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From: Dr Malcolm Reed
Chief Executive, Transport Scotland
20 December 2006

Minister for Transport

EDINBURGH TRAMS: DRAFT FINAL BUSINESS CASE AND START OF UTILITY DIVERSIONS

Purpose

1. To provide advice on the draft Final Business Case and to provide a draft paper for Cabinet consideration.

Priority

2. **Urgent.** To allow construction start before the end of this financial year, Cabinet would need to consider the tram scheme in mid February. Discussion with key Ministerial colleagues early in the New Year would be needed to meet this timescale.

Background

3. Cabinet last considered the tram scheme in January 2006 when it agreed to the phased delivery of the scheme and to commit £375m in 2003 prices (indexed according to the standard Transport Scotland indexation model) to the delivery of the first phase from Leith to Edinburgh Airport via Princes Street. You confirmed this commitment in your statement to the Parliament of 16 March 2006.

4. Cabinet also agreed that before significant capital sums could be committed to the tram scheme further Cabinet consideration would be required. That consideration would take place on completion of the draft Final Business Case (DFBC) and receipt of initial infrastructure bids. We have now received the DFBC and present our analysis in Annex A. Initial infrastructure bids are expected in January.

5. The headline findings of the business case and our analysis are:

- tie's evidence is that line 1a would cost £500m and is therefore affordable within available funding with a benefit cost ratio (BCR) of 1.10 and that 17% (2011) rising to 20% (2031) of patronage is not simply displaced from bus. tie and City of Edinburgh Council will therefore argue that they have met the conditions set by Ministers and the last IDM consideration of the tram scheme;
- phase 1a plus 1b would cost £592m and will not be affordable within available funding unless significant additional savings are achieved. However, phase 1a plus 1b performs significantly better in BCR terms (1.63);
- the assumptions made by tie in the business case for the tram are key to the positive BCR and the case for phase 1a only of the tram is now marginal and very sensitive to assumptions. However, the evidence for line 1b suggests subsequent expansion of the core tram will have a better BCR, exploiting the fixed costs of the core network;

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- the tram supports economic development at Leith Waterfront, West Edinburgh and, if line 1b proceeds subsequently, Granton Waterfront. The appraisal attributes 590 Full Time Equivalent jobs to Phase 1a and a further 340 to Phase 1b;
- there are significant levels of risk remaining with the project, although to some extent that risk – particularly around capital cost – may have been mitigated by February 2007. through the receipt of initial bids for the main infrastructure contract;
- the ability to proceed as proposed depends on receiving sufficient quality information from the initial infrastructure bids and this may not happen – it is possible that the bids will be either too high (and thus make the scheme unaffordable) or too qualified to give the necessary confidence in the overall scheme price
- the DFBC is predicated on the Edinburgh Tram Project being covered by the national concessionary travel scheme. As concessionary travellers make up roughly a quarter of all passengers, failure to include the trams in the national scheme would threaten TEL's financial viability and would lead to both a subsidy requirement for the tram and reduced efficiencies in bus operation;
- the inclusion of tram in the concessionary fares scheme would fall to be negotiated as part of the renewal of the scheme and a large amount of the funding required is already being paid to Lothian Bus for existing concessionary travel. There would be additional pressure on the national concessionary fares scheme from the generated travel and from renewed arguments that Glasgow Underground should be included.

6. It should be noted that the Business Case analysis does not include any quantification of the impact of the tram on land development or property values. This is in accordance with required methodology. It is observable from other tram schemes, however, that the impact of the tram on land and property values can be to trigger significant increases.

7. Further advice and analysis is contained in the following annexes:

Annex A	analysis of draft Final Business Case
Annex B	key risks – analysis, commentary and mitigation
Annex C	recommended conditions on any funding award

Financial implications

8. Our current best estimate is that the outturn value of Ministers' contribution of £375m in 2003 prices would be £480m (with a range £450 - £500m). CEC has committed a further £45m in outturn prices (as a combination of cash and land). This provides available funding of up to £545m depending on actual inflation.

