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·EDINBVRGH·
THE CITY OF EDINBURGH COUNCIL

Item no
Report no

Edinburgh Tram Final Business Case

The City of Edinburgh Council

25 October 2007

Comment [LH1]: Elements of the original Dec 06 report are in green, current report black, areas to be checked in red and areas of the new report needing reworked are in brown.

1 Purpose of report

1.1 To seek approval for the Final Business Case for the Edinburgh Tram Network. To seek approval of the Preferred Bidders for the infrastructure works and the Tram Vehicle Suppliers. To seek approval of funding applications for Advance Works Phase 2 and for interim funding of the Tram Project.

2 Summary

2.1 This report starts by reviewing the history of the development of the Tram project, highlighting important landmarks, including key past decisions of the Council, leading up to the final contract awards that are the subject of this report.

2.2 The report reiterates the critical role trams have to play in supporting the growth of Edinburgh while protecting and enhancing its unique environment. Procurement progress during 2006 is summarised. .

2.2 An overview of the Final Business Case presented by **tie** is presented before capital cost and the affordability of the Tram project are set out and the revenue implications of Tram explained.

2.3 The most important risks arising from the Tram project and appropriate mitigation measures are presented before the next steps in the procurement and implementation of Tram are detailed.

2.4 The Report concludes by acknowledging the confidence afforded to the project through tie's approach to risk management and recommends proceeding with the project with the assurance that Tram's will provide an essential catalyst for the continuing growth of the Edinburgh economy and facilitate the City's' future development.

3 Main Report

The Origins of the Project

3.1 The origins of the Edinburgh Tram project can be traced back to July 1998 when the Scottish Office produced the White Paper entitled "Travel Choices for Scotland -- The Scottish Integrated Transport White Paper" This invited each local authority to produce a Local Transport Strategy, and advocated the

setting up of a Scottish Public Transport Fund for key projects. Appendix 1 summarises the key decisions and reports from 1968 to date.

3.2 In October 1998 and in response to the transport white paper the Council took the decision to prepare its first local transport strategy (LTS) for Edinburgh.

3.3 The LTS, was drawn up over the next two years, and set out the following aims

- to improve safety for all road and transport users; •
- to reduce the environmental impacts of travel; •
- to support the local economy; •
- to promote better health and fitness; •
- to reduce social exclusion; •
- to maximise the role of streets as places to meet and play.

3.4 The first LTS set out schemes to be pursued in the longer term, dependent on funding, including "a light rapid transit system for the city, possible options include further phases of a CERT (City of Edinburgh Rapid Transit) or a public

Comment [LH2]: check

3.5 The strategy included identifying and implementing a series of measures (the "New Transport Initiative", later the "Integrated Transport Initiative" (ITI)), which was presented to the Council's Transportation Committee on 31 May 1999. The Committee approved undertaking Phase 1 of the New Transport Initiative including examination and consultation on the introduction of road user charging and any other appropriate sources of finance as a means to fund a substantially improved transport system for Edinburgh

3.6 On 4 May 2000, the Council considered the results of Phase 1 and agreed to embark on Phase 2, an examination of the ways of achieving the measures that had been identified. The Council Executive considered Phase 2 on 11 September 2001. The package of suggested improvements to public and private transport was divided into five areas: rail, tram and guided bus; integrated transport including park and ride; bus improvements; road maintenance; and quality of life and environmental improvements. That meeting of the Executive also agreed to the formation of **tie**.

3.7 In March 2002 the council was awarded an initial £6.6m by the Scottish Executive as part of its initiative "Delivering Transport Improvements", to investigate the desirability of building one or more tram lines in the city.

3.8 In September 2002, **tie** submitted its proposals to the council. It identified a road user charging scheme to be preceded by a package of improvements including an 'Edinburgh Crossrail' rail scheme, a West Edinburgh Bus Scheme (WEBS) to the airport, bus lane improvements and park and ride schemes. Three tram lines were identified as the most promising in terms of economic viability and benefits to the city: a northern loop connecting Granton and Leith to the city centre, a western line connecting the city centre to the airport, and a south-eastern line connecting the city centre to the new Royal Infirmary.

Comment [LH3]: What report is this?

3.9 The benefits of a tram system were seen as

- a greater capacity than buses – up to 300 passengers per vehicle;
- a greater effect on persuading people to use public transport – research from the Croydon Tramlink indicates a "modal shift" of 18%; •
- less impact on the environment in terms of emissions and noise; and
- greater accessibility for mobility-impaired people

3.10 The Council Executive decided in January 2003 to take these tram lines forward, and

3.11 In March 2003, the Scottish Executive announced £375m would be made available for the construction of the first two lines (subject to STAG 2 approval). When announcing the award, the Transport Minister stated his desire to support Edinburgh's success over the long term. Citing Edinburgh's experience of many years of traffic congestion he expressed the Scottish Executive's desire to support modern, efficient public transport infrastructures and took the view that the creation of a tram network for the city would make a significant contribution.

3.12 The Council then authorised **tie** to proceed with the three tram lines and gave approval to promote the Bill for Line One at a meeting held on 22 December 2003.

3.13 Approval for the promotion of the Line Two Bill followed in February 2004. Two years of intensive investigation, analysis and consultation by **tie**, its advisors, and officials of the City Council led to the respective Bills for Lines One and Two being laid before Parliament in XXXXX and XXXXX . The Parliamentary Bill committees concluded their detailed scrutiny of the proposals and the Bills received the approval of the Scottish Parliament on XXXX and with Royal Assent being given in XXXX and XXXX

http://download.edinburgh.gov.uk/Census_2001_City_Comparisons/CCTable21Cars.pdf
http://download.edinburgh.gov.uk/Census_2001_City_Comparisons/CCTable22TtoWork.pdf

Comment [LH4]: AIDE MEMOIRE

Why Tram?

