

## Answers to question posed by Mrs A Bourne

(DFBC = Draft Final Business Case)

**1. What level of optimism bias has been applied? With no approved detailed design and no traffic management scheme worked out then any assumptions regarding benefits flowing from journey time savings to cars, buses and LGVs/improvement in air quality/reduction in congestion are speculative. DfT Guidance document on Procedures for Dealing with Optimism Bias suggest that, if the Council is prepared to accept a 10% risk that there will be no cost overrun on the scheme, then an uplift of 68% should be applied (if 0% risk, then 80% - 90% is required) on whatever cost is stated in the business account. Again, bearing in mind no final design or details of traffic management scheme, this opens the proposal to risk and I feel that, the level of optimism bias applied should be fairly high. Optimism bias requires to be identified and available upfront prior to any works commencing. Where is it to come from?**

On the robustness of design for assessing benefits:

A multi-modal transport model has been developed for the purpose of not only forecasting tram patronage and revenues, but also to assess the implications arising from the introduction of the tram scheme on other modes of transport within the city, including buses, motorised road vehicles and heavy rail.

The transport model incorporates the definition of the preliminary design layout, which is sufficiently detailed for the purposes of forecasting. This includes the lane layout of junctions, traffic signal phasing and timings on those sections of the route where the tramway shares space with other road based vehicles, including full allowance for pedestrian crossings, bus stops and other facilities where relevant. The transport model has been developed in accordance with International Best Practice, has been independently audited and has been pronounced fit for purpose for forecasting the impacts of the tram scheme.

The level of design detailed available is actually higher than that which would be normally be available for schemes where the procurement strategy does not provide for advance design and the forecasts of benefits, whilst subject to uncertainty as with all forecasts, are not speculative.

On the subject of Optimism Bias:

**tie** has taken cognisance of Optimism Bias guidance during the development of cost estimates included in the Draft Final Business Case and in consultation with Transport Scotland, has concluded that there is no requirement to include additional provisions for contingency over and above the 12% allowance for risk included in the cost estimates.

Any level of Optimism Bias used must be in the correct context of project gestation with a clear understanding of the uncertainties and risks exposures to the project. **tie** considers that optimism bias has been significantly reduced as the design and procurement of the project has progressed. A large proportion of the total costs of the project is based upon tenders received or known rates.

The estimates for the infrastructure contract are based upon quantities from design and have been subject to rigorous independent review and benchmarking against other schemes. The 12% risk allowance is the overall average. It is the summation of a detailed assessment of the risks assessed for each element of the project and is higher than 12% where there is still a higher degree of uncertainty than those elements where, for example, tenders have been received. Risk Optimism Bias will be further significantly reduced following receipt of first stage tenders for the infrastructure works in January 2006.

**2. What is the margin of error on the model used to forecast patronage? Worth bearing in mind Professor Flyvbjerg's report on traffic forecasting where he concludes that the average overestimation of patronage on rail projects studied (of which trams form part) was 106%. That suggests that at worst case would be that Edinburgh achieves only 3/5th of patronage anticipated. I am not suggesting that it will be as bad as that, but I would request that consideration be given to the reliability of the model used and the impact of anticipated patronage not being achieved.**

Professor Flyvbjerg's report on traffic forecasting '*How (In) accurate are Demand Forecasts in Public Works Projects?* (*Journal of the American Planning Association, Spring 2005, Vol. 71, No. 2*), is based upon data collected over a number of years, in a variety of countries for major infrastructure projects. It is not specific to Tram or Light Rail schemes, but covers the full ambit of road and rail projects including heavy rail, suburban metro and subway schemes. It is not clear whether this paper specifically covers tram schemes or not.

The DFBC incorporates a Risk & Revenue assessment, the main function of which is to inform tie/TEL's business planning and management of patronage/revenue through the design implementation and operation of the tram.