9. By March 2007 grant totalling £52m will have been paid or be due to CEC from the £375m. In the event of scheme cancellation around £10-12m may be recoverable following sale of land and property acquired for the tram scheme, leaving sunk costs of £40m.

10. Commitment to Multi Utilities Diversion Framework Agreement (MUDFA) diversions would increase the cancellation and sunk costs of the tram scheme to about £100m. The momentum that would follow a decision to commence utilities diversion work would make it very

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difficult to resist letting of the main construction and tram vehicle contracts and thus a positive decision is likely to lead to spend of a further £350m.

Strategic context – congestion and the economy in Edinburgh

11. Edinburgh has a crucial role in the Scottish economy and the West of Edinburgh in particular has contributed significantly to growth in the Scottish economy through financial services and knowledge-based industries. That economic growth has brought increased pressure on transport networks including significant growth in congestion which is forecast to continue and in turn congestion will start to threaten economic performance.

12. City of Edinburgh Council has pursued a variety of policies to encourage more sustainable travel and has had success with some of these – notably in terms of encouraging high bus ridership. However, the failure of congestion charging has left Edinburgh with only 1 remaining option for significant intervention to boost public transport within the city and that is the tram. The tram alone will not be sufficient to tackle the capital's congestion problems but without the tram we would be relying on future economic measures to restrain traffic growth.

Recommendation

13. I recommend that Ministers should approve the draft Final Business Case for Phase 1a of the Edinburgh Tram (Leith Waterfront – Princes Street – Edinburgh Airport) subject to confirmation of the affordability of Phase 1a following receipt of initial infrastructure bids.

14. In doing so I would invite Ministers to note that the business case is marginal and any decision would need to take account the costs, risks, benefits and opportunities associated with the business case.

15. I recommend that no decision should be taken to support Phase 1b at this time as this would reduce pressure on developers to contribute to that phase and the combined 1a + 1b is not likely to be affordable within current funding commitments.

16. If Ministers go ahead with support for Phase 1a including utilities diversion work then I recommend that Transport Scotland should set the conditions on the funding award that are set out in Annex C.

17. I attach a draft Cabinet Paper (Annex D) to allow you to start consultation with Cabinet colleagues ahead of a Cabinet discussion in mid February.

DR MALCOLM REED

Chief Executive, Transport Scotland

Ext [REDACTED]

20 December 2006

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ANNEX A

EDINBURGH TRAMS: DRAFT FINAL BUSINESS CASE AND START OF UTILITY DIVERSIONS

ANALYSIS OF DRAFT FINAL BUSINESS CASE

Summary

1. tie has undertaken a full appraisal of the tram scheme in line with the letter of the STAG guidance but in doing so has made a number of assumptions that are open to question and the results of the appraisal are highly sensitive to those assumptions.
2. tie has carried out an assessment of the scheme against 3 tests of scheme viability:
 - ◆ **economic viability** – a standard assessment of the quantifiable benefits and costs of the scheme plus environment, safety, integration and accessibility impacts;
 - ◆ **financial viability** – whether the scheme integrates with bus services and whether the combined bus and tram services can operate without subsidy;
 - ◆ **affordability** – whether the initial capital costs are likely to be affordable within the available funding.

Economic viability

(All costs discounted to 2002)	Phase 1a	Phase 1a + 1b
Costs (£m)	340	436
Benefits (£m)	373	709
NPV (£m)	+33	+273
BCR	1.10	1.63

Financial viability

3. The analysis shows that the combined tram and bus network is expected to be profitable from the 2nd year of tram operation.