3.14 The December 2006 Report to Council on the Tram Draft Final Business Case emphasised **the vital role that the Edinburgh Tram would play in continuing the success of the Edinburgh City region** at the centre of the Scottish economy. That Report argued that the region was the most important national attractor of population, investment and development. It pointed out that the City was punching above its weight in the level of GDP per capita and in the recent growth in GDP. Edinburgh was anticipated to maintain its role as the principal element of Scottish population growth and still maintains largest net civilian in migration in Scotland.

3.15 The transport advantages of Tram have been recognised by the Council since the publication of its first Local Transport Strategy. Chief among these in ensuring the quality transport system that an expanding and prosperous Edinburgh needs are its carrying capacity, its potential to attract trips from car and its reduced impact on the environment. In addition the December 2006 Report saw Tram ***"as a tangible and powerful symbol of a modern, dynamic economy that will help to reinforce the city's international image as a business location".***

3.16 The most recent population and employment statistics reinforce this argument. They show significant increases in employment and particularly important increases in population in north Edinburgh close to the route of the Tram The travel demand associated with those demographic changes and the continuing improvement in the quality of the bus services provided by Lothian Buses is reflected in the most recent bus patronage figures that show a sustained growth of XXX%..

Comment [LH5]: get stats from Alistari Richard

3.17 The December 2006 Report expected that some 35,000 new jobs and 24,000 new houses, would be needed within the city by 2015. It foresaw that much of this increase could be met by developments in north Edinburgh, especially on the city's waterfront, with the potential to accommodate up to 29,000 new homes in the longer term. At the same time the City Centre and West Edinburgh, are both forecast to see significant increases in jobs. West Edinburgh, identified by the Scottish Executive as a national growth point, is forecast to grow particularly strongly. The Edinburgh Tram will provide an

effective and efficient link between these two growth hubs. **Tram will prove an even better alternative to the private car for these key movements than the local bus network.**

3.18 Trams are considered fundamental to achieving the growth in north and west Edinburgh. Without Tram development proposals would have to be scaled down. Buses alone, though currently providing very effective local public transport, cannot provide the speed, quality or capacity to support development on the scale envisaged. As an example, modelling work carried out for tie, predicts an increase of some 5,000 passengers southbound on Leith Walk between 2011 and 2031 in the two hour morning peak period. Catering for the increase in public transport demand would be particularly challenging and could lead to bus congestion in the city centre. Transport modelling carried out for the West Edinburgh planning framework suggests that **only Trams are seen as capable of reducing growth in traffic and tackling congestion in the area.**

3.19 The Report to Council in December 2006 also emphasised that the priorities for the City's business community were access to a skilled workforce and ease of movement – a finding reinforced by research undertaken for the Scottish Executive "*Competitive Scottish Cities*". **The success and the latest extension to the Dublin tram system is testament to the value of trams to city business.**

Business Compensation Package

3.20 The business benefits of trams has been well illustrated in Dublin and Nottingham -- especially in terms of improved access to city centres. There will however be disruptions during the Tram construction period that may adversely affect businesses along the route of the Tram. Small businesses are particularly at risk. In order to minimise the impact on the City's economy a package of measures has been developed in discussion with, among others, the Edinburgh Chamber of Commerce. The package comprises

- **Rateable value reduction for retail properties fronting the tramline.** The Assessor has agreed a standard reduction of 20% to be applied to average situations such as may occur on Leith Walk, Princes Street and West Maitland Street. Greater reductions may be applied in the most severe cases of disturbance which will be determined on an individual basis. Reductions may however also be set at a lower level where properties are affected to a lesser degree, e.g. where they are set back from the construction works such as the southern part of Elm Row.
- **Small Business Top Up Support Scheme** In addition, funding has been set aside within costs of the scheme to provide extra support to small businesses. The details of the scheme are still to be finalised, but it has been agreed that the scheme will be simplistic, non-bureaucratic, transparent and swift when paying out
- **Construction Management** Contractors will have to follow the Code of Construction Practice (requirement written into the Tram Acts)
- **Liaison and Publicity** A communications strategy is being developed to ensure that businesses are fully informed of the programme of works and to reassure the public that Edinburgh is still "Open for Business"

Progress with the business support schemes will be the subject of further reports to the Council.

3.21 The tram will of course be just a part of the city's public transport network, with buses continuing to play a dominant role on most routes. It is envisaged that bus services will continue to develop to meet the changing needs of the city. Tram will be integrated with bus, both in terms of through ticketing and easy interchanges. Equally important will be connections with the rail network. Easy

interchange from rail to tram will help expand the number of Edinburgh employers who can draw on staff commuting by rail – crucial to further development of the city's economy.

3.22 The current tram proposals potentially form the core of a more extensive network within the City and beyond. The 2015 Edinburgh and Lothians Structure Plan development strategy is built around a wider network, incorporating phases 2 and 3 of the current proposal, 'Line 3' to the Edinburgh Royal Infirmary and Newcraighall, and extensions to Livingston, Dalkeith, Musselburgh and Queensferry. The draft SEStran Regional Transport Strategy endorses this wider network, and, along with this Council, calls for any new Forth Crossing to be capable of carrying trams.

Key Players

3.23 There are four key players responsible for the delivery of an integrated transport system for Edinburgh: - The Council; Transport Scotland; Transport Edinburgh Ltd (TEL); and **tie** Ltd. Their respective roles were described in the Report to Council of 21 December 2006. The Council is the promoter of the Tram project and has been responsible for its inception through the Local Transport Strategy, and the promotion of Parliamentary Bills enabling its construction. Following Royal Assent the Council is now the "authorised undertaker" for Edinburgh Tram Lines 1 and 2 under their respective Acts. The Council is also the sole or major shareholder in three limited companies all of whom play a vital role in Tram namely TEL, Lothian Buses and **tie**.

3.24 Transport Scotland is the agency responsible for the delivery of the Scottish Executive's transport investment programme and is the principal funder of Edinburgh's tram project.

