

**Edinburgh Tram (Line One) Bill Committee
Consideration Stage – Phase 1**

Response to email of 7 February 2006 requesting further written evidence following the Committee meeting of 7 February 2006

What is the impact of speed limits of 30, 40 and 50 mph along the Roseburn Corridor in respect of the business case for tram line 1 - eg patronage/revenue?

- 1 The predicted run time of the tram from Roseburn Junction (where the tram route to the airport separates from Line One) to the tramstop at Crewe Toll is currently predicted to be 6 minutes and 22 seconds. This part of the route has been chosen because it is that which is under consideration. Previous modelling has not been undertaken between these two locations. It is worth noting that the modelling work presented in this document has been carried out using **tie's** System Design Services' software, and uses a set of parameters that are developed from previous work. The results show the current estimations of the impact of various speed restrictions. The speeds selected below are in kph because the tramway will be signed in speed multiples of 5 kph. For ease of reference, the speeds in mph are also shown.

Maximum Speed, kph	Maximum Speed, mph	Average Increment in run time from a maximum speed of 80kph, for each direction, in seconds*
80	49.7	0
65	40.4	3
50	31.1	24

*Note that the average increment is the average of the runtime from Roseburn Junction to Crewe Toll (outer circle) and the runtime from Crewe Toll to Roseburn Junction (inner circle)

- 2 In previous evidence, the promoter has explained how critical run time is to the overall performance and success of the tram. Increasing run times always results in slower journey times for passengers on the tram, with a consequent reduction in patronage and revenue. The rule of thumb is that the impact in terms of patronage and revenue is likely to be of the order of £30,000/second in NPV terms. In the case of a speed restriction of 65kph, the predicted 3 second increase in run time would equate to £9,000 per annum (which would be the equivalent of an employee's salary of 6 months), or £90,000 NPV.
- 3 In addition to this loss of patronage and revenue, increasing run times also result in a combination of:

- (a) greater intervals between successive trams in service, with increased waiting times for trams at tramstops, and a consequential reduction in patronage and revenue
 - (b) reduced layover times, eroding the system's overall reliability and consequently impacting on patronage and revenue
 - (c) an increased number of trams to provide the service. Each additional tram will have not only a capital cost but also an additional operating cost, including the need for about 4 tram drivers (to allow for shift working, holidays, etc), electrical power and maintenance. In Net Present Value terms, this is a total of about £4M per tram overall.
- 4 It is essential that the operator retains flexibility in relation to speed given the direct impact any reduction in speed could have on both the initial and on the ongoing viability of the tram. In any event there are natural constraints on the maximum speed which can be safely achieved along the Roseburn Corridor. In addition there is a well established process for setting speeds involving HMRI as well as the operator's obligations in relation to safety. HMRI would be able to provide their observation on the appropriateness and level of any speed restriction

Could the promoter provide examples of speed limits set for other schemes eg where an off road section of a tram scheme operates alongside a cycleway/walkway

- 5 The photographs annexed to this response were taken on Midland Metro in Birmingham. They show the tramway with three different methods of separating the footway/cycleway from the tramway. These are a verge, a fence and no separation. There is no speed limit on the tramway other than the line speed limit at these places. Line speed on Midland Metro is 70km/h and it is set by the maximum speed capability of their trams. The footway/cycleway along Midland Metro crosses the tramway in several places and there are no speed limits for these either. There is no history of accidents. HMRI would again be able to provide their observations on these arrangements.
- 6 There is also a cycleway/pathway alongside the Croydon tram system between Lloyd Park and Coombe Lane tramstops. The distance away from the track varies considerably. The track is in ballast throughout. Over most of the length a knee-rail is placed alongside the footpath. The promoter believes there is no location where there is not a further grassed area of at least 1m before the ballast bed of the tracks is reached. The speed limit for the trams is either 80kphh (the line limit) or 65-70kphh, with a short length at 20-25kphh due to visibility at an unsignalled road crossing of the tramway alignment. The promoter does not believe that the reduction in speed from the line limit is due to the presence of the footpath.