Revenue forecasts for the tram scheme are produced using forecasting tools that require a range of assumptions to be made regarding future economic conditions, patterns of land-use and development, and the characteristics of the transport network as a whole - including levels of service, performance and the cost to users. For the purposes of ongoing business planning it is appropriate to seek to understand how revenue forecasts are affected by changes in planning and other assumptions to determine what the main factors are and how sensitive the forecasts are to those changes.

The objective of this risk and revenue analysis it is to provide an understanding of the revenue implications of the Planning Case and the risks and uncertainties within it. The effects of changes to specific assumptions are illustrated through forecasts of alternative scenarios, while the possible range of outcomes is explored by a probability based analysis of a range of scenarios. The effects of future decisions that can be made by the promoting group are considered in particular.

Some of the risks to shortfall in the patronages and revenues expected with the introduction of tram can be effectively managed through design, construction and into operation. Tram run times and the quality of the system (in terms of facility, comfort and reliability) are most notable in this respect. Other risks lie in the uptake of new development which has been assumed in the transport model, and in the timing and extent to which this takes place.

Whilst development uptake is outside the control of the tram operator, experience from other cities such as Dublin and Nottingham would suggest that the tram will be a catalyst for rapid development uptake in areas such as Granton and Leith Docks. The core market for tram patronage does however remain along corridors where a mature public transport market already exists, and through integration with the Lothian Bus services, TEL is in the position to manage costs and yields and match service provision to actual demand.

In addition, a 'ramp-up' factor is built into the patronage forecast. This factor adjusts the forecast patronage in the early years and reflects the fact that the full impacts of a major transport scheme take some time to materialise and therefore a reduction is applied to forecasts to account for this. For Edinburgh Tram, a reduction of 25% is applied to the forecasts for 2011 to obtain the patronage demand expected in the opening year, and it is this figure that is applied in the business case.

Taking account of all of the above, it is concluded that the patronage forecasts used in the development of the business case for the Edinburgh tram are credible and robust.

**3. Has the business case been prepared on the assumption that EARL will proceed? Response F – Sustainability, submitted by TIE to the EARL committee**

**suggests that EARL will take around 48% of tram passengers at the Airport. This lessens over the years but remains significant.**

The DFBC has indeed been prepared on the assumption that EARL will proceed.

The Revenue and Risk report considers the impact on tram patronage in with/without EARL scenarios and indicates that the introduction of EARL reduces forecasts tram patronage from the airport to rest of the tram catchment by 47% in the year of opening. It is also important to note that this reduction represents less than 4% of total tram revenue.

Full cognisance of this effect has been included within the patronage and revenue forecasts and the Business Case for Phase 1 of the tram remains robust.

**4. Streetscape improvements, compensation/rates rebate to businesses for loss of trade during construction, the cost of any associated traffic management measures, impact on businesses who may find a decrease in trade as a result of traffic being diverted away from tram corridor onto surrounding streets/loss of loading/ loss of parking are all associated costs. Are figures for these elements currently available? How robust are they in the absence of a final design? Which elements are covered by the Scottish Executive grant and which will fall to be funded from elsewhere? How will they be funded?**

The guidelines for physical improvement to streetscape as applicable to the tram project are contained in the Tram Design Manual and the Edinburgh Standard for Streetscape and the cost estimates included in the DFBC are fully cognisant of these requirements. A thorough review of the cost estimates has been prepared by tie and its advisors as recently as November 06 in preparation of the DFBC. Nearly 98% of the costs have been estimated based on rates and prices from firm bids received, known rates applied to quantities or based on market rates applied to quantities derived from design to date.