3.25 TEL is the central focus for Tram delivery and was specifically set up by the Council to establish an integrated bus and tram system for Edinburgh. Councillors and Council officials, Lothian Buses executives and one **tie** executive sit on the Board of TEL. The Board of TEL also has seats for representatives of the private sector.

3.26 Lothian Buses will carry on its present role after commissioning of Tram and it will become a component company of TEL. The day to day operation of Tram will be the responsibility of Transdev who were appointed following competitive tender in 2004 and have played a vital role in the development and specification of the Tram.

3.27 **tie**'s crucial role has been centred on project managing the development of the Tram, preparing the case for the Parliamentary process, and procuring the Tram system.

3.28 The relationships between the key Tram players were set out in a report to Council in June 2005. In that report their respective roles in setting up contracts for the construction of the Tram infrastructure, the procurement of Tram vehicles and the ongoing operation and maintenance of the tram and bus network were described. Further reports by the Chief Executive in August and September this year were prepared in response to the revised funding arrangements for the Tram Project and the consequent transfer of financial risk to the Council. These two reports have led to a strengthening of the governance arrangements for the Tram Project and the ensuing relationships between the four key players.

Comment [LH6]: refered to in 26 Jan 06 report by chief exec

Comment [LH7]: no doubt more needs to be added in here

3.29 The four key players have overseen progress through a substantial volume of work to reach this major milestone for Tram in the presentation of the Final Business Case to Council.

Progress During 2007

3.30 2007 has seen substantial efforts on the part of all those responsible for bringing the Edinburgh Tram Project to the final stages of its procurement and implementation in line with the procurement strategy mapped out by **tie**. **tie**'s procurement strategy was developed under the shadow of the Scottish Parliament building overspend and took account of the report of the National Audit Office in 2004 on the effectiveness of light rail schemes. The objectives of the Procurement Strategy are summarised as follows.

- Transfer design, construction and maintenance performance risks to the private sector
- Minimise the risk premia (and/or exclusions of liability) that bidders for a design, construct and maintain contract normally include. Usually at tender stage bidders would not have a design with key consents proven to meet the contract performance obligations and hence they would usually add risk premiums for this
- Mitigation of utilities diversion risk (i.e. potential impact of delays to utilities diversion programme on Infraco works).
- Gain the early involvement of the operator to mitigate the risk relating to the future operation of the tram

3.31 As reported by the Chief Executive on the 21 August, this year, **tie**'s procurement strategy has been given the seal of approval by the Auditor General for Scotland. The Auditor General had been asked by the Cabinet Secretary for Finance and Sustainable Growth to carry out a high-level review of the arrangements in place for estimating the costs and managing the Edinburgh trams. He reported that procedures were in place to actively manage risks associated with the Tram Project; and that **tie** had implemented a clear procurement strategy aimed at minimising risk and delivering successful project outcomes. Full details of the procurement strategy are given in the Final Business Case Section ???

Procurement

3.32 Given the size and complexity of the principal contracts and their very specialised nature **tie** opted to procure these contracts as negotiated tenders. The procedures adopted follow EU procurement regulations and were aimed at ensuring best value can be in the negotiations over price, and contract terms and conditions. These tenders are currently being evaluated by **tie**. These contract documents have been issued by **tie** and contracts to be awarded thereafter will be awarded by **tie** who will be a party to the contract.

3.33 All major tender documentation needed for the successful implementation of the Tram Project has been issued to and returned by competent bidders. The tenders comprise the following:

- Development Partnering and Operating Franchise Agreement (DPOFA)
- System Design Services (SDS)
- Joint Revenue Committee (JRC)
- Multi Utilities Diversion Framework Agreement (MUDFA)
- Infrastructure provider and maintenance (Infraco)
- Vehicle supply and maintenance (Tramco)

3.34 The dates of contract award and successful bidders are given in the following table :

Contract	Awarded	Bidder
DPOFA	May 2004	Transdev
SDS	September 2005	Parsons Brinkerhoff
JRC	September 2005	Steer Davies Gleave and Colin Buchanan and Partners
MUDFA	October 2006	Alfred McAlpine

3.35 Bids for Tramco and Infraco were returned on October 2006 and February 2007 respectively.

3.36 After an extensive and exhaustive assessment and negotiation process, tie has completed the formal evaluation of the tenders for the Infraco and Tramco contracts.

3.37 MUDFA works began in the summer of this year and are being co-ordinated to minimise the impact on the city street network especially on the operation of bus services.

Designing for Tram
Forecasting Tram Patronage

3.38 From the projects early days under the management of tie a very substantial amount of work has been carried out by tie, its advisors, officials in the City Council and the staff of Lothian Buses (latterly from TEL). Their work in developing, designing and refining the project has supported the acquisition of parliamentary powers and the applications for grant support from the Scottish Executive and Transport Scotland.

3.39 Design work has been carried out by Parsons Brinkerhoff (with sub-consultants Halcrow) who were appointed to provide system design services (SDS) in 2005. Parsons Brinkerhoff is a world-wide consultancy with its headquarters in New York is recognised as a leader in transportation which has been the cornerstone of the firms practice since its founder William Barclay Parsons was chief engineer for the original New York City subway. The support of Halcrow with its local experience and its own worldwide pool of expertise made a formidable team for the Edinburgh Tram Project.

3.40 The SDS have prepared preliminary and detailed designs for all of the Tram components, including track and track-bed, signalling, overhead line equipment, structures, a tram depot, on and off-street roadworks and the traffic management measures necessary to allow trams to operate effectively as part of an integrated transport network.

3.41 An essential input to the design process are the predictions of level and patterns of travel demand associated with the introduction of Tram to Edinburgh's streets. This task was taken on by Steer Davies Gleave (SDG) and Colin Buchanan and Partners (CBP) following their appointment in September 2005. Acting as the Joint Revenue Committee (JRC) these two companies, who are among the leading specialists in transport planning and travel demand modelling in the UK, have completed an entirely new set of forecasts of passenger demand and revenue for Tram and also a new set of detailed forecasts of traffic flow on the street network in Edinburgh and surrounding areas.

