New Inquiry:

Integrated Transport: the Future of Light Rail and Modern Trams in Britain

Response by

Transport-watch UK to the Transport Committee

Transport Committee

Transport-watch is an independent association not connected with any business or political party funded by a private trust and dedicated to making the best use of land already committed to transport in the interests of the Community as a whole.

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History

In 1949 London trams were seen as an embarrassment to London's post war planners. In that year Lord Latham, chairman of the London Transport Executive delivered a speech outlining the plans for the tramways conversion programme in which he stated "the loss on the trams is about £1,000,000 per year" (over £20 million annually at today's prices).

In contrast the Europeans are famed for their tram systems. However, Sir Terry Mulroy, said, at an Institution of Civil Engineers meting held on 21st November 2002, that, if one asks the Planners in Geneva (home of the tram) if they would do it again, they will say quietly, Never Again – far too expensive. Meanwhile the town of Grenoble renewed its tram tracks after only 10 years' wear.

In America we have the example of the Bay Area Rapid Transit System (completed in 1972). Professor Hall, writing in New Society 11th November 1976, pointed out that all BART's passengers could be carried in buses costing $40 million compared with the BART cost of $1,600 million. (Professor Melvin Webber, cited in the article, found (a) capital costs were 50% and operating costs 5 times higher than forecast (b) ridership was half the forecast (c) costs per ride were double that by bus, and 50% above that by ordinary American car).

Despite that there is scarcely a city in the land that does not aspire to spend taxes on such systems.

UK Rapid Transit Systems – some data

The systems for which data is here presented are Docklands, Strathclyde, Manchester, Tyne and Wear, Sheffield, Centro (West Midlands) and Croydon. Detail is in the table appended. It shows

1. The capital cost at 2003 prices for Manchester, Tyne and Wear, Sheffield, West Midlands and Croydon amounts to £1.8. If Docklands is added the bill is £2.93bn. In addition to that

(and separately from the data table) Mersytram has the option of spending £225mn, Manchester hopes to spend an additional £900mn, South Hampshire is bidding for £270 million and Edinburgh for £375mn, providing a total of £1.77 billion. Adding that to the historic expenditure of £2.93 yields £4.7bn.

2. With the exception of Sheffield no system covers operating costs. When the costs of capital and maintenance are added costs are between 3.2 and 5.8 times as large as the receipts.
3. Including the annual cost of capital and maintenance the annual subsidy per journey has the range £2.50 (for Manchester) to £4 (for Tyne and Wear).
4. In highway terms, rail rapid transport systems are substantially disused. E.g. the average one-way flow per track for the systems has a range equivalent to 92 to 525 buses per day ,each bus containing an average of 20 people. That may be compared with a potential of up to 10,000 vehicles per day for a single lane of a motor road managed to avoid congestion. The comparison suggests a catastrophic under-use of valuable transport land.
5. The staff per car (or per tram) has the range 4.3 to 10.9.
6. Average journey lengths have the range 3.2 to 10.5 km.
7. The average train or tram load ranges from 17 to 50, excluding Docklands, which has 69 passengers.
8. Capital costs per route-km have the range £7.6 million to £10.4 million excluding Docklands for which the value is £43 million.

We have sought fuel consumptions but with little success. However, data from 1990 provided the equivalent of 51 passenger miles per gallon for Tyne and Wear, 55 for Strathclyde. Also data from 2003 for Croydon's Tramlink provides 92 passenger-miles per gallon (it has phyrister control - using breaking to provide energy for traction). In comparison buses returning 5 miles per gallon and containing the average train loads set out in the tabulation would provide 80 to 205 passenger miles per gallon, excluding Docklands from the set.

Conclusion

1. In financial terms the £2.93bn of capital spent to date building the schemes has been entirely wasted. The same will apply to the additional £1.77bn proposed. That is because there is no possibility of the capital being repaid from the fare box. The total, £4.7bn, amounts to over £180 for every household in the land. Meanwhile the schemes may be of use to less than one in 100 of the nation's population.
2. An alternative may be busways open to commercial vehicles and to cars at certain times of day. The modern option may be to control congestion by road pricing. Ordinary buses would then no longer suffer delay. That would remove the need for bus lanes let alone tram systems. The key to making ordinary buses attractive is to provide a modern image and to ensure a reliable service. That would cost a fraction of tram or light rail.
3. Light Rail can have a future in the UK only if its very high cost and the relatively trivial use to which the rights of way are put are set aside in favour of sentiment.

