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Secretary to the Inquiry
The Edinburgh Tram Inquiry
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Dear [REDACTED]

Edinburgh Tram Inquiry: submission

I submit my views intended as evidence in relation to issues 1 and 8 identified as being considered, with relevance also potentially to issues 7 and 11.

Sections in this submission are as follows:

- 1 Project management (page 1)
- 2 Policy formulation (page 2)
- 3 Edinburgh light rail proposals: initial history (page 4)
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- 6 Developments since 2000-01 (page 8)
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Some element of reiteration arises with the purpose of coherence within sections.

Yours sincerely

[REDACTED]

John S. Wilson

Submission to Edinburgh Tram Inquiry

John S. Wilson

The inquiry has identified in issues being considered the “initial proposals for a tram network” specifying some concerns related to this (issue 1) and the “role of CEC in oversight and monitoring of the project,” including “whether the CEC role was that of Councillors or officers” and “the experience of those involved and the provision of information to the Council” (issue 8). I submit evidence on this, judging that there is no more crucial issue to examine than the role of Council officers in scheme implementation and responsibility for formulation of policy from 2000. This could be seen relevant also to “how the tram project was managed overall” (issue 7) and “the extent to which the line as built met the overall objectives” including “one of the principal stated rationales ... to promote the development of the north Edinburgh waterfront” (issue 11).

I comment as a non-professional observer, with some participation in earlier years in an association putting forward public transport ideas, with experience of some useful exchanges with senior officers of Lothian Regional Council.

1 Project management

Popular perceptions reported in the press have shown a belief of councillors at fault in Edinburgh Tram project mismanagement but any knowledge of central or local government will lead to awareness of the responsibility of officers in policy preparation and management, and advice to elected members.

It was publicly highly visible that it was Edinburgh Council Chief Executive Sue Bruce, on taking up the post, who took action to deal with the evident mismanagement of the Edinburgh Tram project, restructured project delivery, ending the role of TIE, and secured agreement with the contractors to proceed with construction. Inevitably, it is necessary to ask why this did not happen earlier. Such interrogation could relate not only to the previous Chief Executive but to the Director of City Development and Head of Transport. Never mind those in the more senior positions, no excessive assumption is required on the salary level of the Head of Transport to provide an expectation of responsibility for intervening in any failure of delivery by a sponsored body such as TIE.

A belief that the Director of City Development and Head of Transport were not sufficiently senior to resolve the TIE and contractor dispute in the Edinburgh Tram project is untenable, yet this resolution clearly had to wait for a new Chief Executive to be in post.

An article on the “The Guardian” website dated 24 June 2010 and when seen last modified on 20 May 2014 stated: “Marshall Poulton is the Head of Transport for the City of Edinburgh Council and is also Tram Monitoring Officer. He is responsible for protecting the Council’s interests, and works so closely with tie that he works from their offices for some of the time” (the “Edinburgh Evening News,” 6 February 2008, reported the appointment of Marshall Poulton as head of transport in the City Development Department).

In any case, whatever the grade of the designated Tram Monitoring Officer, reference of any problem to line manager if necessary should have arisen.

2 Policy formulation

In 2000 Edinburgh Council prepared a revised Local Transport Strategy with “the top-ranked scheme” an “Edinburgh-wide LRT system” in a list of policy aspirations – initially without any specific routes identified (although suggestions for areas which could be served were “north and north west Edinburgh, south and south east Edinburgh, the Granton/Leith waterfront and the city centre” (“The Scotsman,” 18 August 2000)). This is stated as if there had not been previous studies. The South East Scotland Transport Partnership “Interim Regional Transport Strategy,” February 2001, included as a public transport measure: “Light Rapid Transit: Development of a Light Rapid Transit network in Edinburgh depends on finance becoming available from road user charging. Such a system would facilitate access to the Waterfront, and other growth areas beyond Edinburgh City Centre, from other parts of the region. Light Rail may have applications elsewhere, for example where opening or reopening heavy rail routes proves to be financially unviable.” This shows that at this time there was still no specific intended first or any other light rail route, a further example of a failure to have regard to established policy provided for in the Structure Plan.