3.42 The forecasts for tram patronage and revenue are known as the high level model and have formed an essential input to the TEL Business Plan and also

been input to a review of the project justification required by Transport Scotland. The results of that review are included in the STAG2 Report and conform to the guidance provided by Transport Scotland (Scottish Transport Appraisal Guidance). The STAG2 report is provided as a background paper to this report to Council. The high level model was developed from extensive set of new travel surveys and made good use of the 2001 National Census Data. The JRC reported a successful calibration and validation of the new model deeming it fit for its role.

3.43 Output from the high level model has also indirectly formed essential input to the design of Tram infrastructure and the associated highway and traffic management measures needed to accommodate Tram. A separate suite of detailed simulation models was developed by JRC and takes as input , selected output from the high level model. Known as the Low Level Model these provide detailed information on the traffic demand and performance at junctions along the route of the Tram and at key locations across the city. The Low Level Model enabled the formulation and appraisal of detailed junction designs providing the necessary priority for trams while maintaining an efficient level of service for other road users especially buses.

3.44 Although the initial appointment of the JRC was made by **tie**, the JRC contract for the low level modelling was "novated" to the Parsons Brinkerhoff (the SDS) who have therefore assumed all the obligations under the contract that had been taken on by the JRC. This procedure formed part of **tie**'s procurement strategy and is designed to pass risks to those parties most able to bear and manage those risks. In due course, in a further novation, the contractual obligations of the SDS will be taken up by the infrastructure provision and maintainance contract (Infraco) The Infraco contract will act as a "holding contract" with the design, vehicle provision (including maintenance contract) novated to the infrastructure provider at financial close.

The Final Business Case

3.45 The Final Business Case (FBC) reflects the substantial efforts by **tie** and its advisors during 2007. In particular it reflects the progress in the procurement of the principal contracts and the agreement on funding from the Scottish Government. Capital cost estimates have been finalised from the firm rates and prices received from the bidders at a level slightly below those presented in the Draft Final Business Case. Phase 1a (Airport to Newhaven) is forecast at £498m and Phase 1b from Roseburn to Granton at £87m.

3.46 The FBC recommends proceeding with Phase 1a with the funding of £545m committed to the project. Funding available from the Scottish Government will be capped at £500. Should the project cost be less than £545m the Government contribution will be reduced pro-rata.

3.47 That recommendation is built on the strong case in favour of Trams presented in the FBC. The FBC cites long standing and central role of tram in the City's transport policy and planning and wider economic development aspirations .The FBC re-affirms the viability of the Tram in terms of economic viability, financial viability and affordability. The Business Case provides the financial, economic and social policy justification and sets out the benefits to Edinburgh and to Scotland as a whole over the medium and long term.

3.48 The economic viability of Tram has been assessed through updating the STAG appraisals originally prepared in support of the submissions to Parliament in support of the Private Bills. Within the STAG report the performance of Tram is assessed under the headings of economic regeneration; environment; safety and reliability; accessibility and social inclusion; transport and land use integration; patronage and mode shift; and in transport economic efficiency.

According to formal cost-benefit analysis required by the Scottish Transport Appraisal Guidance, expected benefits are shown to exceed costs (in net present value terms). Tram will sustain a benefit to cost ratio of 2.31 for the whole of Phase 1 (Airport to Newhaven plus Roseburn to Granton) and 1.77 for Phase 1a (excludes Roseburn section).

3.49 The financial viability and affordability of the project are discussed in detail below in the sections on financial implications and risk.

3.50 The executive summary of the Final Business Case is included as Appendix 2 to this report. The full FBC and the TEL Business Plan (the operational plan) are included as separate appendices.

4 Financial Implications

4.1 Following from the commitment, given in the Report to Council of 11 December 2003, to undertake a rigorous evaluation of the final business case this section of this Report examines the financial issues arising from the Tram. Particular attention is paid to the risks associated with the project arising from the uncertainties in estimated costs, funding and future revenues.

Capital Costs

4.2 In January of this year cost estimates were reported to the Council. As part of the DFBC process, all costs have been reviewed and have been revised to take account of detailed but preliminary designs submitted by SDS (the consultants Parsons Brinkerhof responsible for final design of the Tram infrastructure) in July 2006. The current estimates are derived from detailed quantities abstracted from the preliminary designs. In summary the total cost of Phase 1 is estimated at £592m (£512m for Phase1a only) --- some 4% above the previous cost estimates and due mainly to revisions in the programme. Changes in costs are detailed below:

	January 2006 Estimate £m	November 2006 Estimate £m
Leith to Airport plus Roseburn to Granton (Phase 1)	569	592
Leith to Airport (Phase 1a)	484	500
Roseburn to Granton (Phase 1b) (incremental)	85	92

These costs are based on either rates and prices from bids received, or known rates or market rates applied to quantities derived from the Preliminary Design. The estimating process is the most thorough and up to date that could be prepared at this time. It should be noted that tenders for the infrastructure works will not be received until January 2007 and even then will only be initial prices subject to negotiation.

4.3 However cost estimates for the infrastructure works have been compared with detailed pricing information obtained from another tram project in the UK and have been reconciled with cost estimates independently prepared by consultants Cyrill Sweet on behalf of Transport Scotland. Costs for the utility diversions and Tram Vehicles are based on tender returns.

4.4 Land compensation estimates have been provided by the District Valuer. Additional costs have been estimated by **tie** for their own project management, design and legal costs. Internal costs to the Council, including legal costs, land assembly and the promotion of Traffic Regulation Orders are also included in the cost estimates.