Affordability

4. Our current best estimate is that the outturn value of Ministers' contribution of £375m in 2003 prices would be £480m (with a range £450 - £500m). CEC has committed a further £45m in outturn prices (as a combination of cash and land). This provides available funding of up to £545m depending on actual inflation. tie estimates the cost of Phase 1a at £500m (giving some headroom on costs) and Phase 1a + 1b at £592m (and therefore not affordable without substantial savings or additional funding).

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Revenue analysis

5. Other UK tram schemes have suffered from failure to achieve the revenue targets set out in business cases. This has been a significant factor in the failure of recent English PPP tram schemes as bidders have priced revenue risk very heavily. In the Edinburgh Tram scheme the revenue risk lies with Transport Edinburgh Ltd (TEL) and ultimately with City of Edinburgh Council and the revenue projections have been incorporated in TEL's business plan. Essentially those who have a financial stake in the revenue of the combined bus and tram network have signed up to delivering the revenue projections. For the first time on a UK tram scheme it can therefore be argued that it is more probable that the revenue projections will be exceeded than missed.

Other appraisal criteria

6. The executive summary of the DFBC presents notable positive benefits against each of Economic Regeneration, Environment, Safety and Reliability, Accessibility and Social Inclusion and Transport and Land Use Integration. The more negative impacts are included within the detail of the appraisal.

Economic Regeneration

7. The appraisal highlights the role of the tram in supporting economic development at Granton Waterfront, Leith Waterfront and West Edinburgh. The appraisal attributes 590 FTE jobs to Phase 1a and a further 340 to Phase 1b. The additional demand caused by this development is taken into account within the patronage modelling.

Environment

8. The STAG work does not show significant environmental benefits in terms of either local or global air quality. Under Phase 1a, the impact of Edinburgh Tram is broadly neutral in terms of local air quality and under Phase 1a + 1b there is some improvement. Both Phase 1a and 1a + 1b increase CO₂ emissions. CO₂ emissions from transport increase in the region of 2-3% for the two phasing options. This is largely due to the assumption that the introduction of tram will accelerate economic development and not all of the additional travel demand will be made by public transport. There are disbenefits in terms of cultural heritage, landscape and historical buildings.

Safety and Reliability

9. The scheme has accident disbenefits due to the nature of road-light rail interface within the same space. There are improvements in reliability in the off-road sections of tram operation and through the traffic signal priority assumed for the tram. The personal security of travellers is predicted to improve through the availability of increased CCTV and the deployment of inspectors on the vehicles.

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Integration

10. The tram integrates well with the proposed land-use developments at Granton and some new journeys can be made effectively. Against this must be set that some existing journeys will in future involve forced interchange from bus to tram.

Accessibility and Social Inclusion

11. The tram connects areas of relative social deprivation (Granton, Leith, Saughton, Broomhouse) with areas of job growth (new developments in Granton and continuing growth in West and Central Edinburgh). However, many of these areas are already linked by bus services. Additionally, the accessibility data produced by tie includes the tram quality benefits (as detailed above in terms of In Vehicle Time weighting) as part of, what is known as, generalised journey time. No information is currently available as to actual rather than perceived (due to tram quality) accessibility benefits,

Concerns about tie's analysis

12. The assumptions made by tie are key to the positive economic appraisal they have produced. The appraisal is very sensitive to those assumptions and some of those assumptions are open to question. However, an independent due diligence report has been received that finds that the modelling work has been "developed in a professional and diligent manner with due regard given to current best practice guidelines. The identified shortcomings generally reflect [the Joint Revenue Committee's] need to adhere to an extremely challenging timetable."

Construction impacts

13. No account is taken of the construction impacts of the scheme. This is not in line with treatment of heavy rail schemes where compensation payable to train operators is included within the capital cost as a proxy for disruption. There is evidence from elsewhere that careful management and information provision during construction of similar schemes can mitigate the impacts significantly (or in some circumstances be beneficial) but tie have provided no detail of any plans to date. If the construction impacts are not managed well then the additional congestion caused could be sufficient to bring the BCR of Phase 1a below 1.