At the same time Waterfront Edinburgh, with the expected very substantial housing development at Granton, Newhaven and Leith, initiated examination of transport from these areas to the city centre, with a study commissioned by the end of 2000. On 15 January 2001 the pressure group Transform Scotland and the Rail Passengers Committee Scotland held a conference, “Trams back on track,” and secured for this a speech by the Minister for Transport Sarah Boyack, who said: “Elsewhere in Europe many towns and cities have established successful light rail and tram systems. In order to catch up, I would encourage local authorities to explore the potential for the development of such schemes” (Scottish Executive news release, 15 January 2001). The Chief Executive of Waterfront Edinburgh, Andrew Russell, spoke at this conference, at this time without commitment to light rail but with a hope of such a system being shown feasible.

In an interview in June 2001, asked if, by the “proposed public transport link between the city and the waterfront” Waterfront Edinburgh meant trams, Mr Russell said: “We do mean trams and are beginning to be able to say that. A solution consortium has been set up by Waterfront Edinburgh to look at the transport requirements of the development and is coming to the conclusion that trams are the best way forward” (edinburgharchitecture website, to which the “Edinburgh Evening News,” 7 June 2001, made reference as a result of other remarks by Mr Russell).

The study commissioned by Waterfront Edinburgh, “Feasibility Study for a North Edinburgh Rapid Transit Solution” (dated July 2001), was published in September 2001 and presented at an event in Edinburgh in October 2001. The favoured option was a circular light rail line connecting the waterfront with the city centre.

The Waterfront Edinburgh news release on this stated: “The project has already won the support of The City of Edinburgh Council and Scottish Enterprise Edinburgh and Lothian... The City of Edinburgh Council and Lothian Buses sat on the steering group, and the Scottish Executive have also attended meetings as observers.”

On the Local Transport Strategy the Waterfront study stated: “The LTS envisages a Light Rail network as a major part of the future transport infrastructure of the City. The North Edinburgh scheme which forms part of this study could form the initial element of a

larger city-wide network.” This shows there was no recognition of previous studies and knowledge of established policy.

Though the Waterfront study and documents provided for the presentation event referred to light rail, Waterfront Edinburgh was typically using the term, “trams”.

Edinburgh Council clearly found it easy to succumb to the Waterfront proposal. It is evident too that there was contact between officers of local and national government. From this time the Council made exclusive use of “tram” rather than “light rail”. The report, “Edinburgh Tram Development Framework,” to the Executive of the Council, 9 October 2001, set out “progress in promoting a tram scheme in north Edinburgh, and developing proposals for a city-wide network”.

Edinburgh’s intentions were supported at this time by the preparedness of the Scottish Executive to offer funding for studies: there was clearly contact between officers in Edinburgh Council and in the Scottish Executive, equally unaware of the history of Edinburgh transport studies. The Scottish Executive in October 2001, announcing Public Transport Fund grants, included in funding to Edinburgh “£6.555 million from the preparation pool to examine and develop an integrated light rail system in North Edinburgh and examine options for light and heavy rail in the South” (Scottish Executive news release, 22 October 2001).

There was evidence of Transport and Enterprise Minister Wendy Alexander’s interest in progressing Edinburgh’s transport intentions in March 2002. A Scottish Executive news release of 5 March 2002 stated: “Ms Alexander announced that the Executive was prepared to consider funding for preparatory work for a West Edinburgh tram line - this funding is in addition to £6.5 million already identified for development of the proposed North Edinburgh tram line. The funding would allow the scheme for the West Edinburgh Tram line to proceed to the same timetable as, and positively complement, the North Edinburgh proposals.” A further Scottish Executive news release of 21 March 2002 on a “route map” for transport in Scotland included “creating an effective, modern 21st century public transport system for Edinburgh, worthy of a capital city in partnership with Edinburgh Council and private sector partners... Already Edinburgh Council is taking forward preparatory work on a tramline for North Edinburgh and to seek further funding from the Executive, for preparatory work on a West Edinburgh tramline.” The “Edinburgh Evening News,” 6 February 2002, reported: ‘Edinburgh’s transport leader Andrew Burns confirmed Ms Alexander had been in close contact with the authority over recent months and said she was “extremely supportive” of the council’s plans.’