4.5 The costs quoted represent estimated out-turn sums and contain an allowance for construction industry inflation of 5% per annum, where applicable. The 12% project risk allowances also includes 1% for inflation risk. As stated above the estimates have been prepared from a variety of sources. The DFBC indicates the confidence attached to the components of the estimates. Overall there is high confidence for some 31% of total project costs and a medium confidence attached to 67% of total project costs. Tram vehicle costs and utility diversions contract rates are fixed, but it is likely that other costs may include inflation. It should be stressed that Transport Scotland will not provide funding for utility diversions until the outcome of the infrastructure tender negotiation is known.

4.6 The profile of costs projected by **tie** is shown in the following table.

Estimated capital expenditure	**Phase 1**
Cumulative expenditure to March 2007	£58m
April 2007 to end September 2007 - award of Tramco and Infraco	£61m
Cumulative up to award of Tramco and Infraco	**£119m**
October 2007 to March 2008	£47m
Year to March 2009	£204m
Year to March 2010	£154m
Year to March 2011	£65m
Year to March 2012	£3m
Total capital expenditure	**£592m**

4.7 The risks associated with the capital cost estimates are discussed below.

Funding and Affordability

4.8 The available funding for the project is estimated to be £545m, as reported to Council on 26 January 2006. This comprises grant funding from Transport Scotland of around £500m (depending on the exact indexation calculation) and a committed funding of £45m from the City of Edinburgh Council.

4.9 The Transport Scotland grant was based on a ministerial announcement of £375m, indexed to take account of inflation up until tram completion. Indexation calculations are still to be finalised, but it is expected that the grant award will be around £500m. Note that commitment to any start of works will be dependant on formal grant offers being received from Transport Scotland made under a covering agreement being drafted at present.

4.10 Officers in City Development and Finance have reviewed the various element making up the £45m Council contribution, although further work on generating Capital Receipts and revaluing the land contributed by developers is required. A breakdown of the estimated contribution is included in the table below:

	January 2006 Estimate £m	November 2006 Estimate £m
Council Cash	2.5	2.5
Council Land	6.5	6.2
Developers Contributions – Cash	10.2	24.4
Developers Contributions – Land	7.9	2.2
Capital Receipts (Development Gains)	5	2.8
Capital Receipts	12.9	6.9
Total	**45**	**45**

4.11 The total project cost of £592m (inclusive of a risk contingency) is therefore some £47m or 9% above the estimated funding of £545m. However Phase 1a, at £512m, falls well within the probable funding envelope.

4.12 In response to these affordability issues the DFBC recommends a phased approach with a target opening for Phase 1a of December 2010 and Phase 1b following one year later in December 2011. This approach is designed to achieve better cost certainty on the cost of Network so that Phase 1b construction will only commence when it can be demonstrated that costs can be met from available funding. However, the phased approach requires advanced design and utilities work of approximately £9m to be carried out on 1b prior to construction commencing.

4.13 In addition, the Council and Transport Scotland could jointly provide additional funding to help bridge the gap over a three to four year period. Council funding sources under consideration include City Growth (Round 3), the Capital Investment Programme and asset sales. The source and amount of any additional funding will depend on infrastructure prices and the level of any additional grant awarded by Transport Scotland. Discussion have been started with Transport Scotland on the basis of an increased contribution of £10m from the Council combined with possible support from Transport Scotland to reach an aggregate funding level of £595m.

The Roseburn to Granton Section (Phase 1b)

4.14 A succession of studies have recognised the value of improved transport links between north Edinburgh and the city centre, west Edinburgh and the airport. The important role of a tram network in these improvements formed a cornerstone in the plans for a rapid transit network first mooted in the Council's Local Transport Strategy. Tram connections to north Edinburgh featured prominently in the Waterfront Edinburgh Ltd Study of 2001 and in the Edinburgh LRT Masterplan Feasibility Study published in 2003.

4.15 These studies recognised that economic development and regeneration in Granton and neighbouring areas of the city would be accelerated as a result of investment in a new tram system with direct connections to central Edinburgh. Direct connections to the city centre would afford a significant improvement in accessibility to those areas where existing bus services are somewhat circuitous. The superior comfort and image of a modern tram system combined with its high speed and carrying capacity represented an attractive boost to the residents of north Edinburgh and a real incentive for inward investment in the area.

4.16 During 2005 important funding and affordability issues were identified and a variety of possible configurations of the tram network were considered. The limit of grant on offer from the Scottish Executive and the revised capital cost estimates of the time led to the conclusion that a phased approach to procurement was required.

4.17 The core element from Leith Waterfront to Edinburgh airport (Phase 1a) was thought to give a good balance of costs and benefits and a high probability of being financially viable. Phase 1b would connect from Roseburn to Granton . A review of the transport economic appraisal is given in the DBFC and shows that the costs of adding Phase 1b to the core Phase 1a would be more than offset by the user benefits realised by bringing Phase 1b into operation. The benefit to cost ration would increase from 1.10 for phase 1a to 1.6 for the whole of Phase 1. However the financial analysis also reported in the DBFC shows that while introducing the Roseburn to Granton section increases tram revenue by £2m this is offset by an equal loss in bus passenger revenue.

4.18 At the same time the circular configuration of the Roseburn to Granton section of tram does not lend itself to savings in the essentially radial nature of the bus services in the area. As a result operating savings cannot be realised from the bus network and of course there are additional tram operating costs and total operating costs increase – without a significant revenue increase in the short-term. The Roseburn to Granton section therefore brings a clear social cost benefit but a potential deterioration in the projected finances of TEL.

4.19 Tram is nonetheless a real catalyst for development in north Edinburgh and indeed the JRC model shows that by 2031, 70% of trips in the Roseburn section of Tram come from new development. Not providing Tram is considered to hamper development but clearly early implementation of Tram brings financial risks. A cautious and phased development is therefore appropriate. Such an approach will reduce the planning, development and affordability risks but give enough encouragement to developers to assure their early commitment to north Edinburgh.