Costs for streetscape improvements and traffic management measures required have been estimated using the same thorough approach as all other capital costs included in the DFBC. They will continue to be refined as the project progresses. For example, costs for traffic management measures will be further defined as part of the processes to obtain approval for TTRO's and TRO which include full consultation with the statutory and CEC consultees. Details of the approvals process which will be followed by tie are included in the DFBC.

tie has worked with the Council and the Edinburgh Chamber of Commerce to introduce a support package for those businesses directly affected by the works. This includes a 20% reduction in Business Rates, as assessed by the Scottish Assessor, plus a Small Business Support Scheme which will act as a "safety net" for those businesses for which the Business Rates scheme does not provide sufficient assistance. These schemes are supported by an "Open for business" Communication and Marketing package for the city centre during the construction phase. The cost of the Small Business Support Scheme is included in the cost estimates included in the DFBC.

The procurement strategy is designed to achieve a high degree of confidence in the cost estimates for the business case through early development of the systems design. The current preliminary design provides considerable detail to support the development of robust cost estimates which have undergone independent scrutiny as well as being benchmarked against other schemes to gain further assurance.

The DFBC assumes that capital costs within will be funded from the commitments made in-principle by CEC and Transport Scotland in January 2006 and February 2006 respectively.

**5. What is the financial impact on Lothian Buses? Are recent changes in services a result of trying to make the impact look less than it actually is? Would the recent changes have happened if the tram scheme were not on the cards? How will these reductions and any increase in journey times as a result of associated traffic**

**management scheme(s) affect the objective of attracting people to public transport/ reducing congestion and thus the business case?**

The detail of the financial impact on Lothian Buses is outlined in the DFBC. The DFBC has been prepared on the basis of full integration of the tram with Lothian Buses' operations under the umbrella of Transport Edinburgh Limited (TEL), the organisation charged with the delivery and management of the integrated bus/tram network.

The DFBC demonstrates that TEL as a whole will be profitable after one year of tram operations and will thereafter experience significant growth in profits with tram contributing significantly to the total. These forecasts are based on public transport patronage forecasts which have been developed using a sophisticated transport model for Edinburgh and they have undergone detailed scrutiny by independent experts. The model fully incorporates service integration plans between bus and tram which were developed by TEL – based on Lothian Buses experience – and it takes account of predicted journey times and traffic management schemes as included in the preliminary design. Changes to the travelling experience have therefore been fully accounted for in the model and thus the Business case.

Included in the patronage forecasts is a considerable proportion of passengers arising from those who do not currently use public transport. These are either current car users or those who don't currently travel at all. A prudent ramp up period has been applied to add a further level of conservatism to the forecasts in the early years in recognition of the fact that new services may take some time to be adopted by the travelling public.

The analysis shows that due to the enhanced opportunity to travel, including greater capacity, comfort and security, the introduction of tram and its integration with Lothian Buses services will result in greater number of passengers than either bus or tram could hope to achieve independently. This in turn supports the opportunity to generate profits within TEL for future investment in public transport in Edinburgh.

The recent changes in Lothian Buses services are part of the ongoing refinement of the Lothian Buses network in line with passenger and operational demands. No recent changes were made to reduce the potential future impact of tram – they are a response to operating realities in the present and would have been made regardless of the future introduction of tram.

**6. Consultants' fees for managing the project (to include technical/legal, etc) – have these been included in the business case? How much are they likely to be and how will they be met? Will tie be project managing or will they sub-contract to other consultants? Is this cost effective?**

All consultants' fees related to the delivery of Phase 1 the project are included within the estimate costs reflected in the DFBC and will be met from funding for the project from Transport Scotland and CEC. Professional fees include those in relation to design, technical support, legal and financial advice.

As noted in the DFBC, the tender processes for the tram vehicles and infrastructure contracts have commenced and the detail behind the cost estimates is not being made available due to commercial sensitivity. The detail behind the estimates has however been subject to scrutiny by both CEC officials and Transport Scotland.

**tie** takes overall project management responsibility for delivering the tram project. It is intended that the resources to support project management will be secured by a mix of directly engaged personnel supplemented by consultants. Given the fluctuating demand for such resources over the life of the project, this approach is the most cost effective.