This overview of policy development illustrates the failure to make reference to previous studies, despite established policy, with routes safeguarded in the Structure Plan so recently approved (Lothian Structure Plan 1994 Written Statement (1994 Plan approved in 1997)). In saying this, I take account of the following:

- At the “Trams back on track” conference, 15 January 2001, Councillor Mark Lazarowicz stated that it was the capital cost of light rail in the Edinburgh Area Public Transport Study which made it unrealistic 10 years previously.
- The Ove Arup “Edinburgh LRT Master Plan Feasibility Study,” January 2003, stated: “In 1987 a two line ‘light metro’ was proposed, with a significant part of the North-South Metro route underground, but was not progressed beyond design stage because of the high cost.”
- The report to the Executive of the Council, 28 January 2003, on an Edinburgh Tram Network stated: “In 1987 a two line ‘light metro’ was proposed, but has not progressed beyond design stage due to the high cost, especially of a tunnelled section through the City Centre.”

This is far less than the total truth, and reveals a failure to understand the previous study. The inaccuracy in stating the date 1987 is sufficiently revealing. The Edinburgh Area Public Transport Study began in 1987: there was no proposed scheme in 1987. The failure to get that right shows how little understanding there was of previous proposals. The poor perception is manifest in failing to recognise that any scheme total cost has to be subject to cost-benefit analysis, and so evidently misguided in view of what the limited section of the Edinburgh Tram scheme now implemented has cost – which moreover has not reached the waterfront, so conspicuously selected as the first area to be served.

The report, “Edinburgh Tram Network,” to the Executive of the Council, 28 January 2003, included in recommendations: “To remove safeguarding for the Edinburgh Metro routes once the safeguards identified in paragraph 16 are in place.” Paragraph 16 outlined “potential extensions” to e.g. Livingston, Queensferry, Dalkeith. Extensions to such areas are arguably now more remote than if the light rail routes intended and as safeguarded in the Lothian Structure Plan 1994 had been pursued and implemented competently.

A reflection on Edinburgh transport planning history could lead to the conclusion that there has been repeated failure in transport policy development in Edinburgh. It would be possible to recall a series of abortive transport initiatives, e.g. the CERT busway, the central area traffic management scheme of 10 years ago, congestion charging. In late 2001 the Council promoted the “Integrated Transport Initiative,” some of which, including of course Tram Line 3, depended on revenue from congestion charging, but some measures which did not depend on such revenue have not materialised. The abandonment of CERT in 2001 was quickly followed by “WEBS” - taken forward at the same time as Tram Line 2. The Arup “Edinburgh LRT Masterplan Feasibility Study” of January 2003 for Edinburgh Council stated (page 72) that “funds have been allocated” for the West Edinburgh Busway Scheme, with “over 3 km of guideway,” but the guided busway built was 1.5 kms in length. It operated from December 2004 to January 2009.

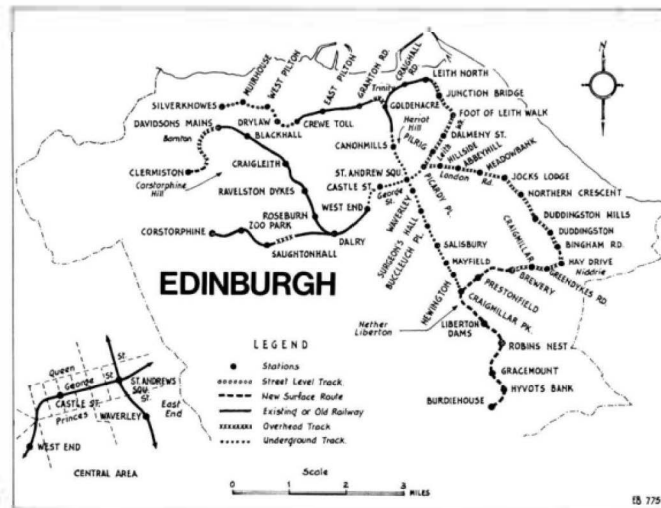
Sections 3 to 7 amplify justification of what I state above.

3 Edinburgh light rail proposals: initial history

Outlining the history of transport study in Edinburgh can demonstrate that since 2000-01 there has been manifest wide ignorance of past study in Edinburgh.

The Buchanan-Freeman Fox Edinburgh Planning and Transport Study, culminating in the “Recommended Plan” of 1972, discarded light rail in favour of an “enhanced bus system” but said “the judgment had been a difficult one”. Accepting that the public transport choice in the Recommended Plan of 1972 was “finely balanced”, Edinburgh Corporation in 1974 – a significant example of responsiveness to public comment - commissioned a review of the public transport elements of the “Recommended Plan” from consultants De Leuw Chadwick O hEocha who reported in the “Review of the Public Transport Elements of the Recommended Plan” in February 1975 that a light rail transit system *“would be feasible in Edinburgh, would be likely to attract high passenger volumes and might offer significant advantages to an all-bus system”*. De Leuw Chadwick O hEocha planned a highly segregated light rail system, as shown below.