Interim Funding

4.20 **tie** have also clarified the need for interim funding. **tie**'s present annual Business Plan has Council authority for expenditure until 31 March 2007. It is estimated that additional funding of £61m will be required up to the award of the Infraco and Tramco contracts in October, subject to formal approval of the annual business plan for **tie** ltd.

Revenue Implications

4.21 The financial viability of the integrated tram and bus network is dealt with in the TEL Business Plan. While noting that TEL aims to achieve broader social and economic benefits, TEL will also be a viable and profitable business. The Draft Final Business Case forecasts that future tram revenues will exceed operational cost by the second year of operation and grow steadily through later years, resulting in significant surpluses. However, it is likely that the Council will not receive its current level of annual dividend (£2m) in the first three years of tram operation, as this may be needed within TEL. Careful dividend planning will be required to ensure that increased dividends can be paid in earlier or later periods to compensate for any loss of income to the Council.

4.22 Income projections are based on current bus fares and passenger numbers, increased to reflect passenger growth and fares inflation based on Lothian Buses experience over the past decade. Passenger growth has been estimated by the JRC modelling processes, and also prudently includes a 3 year 'ramp up' period, to allow time for predicted passengers to switch to trams. Even with that "ramp up" period the projections prepared by JRC show a steady growth in both

bus and tram passenger numbers over future years. Experience from Nottingham and Dublin suggests that three years may be a conservative assumption.

4.23 Future operating costs, including infrastructure maintenance will be borne by TEL and has been incorporated in their business plan. Bus costs have been derived from current costs incurred by Lothian Buses. Tram costs are based on figures provided by Transdev, the future tram operator. Both sets of costs have been adjusted for planned changes to service patterns and inflation, including above RPI increases for both fuel and salary costs. The costs of maintaining the infrastructure of tram (tram tracks, overhead line equipment etc) will be borne by TEL, but of course the tram operates for much of its length on public highway presently maintained by the Council. An agreement is therefore necessary between TEL and the Council for the demarcation of maintenance and liabilities associated with shared infrastructure (and is currently in preparation).

4.24 The integrated service plan for the TEL operations includes 6 trams per hour running from the Airport and Granton through the centre of Edinburgh to Leith Waterfront. This gives a service of 12 trams per hour in each direction on Princes Street and Leith Walk. Avoiding unnecessary duplication of services TEL would plan to significantly reduce bus services on Leith Walk and on the present Airlink service. Limited reductions are planned to bus services operating between St Andrew Square and Haymarket together with some reductions on the Broomhouse to Saughton Mains corridor.

4.25 These service changes will require passengers to change between bus and tram for some journeys previously made on a single bus service. TEL are seeking to make this interchange as attractive as possible through the design of the interchange stops. The introduction of an integrated suite of transferable tickets for both bus and tram (including a single flat fare) combined with high quality facilities will make interchange second nature. The integrated service plan seeks to minimise the number of required interchanges.

Risk Management

4.26 The complexity and size of the Tram project have long been recognised and consequently required a comprehensive and thorough approach to risk management. The risk management strategy has been mindful of recent reports by the National Audit Office and Audit Scotland and has been developed to achieve value for money from the Tram. As noted above at the request of the Cabinet Secretary for Finance and Sustainable Growth the Auditor General for Scotland has carried out a high-level review of the arrangements in place for estimating the costs and managing the Edinburgh trams. He reported that procedures were in place to actively manage risks associated with the Tram Project; and that tie had implemented a clear procurement strategy aimed at minimising risk and delivering successful project outcomes.

4.27 In the FBC tie report that many of the development and construction risks are now either crystallized, superseded or effectively mitigated, through management action or transfer to the private sector. However some significant risks still lie with the public sector, and given the cap on Government funding, may impinge directly on the Council.

Comment [LH8]: Check on the funding conditions see 11.11 in FBC

4.28 The risks fall into the following broad categories

a Project Risks (risks affecting the timeous completion of the project within time and budget and to the desired quality)
b Operational Risks (risks affecting the long-term viability of TEL)

Project Risks

4.29 The most significant risks affecting the timeous completion of the project within budget are identified in the FBC as those arising from the advance utility diversion works (MUDFA); changes to project scope or specification; and obtaining consents and approvals. In particular it is noted that delays from MUDFA in handing over sites to the infrastructure contractor could lead to significant additional costs.

4.30 The project's approach to the identification, allocation and mitigation of these and other risks is set out in some detail in Section 11 of the FBC. As noted in the Report to Council in December 2006 that , on the recommendation of **tie** that the Council is taking a long lease of land rather than outright compulsory purchase on two sites, one owned by Network Rail the other by BAA. There is a small risk that these landowners may seek to impose conditions on the operation of Tram at some future date.

4.31 Although the procurement strategy aimed at transferring a significant number of risks to the private sector certain risks are retained by the public sector. The FBC draws attention to risks stemming from delays in completing utility diversions, changes to scope or specification and obtaining consents and approvals.

Comment [LH9]: Is this strong enough see 11.70 in FBC

4.32 There are risks associated with capital costs and with funding. The procurement strategy aims to minimise risk to works costs by placing risks with those best suited to manage those risks. However, it is emphasised that all cost estimates are subject to change. The risk contingency is designed to cover additional unforeseen costs, but it is recognised that there is an element of residual risk of costs exceeding current estimates. It should also be notified that the risk contingency does not cover major changes to scope. For example, there may be additional works required to the wider road network to minimise inconvenience to other road users. . An allowance has been made for these costs but the eventual costs are dependent on the final detailed design of the Tram system.

Comment [LH10]: DELETE THIS SECTION BUT CHECK ON THE REFERENCE TO FINAL DESIGN AFFECTING COSTS

4.33 As explained above a phased approach is being proposed for the construction of Tram. This is a powerful tool to minimise the risk of cost overrun as it ensures that appropriate pressure is maintained on contractors and on developers contributions up to the point of contractual commitment. In addition, it gives the Council additional control over costs as the ability to restrict construction to the Airport to Leith line is retained until such time as there is sufficient funding headroom to construct the Granton / Roseburn section.