Value of time

14. A large proportion of the benefits of the scheme arise from the use of a weighting on tram in-vehicle time. Whilst the way in which this has been applied is unusual, it is a reasonably standard practice. What this means however, is that a large proportion of the benefits are derived from the fact that "people prefer a tram to a bus".

15. This degree of preference was calculated from a survey that discounted the views of those who expressed a preference against trams at the time. This was arguably because negative media coverage at the time the survey was undertaken was affecting some people's views whilst delivery of the scheme was in doubt. It is not unreasonable to suggest, as tie has done, that people would no longer express a preference against trams once they were in service. Taking account the

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sensitivity of the survey results the BCR could fall below 1 for Phase 1a and close to one for Phase 1a + 1b.

16. If the weighting on tram in-vehicle time is removed altogether then the case for both options falls below 1.

Bus alternatives

17. Comparison of the reference case which, at tie's insistence, contained bus priority measures not now in place or committed, with a formal do-minimum that represents the current situation shows that around two-thirds of the benefits achieved by the tram scheme could in theory be achieved by a bus priority scheme at much lower cost (although tie have not calculated what that cost would be). It is possible that such measures might be funded out of the increased revenue that would be raised.

18. The question therefore arises of whether a bus alternative could be implemented. There are 2 principal barriers to this: road capacity and securing approval for bus priority measures. tie argues that the capacity of key streets such as Princes Street and Leith Walk would not allow continuing increases in bus vehicle numbers to accommodate the projected demand. The acceptability of a tram scheme has been demonstrated through the ultimately successful Private Bills process and, although there are still statutory approvals to be sought including Traffic Regulation Orders, the issues that arise have already been debated before Parliament. Ministers have previously accepted these arguments and ruled out bus alternatives in supporting the tram bills.

Level of modal shift from car

19. There is concern that the model used may overstate the level of modal shift from car. Standard values of time were used for car-users despite the survey, detailed above, calculating a lower value. The use of the survey value instead would tend to reduce the amount of modal shift.

20. The independent Model Construction and Application – Due Diligence Report, produced by Scott Wilson has been received recently. Although it does not consider the point above regarding the discarding of SP data for car use, it identifies shortcomings in the model – some of these would tend to present an overly positive view of the tram, some of them would tend an overly negative view. The report states that “the impact of the issues indicated on the business case is difficult to quantify without detailed investigation, however the view is that each aspect in isolation is likely to be minor... The potential areas where the business case is over estimated is almost equally matched by the areas whereby the case is under estimated. On balance it is expected that there is minimal bias in the way in which the study has been conducted.” Analysts are currently examining the report in further detail.

Transport Scotland – Rail Delivery Directorate
Transport Scotland – Transport Economics, Analysis and Research
December 2006

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ANNEX B

EDINBURGH TRAMS: DRAFT FINAL BUSINESS CASE AND START OF UTILITY DIVERSIONS

KEY RISKS – ANALYSIS, COMMENTARY AND MITIGATION

ISSUE	RISK	LEVEL & MITIGATION
Economic Assessment	Economic Assessment has been validated independently as being in line with best practice guidance but case is very sensitive to assumptions made. Risk that assumptions are not borne out in reality.	Medium Some assumptions will be validated by further work in light of infrastructure bids. However, others can only be reviewed after the event and so would have to be acknowledged and tolerated.
Programme	The programme is consistent and logically structured but lacks any allowance for slippage. It therefore assumes everything will run to time despite the track record of the tram scheme to date where programme deadlines have consistently not been met. The lack of float will also lead to pressure for decisions to be taken whether or not all the supporting information is available.	High With no “float” in the programme slippage in overall delivery is likely. The opportunities for mitigation are limited but tie/CEC need to be challenged to act effectively and reduce the number of tasks on the critical path wherever possible.
Capex Costs	Capex costs have been benchmarked against other schemes and independently validated. However, the costs are highly sensitive to the risk treatment applied by the infrastructure contractors to their bids. The commercial drive to reduce risk premiums is reduced by the fact that there are only 2 infrastructure bidders.	High Further design work would mitigate some of the risk together with a robust negotiating strategy with Infracore bidders. However, mitigation potential is limited by weak market for tram schemes in the UK.