At a cost of £132.7M, the light rail system proposed was within the transport budget of the “Recommended Plan” of 1972 - using the cost in this allocated to an Intermediate Circular Route road. It included elevated sections which clearly were not going to be acceptable, and it was not intended to be a final answer (it immediately preceded local government reorganisation in 1975).



Light rail for Edinburgh proposed in De Leuw Chadwick O hEocha study, 1975

It included some operation underground (E-W West End-Picardy Place and N-S Canonmills-Newington). The east-west sub-surface section in the city centre would have been under George Street - a merit of which was that with the street gradients north and south it could have provided close to level access for passengers at Castle Street and St Andrew Square - for which Nürnberg U-bahn Lorenzkirche is an iconic example. It is worth comparing the envisaged number of east-west central area sub-surface stops with what has been provided on the surface in the Edinburgh Tram scheme.



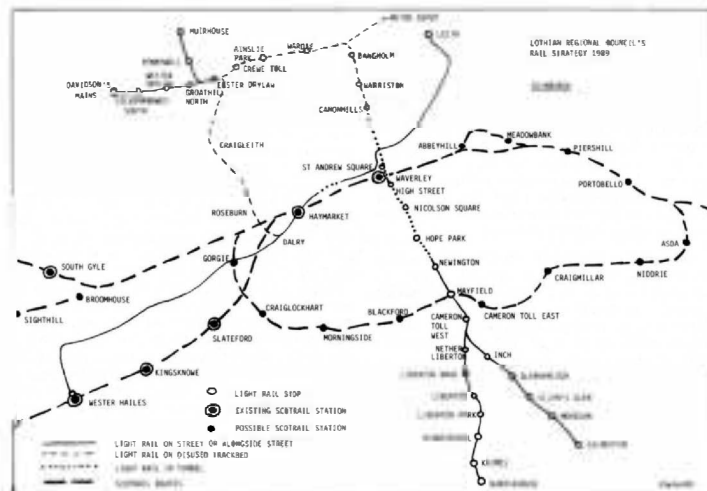
Nürnberg, December 2005: U-bahn Lorenzkirche

4 Edinburgh Area Public Transport Study

There was comprehensive study in the Edinburgh Area Public Transport Study (EAPTS), 1987-90, which assessed the potential of enhanced bus and light and heavy rail modes and designed an optimum network of N-S and E-W light rail lines, with the marketing term of "Edinburgh Metro" adopted. The forecast was that this would attract 44% of public transport trips in Edinburgh. Services were planned to run every 5 minutes to confront bus competition rather than for required capacity.

The final optimum network included the south side railway, with a level of usage of this solely attributable to the synergy of interchange between it and the light rail lines, and

unachievable frequency of service.¹ The EAPTS 1989 forecast was that the optimum network with a south side rail service would attract 50% of trips.



EAPTS 1989

The Technical Analysis of the Option Networks of 14 June 1989 stated that the N-S “Light Metro is more successful than the ‘East-West’ Light Metro due to its enhanced passenger time savings and reduced traffic costs [i.e. reduced impact on other traffic (including servicing and parking)] (both related to its segregated routeing in the underground and north Edinburgh section)”.

The Regional Council Public Transport Strategy for the Edinburgh Area of 16 June 1989 therefore stated: “The North-South Light Metro offers the greatest balance of advantage for the future, and would therefore be the best new rail element to be developed as the first phase.” With the recommendation that the N-S line should be progressed first because of its better rate of return, it was taken forward to detail design.

The Joint Authorities Transportation and Environmental Study (JATES) of 1991 corroborated an overall transport strategy including the N-S and E-W light rail lines, affirming that the N-S line specifically was “a worthwhile community project in economic efficiency terms, which meets the essential requirements of Central Government for such a project,” and “would justify inclusion in the strategy, however little finance was available”.

The cost of the optimum network with south side rail was put in 1989 at £334M at 1987-88 prices (individually £184M for the N-S line and £144M for the E-W line). Following design changes, significantly with the sub-surface section extended from Newington to Cameron Toll (resulting as illustrated below), and detailed cost assessment, the N-S line was costed at £256M in 1991.