Comment [LH11]: DELETE THIS SECTION

4.34 To maintain control over the capital cost of the project the following actions will be required:-

a Enabling works, including utility diversions, should be authorised to proceed on a timetable that will not disrupt the main infrastructure programme
b Negotiations with bidders should continue with a focus on achieving a high proportion of fixed cost in the final contracted capital cost (so far as the public sector is concerned)

In parallel with these steps negotiations with property developers should continue across the tram network, with the aim of achieving an equitable contribution to tram costs from those developers where the tram contributes to the value of the development or provides the most appropriate solution to the transport challenges presented by the development.

Comment [LH12]: THIS SECTION CAN BE DELTED BUT WHAT CAN BE SAID ABOUT FIXED COST ELEMENT OF BIDS RECEIVED?

4.35 There is a risk associated with all funding provided in advance of financial close and final business case approval in Autumn 07, as it is potentially abortive expenditure. However, the DFBC presents a strong case for trams, and this expenditure is necessary to meet the programme outlined within it.

Comment [LH13]: DELETE THIS SECTION

4.36 It should also be recognised that any decision by the Council or Scottish Ministers to cancel the trams is not free from costs, as costs including compensation to contractors and redundancies at tie, could be between £8 and £10m (dependant on the timing of cancellation). Transport Scotland has also indicated that should the Council cancel the tram for other than purely commercial reasons, the Council would be liable for the full cost of that decision. Conversely, should Scottish Ministers cancel the project, it is assumed that they would pay for the project termination costs.

4.37 The £545m of approved funding also is not completely free of risk. In particular contributions to Tram from developers are of course subject to development activity. However Agreements under Section 75 of the Town and Country Planning (Scotland) Act total some £5.4m to date, with a number of further major contributions in the pipeline.

4.38 Funding from Transport Scotland also carries some risk with the agreement on issues such as cost sharing, indexing and payment schedules still to be finalised.

Comment [LH14]: DELETE OR COMMENT ON FUNDING AGREEMENT

Operational Risks

4.39 Future risks arising from the forecasting process have been examined by the JRC. After recapping on the central or reference case forecasts and the assumptions in these forecasts the Revenue and Risk Report tests the sensitivity of Tram to alternative planning and growth assumptions. The JRC also tested assumptions on the attractiveness of Tram to potential users and on the possible impact of bus competition. The analysis of the JRC illustrates the sensitivity of Tram to development assumptions. The interdependence of Tram and development – especially in north Edinburgh should be noted.

Comment [LH15]: Is JRC report included as Appendix to FBC if necessary reword to refer to DBFC

4.40 A detailed statistical analysis has also been carried out that allows the assessment of the impact of a variety of relevant factors within assumed ranges. The analysis notes the sensitivity of the DBFC financial projections. It also re-emphasises the fundamental relationship between the Tram and the continued growth of the City and associated movement demand, and consequently the sensitivity of Tram revenues to planning and economic growth.

4.41 In mitigation, it should be noted that Lothian Buses' extensive knowledge of the local transport market has been used to inform and validate the modelling process. Passenger growth assumptions are in line with growth Lothian Buses has experienced in recent years.

4.42 While Council policy can influence planning and economic development there are decisions in the power of the Council and TEL which have a bearing on the outcome for Tram. In this regard the JRC examine the impact of partial completion of Phase 1, the effect of the Edinburgh Airport Rail Link (EARL) and of various detailed operational factors such as the quality of interchange, tram run-times, and bus service integration plans.

4.43 The JRC concludes that the most significant risk to Tram arises from the planning growth assumptions (this applies especially to Phase 1b) but that TEL could manage its operations and reduce costs in response. However the most recent data available shows a continuing strong growth in development in areas close to the route of the Tram in north Edinburgh. The highest growth rates in

the number of dwellings the City are to be found in Leith and Leith Walk where growth rates of approximately 8% from 2003 to 2005 have be recorded (Source Scottish Neighbourhood Statistics). Confidence can also be drawn from the continued growth in Lothian Buses patronage levels which continues at around 4% per annum – a figure well above the projections of the JRC report.

Comment [LH16]: Alistair Richardson to supply

Comment [LH17]: value

4.44 It also should be noted that current modelling assumes that the Edinburgh Tram Project will be covered by the Scottish Executive's Transport Scotland's national concessionary travel scheme. It is a fundamental assumption that TEL bus and tram will both participate in the national concessionary ticketing scheme. The relevant agreement has not yet been finalised although Transport Scotland have given support for this assumption in the preparation of the TEL Business Plan. 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.

Comment [LH18]: Is this to be taken out of the report?

4.45 Of all the risks discussed above the greatest risks clearly stem from the uncertainty associated with planning growth. This is nowhere more important than on the Roseburn to Granton section (Phase 1b). Here the development of tram acts to mitigate planning growth risk. Tram will provide the catalyst for development at Granton. It will provide confidence and assurance to developers and accelerate the pace and quality of development. An early decision supporting the commitment to Phase 1b will clearly minimise the planning risk, encourage development and enhance the medium and long term viability of Tram.

Comment [LH19]: Delete?

Next Steps

4.46 Infraco and Tramco tenders have now been evaluated. Preferred bidders have been selected for both contracts. Final negotiations can now commence leading to contract awards in January 2008 and eventually to the start of operations at the end of 2010.

4.47 The table below (taken from the Final Business Case) summarises the principal milestone events in the final stages of the procurement and construction of the Edinburgh Tram Network. Some adjustment to these date may be required in due course to fit with the Council meeting schedule.

