revenue changes, as is the case for Edinburgh Tram.

This correction is complicated in that the User charge figure is an economic welfare measure and will generally not directly match the net (private and TEL) revenue changes. Simplistically, the "rule of a half" applies to new PT trips whilst the actual change in expenditure applies to existing PT users. Some indicative results from the available information are given in Annex A. These results are for demonstration purposes only.

For the reasons we have set out above, we agree that there are differences between the methods that should be used for calculating User Charge impacts and revenue changes.

The data in Annex A replicates the TEE/CTG analysis, adding a range of estimated User Charges and recalculating the BCR. Again for the reasons set out above, we do not accept the argument that these changes are necessary.

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[1] t = 20.9% for work trips and 0% for non-work trips.

Additionally, it is difficult to determine where the additional revenue comes from. It was understood that the Tram pricing was identical to existing bus services. As such, it would appear that the additional revenue must come from non-PT users but this is difficult to reconcile with information provided within the DFBC and elsewhere.

The additional revenue does come from additional PT demand. The STAG report demonstrates that there is significant transfer from car to tram, totalling some 6.4m trips by 2031 with Phase 1a+1b. With real fare growth assumed and summing over the appraisal period, this produces the discounted revenue gain reported in the STAG report.

It is clear that the correction of the error will have a negative impact on the economic case for the Edinburgh Trams. It is difficult to be precise with the information available but best estimates suggest that the BCR for Phase 1a will fall from 1.10 to the region of 0.63 and the BCR for Phase 1a+1b will fall from 1.63 to the region of 1.16.

We believe that the existing TEE analysis is robust and do not accept the lower BCRs suggested.

PREVIOUS EDINBURGH TRAM APPRAISALS

The STAG reports for Lines 1 and 2 (September 2004) showed User Charges of -£9.5m and -£26.7m respectively. However, these were based on differing assumptions and methodology as follows.

Line 1

When Line 1 was originally appraised, Lothian Buses operated a graduated fare system (80p and £1.00 essentially). Although fares parity was assumed, the demand forecasting for tram modelled the fares as distance related. The configuration of Line 1 was such that although a journey by tram was faster overall, the distance around the loop often pushed the fare into the next band (say 80p to £1.00), resulting in the User Charge disbenefit. Arguably, this was simply an artificial construct of the modelling methodology and hence should have been omitted; this would have inflated the BCR for Line 1.

Currently and as modelled, Lothian/TEL has a flat fare structure and hence this issue does not arise, leading to a zero impact on User Charges.

Line 2

Line 2 modelled a 33% premium over bus fares and hence all users would record a User Charge impact. The Line 2 TEE is correct in this respect.

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