The following figure shows the 1989 design of the N-S and E-W lines with the inclusion of the 1991 N-S line extension from Gilmerton to Ferniehill. The EAPTS autumn 1989 N-S line design was for 17.5 kms and 32 stops, and the improved design in 1991 18.5 kms and 36 stops. That included 4 underground stops in 1989 and 7 in 1991. If the E-W line had been taken forward to detailed design, it is reasonable to suppose that a similar stop spacing would have been designed.

¹ NB: The assumed headway on the south side rail service was 10 mins.



EAPTS: amalgam of 1989 and 1991 designs

The only disadvantages of the EAPTS N-S line were proposed stop depth, stated as up to about 30m (necessary to dive under the Cowgate and Waverley Station), and the 800m distance between the stops at St Andrew Square (renamed Waverley in 1991) and Canonmills. (In 2005 I examined the EAPTS papers then still held by the Council Transport service and found that, not made public, a stop at Drummond Place had been designed.) The sub-surface stops would have been, in 1989, St Andrew Square, High Street, Nicolson Square and Hope Park and, in 1991, Waverley, High Street, Nicolson Square, Clerk Street, Salisbury, Newington and Cameron Toll. The stop at Waverley would have had main access from St Andrew Square with other access from the north side of Princes Street, the lower floor of the Waverley Centre and from Waverley Station. The High Street stop would have had access from Cockburn Street, Blair Street and the Cowgate (Edinburgh Metro Development Group, Technical Report on the Preparation of the Improved Design, 3 June 1991, section 7.4).

After initial encouragement from central Government, Treasury restrictions impeded progress, which affected light rail schemes in English cities also at the same time. However, there was specific route safeguarding in the Lothian Structure Plan until 2001.

In conversation after the Lothian Region Structure Plan transport discussion, 6 February 1992, David Jamie, Director of Planning, indicated that the Scottish Office was supportive of the Region's light rail plans; the obstacle resided in the Treasury. The problem was lack of a funding mechanism. JATES had shown viability of light rail. This was "not shelved for 10 years - but mothballed". Current resources were devoted to Structure Plan preparation, and there would be no parliamentary bill in November 1992. The Region's will appeared to be to continue advancing plans in the hope of funding becoming available, rather than abandon plans because of present lack of resources.

5 Policy enshrined in route safeguards

Policy was set out in the Lothian Structure Plan 1994 Written Statement (1994 Plan approved in 1997), para 6.124 et seq, page 131, dealing with Long Term Transport Options for Edinburgh. Paras 6.57-6.58 also deal with light rail transit (LRT), para 6.58 stating: "... the Structure Plan will safeguard both routes and the locations of associated depots and park-and-ride sites to allow further evaluation of the concept". Appendix 1, page 161, provided for safeguards, continued on page 162, with LRT safeguards including: Burdiehouse-Penicuik (part), Sheriffhall-Dalkeith/Esk Valley. The statement was in part:

Lothian Structure Plan 1994

6.125 Central to the long-term transport strategy for Edinburgh is the improvement of public transport to counter the growth in traffic and provide a viable alternative to the car in serving development... For movement within Edinburgh, the longer term objective is to pursue the development of the LRT proposals towards the end of the Structure Plan period.

6.126 An east-west LRT line would serve the western corridor of the City and also support the revival of the local economy in Leith. It is likely to cost £210 million at 1991 prices and could be designed to allow for an extension to serve the airport. It will be possible to introduce such a system in phases, with the first phase consisting of the Busway between the airport, South Gyle and the City Centre proposed in policy TP2. This would be segregated along most of its route, and designed so that it could be converted to form part of a rail based east-west LRT line at a later date.

TP 35 LOCAL PLANS SHALL SAFEGUARD THE ROUTE OF AN EAST-WEST LRT LINE AS DESCRIBED IN APPENDIX 1.

TP 36 *THE REGIONAL COUNCIL WILL ASSESS THE POSSIBILITY OF INTRODUCING AN EAST-WEST LRT LINE IN PHASES, COMMENCING WITH A BUS BASED SYSTEM IN THE SHORT TERM.*

6.127 The north-south LRT line is expected to produce major benefits to travellers and will support new housing and economic development in the south-east of Edinburgh. In conjunction with park-and-ride at termini, it will assist in removing traffic from the road network and improve wider access to the City Centre. Unlike the east/west line, the north-south line can only be provided as a light rail operation owing to physical constraints in the corridor. It is not practical to consider a busway on an interim basis in this case. The estimated cost of this line at 1991 prices is, therefore, £300 million and there is little potential for phasing its construction. The Council will, therefore, seek at this stage to safeguard the route and develop options for its funding.