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Data table

Data is from the 2004 Edition of TSGB and the DfT Light Rail Facts leaflet except and the Emboldened which have been calculated.	Dock lands	Strath Clyde	Man chester	Tyne and wear	Sheffield	Centro	Croydon	Totals/AV Excluding Docklands and Strath
Capital costs 2003 prices £mn, see notes	1162	NA	359	739	302	159	212	1771
Operating costs to 31st March 2003 £mn	63.7		25.8	95.7	7.97	6.35	25.53	161
Cost per route km £(mn)	**43.04**		**9.21**	**9.47**	**10.41**	**7.95**	**7.57**	**9.13**
Annual cost of track £(mn) (see note)	**120.85**		**37.34**	**76.86**	**31.41**	**16.54**	**22.05**	**184.18**
Annual cost of rolling stock at £1.2mn per car	**14.55**	**6.35**	**4.95**	**10.84**	**3.87**	**2.48**	**3.72**	**25.85**
Total annual cost £(mn)	**199.1**		**68.09**	**183.4**	**43.25**	**25.37**	**51.3**	**371**
Costs minus receipts £(mn)	**161.7**		**47.19**	**152**	**34.05**	**20.17**	**35.2**	**288.6**
Subsidy per journey pence	**333**		**250**	**401**	**277**	**395**	**183**	**309**
Operating costs divided by receipts	**1.7**		**1.23**	**3.05**	**0.87**	**1.22**	**1.59**	**1.94**
Total annual cost divided by receipts	**5.32**		**3.26**	**5.84**	**4.7**	**4.88**	**3.19**	**4.49**
Receipts (£million) 2003/4	37.4	10.3	20.9	31.4	9.2	5.2	16.1	82.8
Journeys (million) 2003/4	48.5	13.3	18.9	37.9	12.3	5.1	19.2	93.4
Passenger-km (million) 2003/4	235.5	42.7	169.3	283.9	42	53.5	105	653.7
Train-km (million) 2003/4	3.4	1.1	4.6	5.8	2.5	1.7	2.5	17.1
Stations/Stops 2003/4	34	15	37	58	48	23	38	204
Seats 2003/4		1,508	2752	6120	2200	832	1680	13584
Rail cars	94	41	32	70	25	16	24	167
Route-km	27	11	39	78	29	20	28	194
Cars per train	3	2	2	NA	1	2	2	NA
Staff as at 2001	405	NA	303	710	272	147	186	1618
Staff per car	**4.3**		**9.5**	**10.1**	**10.9**	**9.2**	**7.8**	**9.7**
Av. Journey length km	**4.9**	**3.2**	**9**	**7.5**	**3.4**	**10.5**	**5.5**	**7**
Passagers per train	**69.3**	**38.8**	**36.8**	**48.9**	**16.8**	**31.5**	**42**	**38.2**
Passengers per car	**23**	**NA**	**18**	**NA**	**16**	**16**	**21**	**NA**
Equivalent (one way) bus flow per day per track based on 20 passengers per bus	**597**	**266**	**297**	**249**	**99**	**183**	**257**	**231**
Station spacing km per station	**0.79**	**0.73**	**1.05**	**1.34**	**0.6**	**0.87**	**0.74**	**0.95**

Notes:

There may be some double counting in total costs in that rolling stock costs may be part of capital and operating costs include interest paid (to be distinguished from interest owed).

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Data sources for the table are: Transport Statistics Great Britain, the DfT publication Focus on Public Transport and the DfT leaflet with the title Light Rail Facts and, for operating costs, the 2003 edition of the TAS Light Rail Monitor.

The annual track costs are based on repayment of capital over 30 years at the Treasury discount rate of 3.5%, (providing a multiplier of 0.054 on capital) plus maintenance of 5% of capital, yielding a combined multiplier of 0.104.

The annual cost of rolling stock is set to the cost of capital, (again) repaid at 3.5% over 30 years, plus the cost of maintenance set at 7.5% of capital providing a combined multiplier of 0.129.

Outturn prices have been converted to the 2003 base using the Retail Prices Index.

Docklands: Capital costs: £77 million in 1987, £294 million in 1991, £280 million in 1994, £250m in 1999, a total of £901 million at outrun prices or £1162 at 2003 prices.
Croydon Tram link: Opened May 2000 at a construction cost of £200 million, providing £212 million at 2003 prices
Midland Metro: Opened 1999 at a construction cost of £145 million providing £159 million at 2001 prices.
Manchester Metrolink: Opened 1992 at a construction cost of £140 million, Extended in 2000 at a cost of £160 million, providing a total of £359 million at 2003 prices.
Tyne and Wear: Opened 1980-1984 at a construction cost of £284 million (mostly new track with some use of former rail alignments), extended to Airport in 1991, Sunderland extension in 2002 (sharing 14 km of exiting national rail track), £105mn at 2001 prices providing £739 million at 2003 prices.
Sheffield Supertram: Opened 1994/5 at a construction cost of £240 million, providing £302 million at 2003 prices. The trams cost 1.6 million each; higher than allowed for in the tabulation above.