ISSUE	RISK	LEVEL & MITIGATION
Financial Agreement with CEC	Formal agreement not yet signed. It covers the quantum of investment by both parties, risks and responsibility for cancellation costs	<p>Medium</p> <p>Agreement is being recommended by officials to Ministers and CEC elected members and approval of the draft FBC will allow completion of the agreement. However, the proposed arrangement relies on sufficient headroom for cost increase. If headroom is exhausted risk lies in theory with CEC but they would seek to reopen this issue. Binding agreement that is realistic about treatment of cost overrun is needed before financial close.</p>
Contingency, Optimism Bias & Headroom	Tie have allocated an Optimism Bias uplift of 12% for Route 1a (£58m). Relies heavily on success of tie's risk mitigation strategy. Other schemes with a different strategy have allowed circa 20% at this stage and this has been borne out where schemes have gone forward to construction.	<p>Medium</p> <p>Phase 1a, at £500m, seems to be affordable within the current overall £545m funding envelope, with up to £45m headroom above the optimism bias figure.</p> <p>tie's Monte Carlo statistical analysis indicates that there is a greater than 90% chance that Phase 1a would be affordable within a funding envelope of £545m</p>
Design	The design contractors (SDS) are currently performing poorly and remain behind programme. This may be exacerbated by the procurement strategy of novating the SDS contract to the successful infrastructure contractor where there is a risk of delay whilst the terms of the handover are agreed.	<p>Medium</p> <p>Currently of concern given the continuing failure to deliver on time and on quality. This leads to capital cost risk over the Infracore contractors' pricing of the uncertainty that remains in some designs.</p> <p>Mitigation by tie with contractor's USA headquarters is underway to ensure a culture of realism and production. Weekly updates to TS will allow visibility of whether problem is being resolved and situation can be reassessed at end January 2007.</p>

ISSUE	RISK	LEVEL & MITIGATION
Design	Design of interchanges at Foot of Leith Walk, St Andrew Square, Crewe Toll (1B) not developed and therefore effectiveness not demonstrated.	Medium The design has of the “forced interchange” at the Foot of Leith Walk must be of very high quality to ensure that this does not become a barrier to patronage. Ongoing consideration with tie/CEC and others to evaluate quality of design.
Additional Costs for Phase 1b	Phase 1b is not likely to be affordable within current funding but pressure is coming from City of Edinburgh Council to provide additional funding. This may impact on funds available for other projects and is likely to reduce pressure on developers to contribute to infrastructure from which they benefit.	Medium Mitigation is to resist any calls to fund Phase 1b until there is firm evidence that Phase 1a is being delivered within budget and until meaningful developer contributions are secured.
Concessionary fares	The DFBC assumes that the Edinburgh Tram Project will be covered by the national concessionary travel scheme. As concessionary travellers make up roughly a quarter of all passengers, failure to include the trams in the national scheme could threaten TEL’s financial viability	Medium A substantial portion of the concessionary fares support is included in the current settlement and is paid to Lothian Buses. However, the generated travel will put pressure on the concessionary fares budget and will fuel demands for the inclusion of the Glasgow Underground within the scheme.
Traffic Regulation Orders (TROs)	The necessary TRO powers were not included in the private Bills and consequently remain a potential source of risk / delay to the programme and subsequent operational performance of the tram network.	High A programme of mitigation has been drawn up but requires closer communication and cooperation between CEC, its lawyers and Transport Scotland. Relies on willingness of CEC to take tough traffic management decisions and change in procedure through revised statutory instrument covering rules for hearings.