TP 37 LOCAL PLANS SHALL SAFEGUARD THE ROUTE OF A NORTH-SOUTH LRT LINE AS DESCRIBED IN APPENDIX 1 AND THE REGIONAL COUNCIL WILL SEEK TO COMMENCE CONSTRUCTION IN THE STRUCTURE PLAN PERIOD.

The Lothian Regional Council brochure for its Moving Forward strategy, 1994, describing CERT (City of Edinburgh Rapid Transit), which was intended to be “a purpose built route for buses” from “Edinburgh Airport, South Gyle, Edinburgh Park and Wester Hailes to the city centre,” stated that “it is being designed to accommodate future upgrading to a Light Rail system”.

The brochure also stated: “A light rail metro system remains our long term objective for providing Edinburgh with a public transport system which significantly improves the service to the user and is a viable alternative to the private car. The main problem is the availability of finance and it is important that every opportunity is taken to make these proposals achievable.”

6 Developments since 2000-01

That extant policy, with specific route safeguarding, was abandoned with the Review of the Structure Plan begun in 2001 and the different Waterfront light rail scheme which began to be taken forward at that time. The evidence is that the lack of adequate knowledge of history on the part of City Development transport staff and others in public positions contributed to the Waterfront scheme hijacking council policy in 2000-01. There is reason to consider that the Waterfront scheme distorted a perception of the needs of the whole city and supplanted established Council policy, resulting in ad hoc ideas coming together in a less than comprehensive way. Yet it has to be said that neither has anything happened quickly nor is there any imminent expectation of serving the waterfront area as intended.

The light rail intentions pursued in Edinburgh from 2001 have disregarded previous comprehensive study which identified a city-wide system in the interests of the greatest

number of public transport users. Learning from history might have prevented the cost of previous studies being wasted.

There was an Ove Arup “Edinburgh LRT Master Plan Feasibility Study,” January 2003, but with the Tram Line 3 route to the south-east later deviating from what that outlined, so much for an overall plan. The Arup report stated at section 1.2: ‘In 1987, a two-line “light metro” was proposed, with a significant part of the North-South Metro route underground, but was not progressed beyond the design stage because of the high cost.’ It is debatable whether 3.1 kms of a 17.5 km route in 1989 or 4.4 kms of an 18.5 km route in 1991 is “significant”. With no further reference to the EAPTS proposals (conducted with public participation, unlike the Arup report), and when they cannot even get the date right, it shows how much real awareness there was of, or willingness to learn from, history; the conclusion has to be that this is the way they were briefed by officers in Edinburgh Council.

In relation to the above observation about “high cost,” it is possible that the capital cost of the improved design led to some lack of confidence at a political level in the council. However, the conclusion from cost-benefit analysis in 1991 and the Region’s will to continue advancing plans in the hope of funding becoming available, rather than abandon plans because of present lack of resources – demonstrated by the policy sustained in the Structure Plan - indicate that the assumption that this was the reason for failure is elevation to a myth, albeit one which I recognise took hold. It is necessary to wonder whether this was encouraged by changed personnel at member and officer level in Lothian Regional Council before local government disorganisation in 1995 and in Edinburgh Council thereafter.

In August 2002 I recorded in writing concerns about design features in the Waterfront scheme as set out in the “Feasibility Study for a North Edinburgh Rapid Transit Solution” (July 2001), e.g. apparent reliance on future travel to Waterfront, additional to existing demand; prospect for transfer from bus for travel to Trinity, Newhaven, especially from points in the city centre not close to a light rail stop; numerous route variations studied, but all variations on one route; a too wide stop spacing; route insertion and interchange scope at Haymarket looking awkward.

We have seen pointed use in the last 15 years of “tramway” and even presentation as “reintroducing trams” (and the scheme development has provided other examples of the propensity to get things wrong). This has had some adverse presentational impact; the previous marketing term use of “Edinburgh Metro” for the N-S and E-W light rail lines of the EAPTS 25 years ago has equally led to some misunderstanding. In making comparison between the light rail proposals of 25 years ago and those since 2000-01, I suggest the first need is to get behind marketing or presentational terms adopted. It is difficult to assess whether greater harm has arisen from use of the name Edinburgh Metro or of Edinburgh Tram.

How did the E-W line proposed in the EAPTS differ from the intended Edinburgh Tram scheme line from Leith to west Edinburgh in a way that justifies use of the term “metro”? The N-S line of the EAPTS had segregated route away from streets in north Edinburgh and, in 1989, was 17.7% underground, and in the revised 1991 design 23.8% underground. The reality is that any light rail system will include off-street operation to be effective, and that is indeed not absent from the line now operating. Edinburgh Tram Line 1 STAG Appraisal, November 2003, stated that 58% of the 15.5 km route would be off-street, and Tram Line 2 was almost completely off-street west of Roseburn.

The EAPTS E-W line resembled the designed Edinburgh Tram Leith-west Edinburgh line but as broadly defined superior alignment design was envisaged – use of Great Junction Street instead of Constitution Street, a junction underpass at the West End (such an underpass for general traffic north-south could now be seen as advantageous), a route along

Gorgie Road and Calder Road (to Wester Hailes and Gyle),² and joining the Roseburn-Craigleith corridor from running south of the railway from Haymarket, using the still perceptible but no longer safeguarded linear strip between the railway and housing. The value of the alignment through Ravelston would be reinforced if it was part of a route to Muirhouse. Wester Hailes might have merited greater priority than a service to the airport.

As just one other example of misunderstanding, or lack of knowledge (relevant to quote because it undoubtedly exemplifies more widely held misunderstanding about previous proposals), Councillor Fred Mackintosh wrote to me in correspondence in 2004 that “the vehicles proposed for the Metro Scheme would have been larger, they would have had full height platforms, similar to the Manchester Metro System, unlike that Scheme the Edinburgh Tram Line will involve light weight vehicles with low level platforms”.

This demonstrates such a profoundly erroneous view on vehicle design - and weight. I pointed out to him that the EAPTS Technical Analysis of the Option Networks, June 1989, para 2.3, on guidelines for providing on-street priorities, stated that “in narrow streets ... stops would be provided by ‘blistering’ out the footways”. I said this hardly suggests any prospect of “full height platforms”: ‘I have recorded that the 1989 consultation confirmed the earlier intention to have light rail vehicles of Grenoble profile - low-floor, double-articulated, 2.3m wide and 30m long. An answer at the 7 November 1989 meeting said that the LRVs would have a floor height 12ins above ground level. The 1991 report, para 4.4.45, records support “for the inclusion of a low floor specification”. Para 4.4.54 states “support was expressed for the design of low floor, level access Metro vehicles”.’

In relation to a report in the “Edinburgh Evening News” on 22 May 2006, identifying the problem of curvature and incline from North St David Street to Queen Street for the Edinburgh Tram scheme - though it may have been something known for some time and a recent discovery only for the “Edinburgh Evening News” - I noted from a talk by the project leader, “EAPTS: the Next Stage,” on 23 February 1990 that “minimum curve radius arising is 17-18m on E-W line, from St Andrew Square into York Place” and that characteristics of this one location would determine design across the system. A vivid illustration of failure to learn from previous studies was the intention progressed in the Edinburgh Tram scheme of single tracks in St David Street and St Andrew Street (following existing one-way flows), yet then the revised intention, revealed at a meeting on 23 February 2007, of a switch to double track in St Andrew Street - with the evidence that this was in total ignorance that the EAPTS assumed this operation on the east side of St Andrew Square.

The most cogent representation during the Parliament’s Tram Line 1 Bill Committee consideration was that from Newhaven Community Council and other residents on 13 and 28 September 2005 putting well-argued proposals for a different Line 1 alignment in the Starbank/Trinity area, using disused trackbed. TIE had difficulty in sustaining the case for their chosen route, and the Committee’s consideration stage report giving their decision on the Trinity Railway Corridor Alternative Route shows their struggle not to uphold “the objections from Group 30,” accepting the Bill as promoted in this respect: “The Committee commends Group 30 for the quality and detail of its evidence in support of their alternative alignment. The Committee recognises that the case for the currently promoted route is finely balanced with the proposed alternative alignment particularly on issues such as cost and patronage.”

I find it difficult to see that the intentions pursued in Edinburgh since 2001-01 will deliver as effective a light rail route network as the N-S and E-W routes of the EAPTS.

² The proposed switch to “running on the alignment of the Western Radial west of the City centre” originated in the Joint Authorities Transportation and Environmental Study (JATES) of 1991 (para 7.3.2).