ISSUE	RISK	LEVEL & MITIGATION
Functional Specification	Functional specification not yet finalised although significant progress has been made. If the functional specification is not agreed then proper project controls cannot be implemented.	Low Final agreement anticipated before end December

Transport Scotland – Rail Delivery Directorate
December 2006

ANNEX C

EDINBURGH TRAMS: DRAFT FINAL BUSINESS CASE AND START OF UTILITY DIVERSIONS

RECOMMENDED CONDITIONS ON ANY FUNDING AWARD

ADDITIONAL CONDITIONS ON FUNDING RELEASE

Purpose of additional conditions

1. When considering the proposals for the Edinburgh Tram scheme Ministers need to consider 2 separate questions:

- (a) is this a scheme that the Scottish Executive should continue to support?
- (b) what conditions and controls would be needed to give the best chance of success if Ministers do continue to support the scheme?

2. This annex covers proposed actions to be required of CEC, tie and/or TEL to address the second question. These issues were considered by the Transport Scotland Investment Decision Making (IDM) Board on 13 December 2006 and the IDM concluded that the following actions were required.

Action before February 2007

3. Before a final paper can be presented to Cabinet the following activities need to be completed:

- ◆ receipt and first-pass analysis of initial infrastructure tender bids;
- ◆ confirmation of revised cost estimates in light of tram vehicle and infrastructure bids including cost range associated with remaining risk and uncertainty.

4. We should specify that the process of revising the cost estimates in light of tram vehicle and infrastructure bids must be transparent to Transport Scotland and its advisers to ensure that we can advise clearly on the confidence in the cost estimates.

Other action before financial close

5. Before financial close in Autumn 2007 we need to specify any other activities we regard as critical to success. These would include:

- ◆ Completion of the Final Business Case (FBC)
- ◆ Completion of robust pre-construction design by tie's Systems Design Services consultant
- ◆ Submission of final draft Traffic Regulation Orders and timely progress with these
- ◆ Strengthening of tie's management information and project control systems including independent audit of these controls
- ◆ Completion of land assembly
- ◆ Carry out OGC Gateway Review 3 and have agreed action plan for any recommendations

Completion of the FBC

6. The FBC needs to be completed in the light of final bid prices for all contracts. Transport Scotland also has a variety of comments on the detail of material that has already been submitted. We need to provide a comprehensive set of comments making it clear where specific changes to the document are required by end January 2007. We would expect to see a revision to reflect those comments by end March 2007 and a fully-compliant and robust FBC before contracts are signed.

Completion of the pre-construction designs

7. tie's System Design Services (SDS) consultant has not yet produced designs of adequate quality and is running some weeks behinds schedule. Action has been taken at the highest level to improve performance but we must monitor the success of this closely and require weekly updates. Robust pre-construction designs must be completed before for each piece of construction before physical works start.

Submission of draft Traffic Regulation Orders (TROs)

8. The necessary TROs have not yet been obtained and it would be very risky to begin construction without obtaining relevant TROs. City of Edinburgh Council must devote sufficient resources to progress these as fast as possible through the statutory process. The Scottish Executive may need to support this with a change to the rules governing inquiries. This is under discussion with colleagues in Transport Group.

Strengthening of tie's management information and project control systems

9. Since the May 2006 readiness review tie has strengthened its team very significantly and has made some progress in improved systems. However, it is essential that significant improvements in systems are made before any physical works start. For TS to have confidence in the systems they will need to be subject to independent and transparent audit.

Completion of land assembly

10. tie are currently undertaking land assembly for the scheme to reduce risk to the main contracts. This must be completed as soon as possible to realise the benefits of reduced risk premiums from tram infrastructure contractors.

OGC Gateway 3

11. In line with all other major projects the Tram is subject to OGC Gateway Review and it would be normal to undertake a Gateway 3 and agree any necessary action plan before contracts are awarded.

Rail Delivery Directorate
December 2006

ANNEX D