There is reason to have misgivings about a surface route in the Bridges corridor being realistic. There has been a failure so far to show the acceptability of an Edinburgh Tram Line 3 on the surface with shared operation from High Street to Cameron Toll.

Operation underground in a city centre should preferably be associated with environmental enhancement at surface level. Operation on the surface will give closer access to destinations including retail outlets, but that will not be attractive if service is unreliable or slow and there is no surrounding street-level environmental enhancement because other traffic is still present. A sub-surface route can provide higher capacity and higher speed.

It is difficult to imagine that new systems on the European continent would be designed with the lack of separation, on a major radial route, proposed for Edinburgh Tram Line 3. The EAPTS Technical Analysis of the Option Networks of 1989 stated at para 3.13:

“On-street priorities along the Bridges Corridor from Gilmerton and Liberton are likely to cause considerable effects from displaced traffic over a very wide area. The traffic diversion, and its environmental effects, may be considerably reduced by the use of the underground Light Metro proposal rather than the surface Enhanced Bus priority measures or Light Rail tracks.³ This would be a major benefit to balance against the heavy cost of underground construction.”

(This was at the stage when the underground section would have ended at Minto Street.)

I consider that it remains to be shown that a surface route in the Bridges corridor will provide public transport infrastructure of adequate quality. The Council needs to do more to demonstrate meaningful separation from other traffic.

7 Feasibility of tunnel construction

Professor Arnold Hendry, Professor of Civil Engineering at Edinburgh University, in 1972 began to put forward his ideas for rail-based development – first reported in "The Scotsman" on 20 March 1972. Prof Hendry adapted his proposals but the core remained a north-south sub-surface light rail route.



Professor Hendry's proposals in 1972, and in 1975 following the De Leuw Chadwick O hEocha report

At a Cockburn Association evening symposium, “A Metro System for Edinburgh?”, on 22 September 1986, Professor Hendry described his system based on a N-S tunnel with lines radiating from each end. The insight of Professor Hendry as a civil engineer - and of Don Munro of Balfour Beatty Construction at the Cockburn 1986 symposium - must be reliable on tunnel construction. Mr Munro said it would be necessary to check whether there were

³ “Light rail” and “light metro” were artificial shorthand terms used in the EAPTS for options studied: the first avoided sub-surface operation.

cavities in the Scotland Street tunnel. He stated that tunnelling from Waverley to St Patrick's Square would take two years. He gave a cost summary (these and any other costs from past years obviously needing to be updated for present value):

	£K per metre	Total £M
Tunnel in soft ground	28.89	5.779
Tunnel in rock	7.62	11.434
Cut and cover	5.31	7.969
Elevated	1.61	4.482
Track in roadway	0.71	2.141
Railway embankment	0.55	3.105
Track reservation	0.36	1.417
Repair existing tunnel	2.23	2.270
Edinburgh North		7.17
Edinburgh Central		19.5
Edinburgh South		7.2
	cut and cover	15.2
Construction		52.7
Overall		97.7

Professor Hendry's core concept was endorsed by the De Leuw Chadwick O hEocha "Review of the Public Transport Elements of the Recommended Plan," 1975, the Edinburgh Area Public Transport Study (EAPTS), 1987-90, and the Joint Authorities Transportation and Environmental Study (JATES), 1991, which I have described in Sections 3 and 4.



Tyne and Wear Metro, May 2015: operation in tunnel in the city centre has not done Newcastle any harm



Hannover, April 1980: operation sub-surface in the central area and on the surface outwith the centre

Stuttgart has a physical geography exhibiting significant undulation in terrain level, worth noting as relevant to consideration of any sub-surface light rail alignments in Edinburgh.



Stuttgart, December 2008: variety of type of alignments on standard-gauge light rail system upgraded from previous metre-gauge street-based tramway

Professor Hendry, in his “The Edinburgh Transport Saga,” 2002 (which regrettably contains errors in the text and one significant diagram) wrote (page 70): “The big gap, however, is in the installation of a light rail system which came near to being installed with the proposed North-South Metro line. It is likely that a start may be made with a street tramway within the next ten years or so but the possibility of building this Metro line, tunnelled only under the city centre, should not be lost sight of. As much of it would be on segregated track it offers the possibility of much faster and more reliable service on this route than is possible with street running.”

John S. Wilson
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