Milestones	Date
Approval of Draft Final Business Case by CEC	21 Dec 06
Approval of Draft Final Business Case by Transport Minister – approval and funding for utility diversions	16 Mar 07
TRO process commences	28 May 07
Tramco - complete initial evaluation/negotiation	07 Mar 07*
MUDFA - completion of pre-construction period of MUDFA contract	30 Mar 07
MUDFA – commencement of utility diversions	09 July 07
Infraco – return of stage 2 bids	08 May 07
Tramco – appointment of Preferred Bidder	10 Oct 07
Infraco - completion of evaluation/negotiation of bid	19 Sep 07
Infraco – appointment of Preferred Bidder	10 Oct 07
Tramco/Infraco – Final facilitation of novation negotiation complete	31 Oct 07
Tramco/Infraco – final negotiation and appointment	19 Nov 07
Infraco - negotiation of Phase 1b complete.	12 Nov 07
Approval of Final Business Case by CEC and Transport	21 Dec 07

Scotland – approval and funding for Infraco / Tramco	
Tramco/Infraco - award following CEC/TS approval & cooling off period.	28 Jan 08
Construction commences on Phase 1a	18 Feb 08 (S) 01Feb 08 (R)
TRO process complete	02 April 10
Construction complete Phase 1a	23 Aug 10 (S) 27 Sep 10 (R)
Operations commence Phase 1a	27 Dec 10 (S) 25 Feb 11 (R)

5 Conclusions

5.1 Tie and its advisors have successfully completed the complex and arduous tendering process for all of the major contracts for the first phase of the Edinburgh Tram network. The cost estimates presented in the Draft Final Business Case have proved robust.

5.2 Given the scale and complexity of the project there are inevitably risks associated with the project. **tie** have ensured that risk management has been given a high priority in the preparation of the project and appropriate mitigation measures have been designed to ensure value for money from the project. The detailed risk analysis undertaken by tie gives confidence that the project can be realised and trams brought into operation within the available funding

5.3 All of the analyses of patronage and revenue completed confirm that the Edinburgh Tram Network will provide an essential catalyst for the continuing growth of the Edinburgh economy, facilitate the planned major expansions in the north and west of City and form the basis for future developments. The development and procurement of the project under the auspices of **tie** and TEL has allowed the formulation of a practical, integrated and viable bus and tram transport network which will serve the North, West and Centre of the city for many years to come.

5.4 The Edinburgh Tram Network will be successful in reducing the demand for car travel and will promote the environmental, safety and social objectives of the Local Transport Strategy.

5.5 The Final Business Case and its substantive supporting documents illustrate the significant effort made by the staff of **tie**, their many advisors, TEL, and the officials of the City Council who have been involved in the many stages of the conception development and procurement of the Tram project.

5.6 The FBC shows that, within current funding, Phase **1**a is clearly affordable and that a positive business case has been established for the project. TEL has been demonstrated to be a viable and profitable business, combining tram and bus operations in an integrated manner.

Comment [LH20]: Comment on TEL BP cycle?

6 Recommendations

6.1 To approve the Final Business Case.

6.2 To note that the Council gave, in January 2006, approval , in principle, to a Council contribution of £45m toward funding Tram; subject to a satisfactory final business case.

6.3 To note that the Auditor General for Scotland reported that procedures were in place to actively manage risks associated with the Tram Project; and that tie had implemented a clear procurement strategy aimed at minimising risk and delivering successful project outcomes.

6.4 To approve the appointment of the preferred bidders for both the Tramco and Infraco contracts

6.5 To note that final Council approval for the award of the Infraco and Tramco contracts will be sought in December 2007 with the formal award of these contracts in January 2008.

6.6 To note the schedule of milestones presented at Section 4.45 above.

6.7 To instruct the Directors of City Development and Finance to apply for additional grant support for the commencement of advance works

6.8 To note that the Directors of City Development and Finance will continue discussions with the Scottish Executive with regard to extending the national concessionary travel scheme to include Edinburgh Tram.

6.9 To instruct the Directors of City Development and Finance to continue discussions with Transport Scotland in respect of additional funding for Phase 1b, should such funding be required.

Comment [LH21]: Delete?

6.10 To approve the budget for interim funding of £61m up to final closure of the Infraco and Tramco contracts in October 2007, pending receipt of a full tie business plan for 2007/8 and note that approval of Transport Scotland is also required for this sum.

Donald McGougan
Director of Finance

Andrew Holmes
Director of City Development

Appendices	List of previous Council Reports on Tram Edinburgh Tram Network Final Business Case Executive Summary *Under Separate Cover* Edinburgh Tram Network Final Business Case TEL Business Plan
Contact/tel	Duncan Fraser [redacted] Rebecca Andrew [redacted]
Wards affected	All
Background Papers	Edinburgh Tram Network STAG2 Appraisal Edinburgh Tram Network Revenue and Risk Report

Appendix 2

1.0 Executive Summary

Comment [LH22]: Copied from FBC01 Executive Summary by MT 23/09/07

Introduction

1.1 In December 2006, the City of Edinburgh Council (CEC) approved the Draft Final Business Case (DFBC) for the project to construct the Edinburgh Tram Network (ETN). The DFBC presented the strong case in favour of Trams. It concluded that the proposed scheme is economically and financially viable and, on the basis of a phased implementation, affordable. It also demonstrated the operational sustainability of the future integrated tram and bus network. Since approval of the DFBC, considerable progress has been made on all important aspects of the project. This Final Business Case (version 1) (FBCv1) takes full account of the achievements made to date and is a key part of the documentation which supports the commitment to the principal contracts for construction of the system and supply of the tram vehicles.

1.2 Two main aspects of the business case have progressed to a conclusion since the DFBC was approved:

- The procurement of the principal contracts has reached a stage where all material terms are agreed, including the capital cost; and
- The funding available to support the delivery of the ETN has been agreed by the funders; CEC and the Scottish Government

This FBCv1 explains in detail the important consequences arising from the finalisation of these two critical areas.

1.3 The capital costs of the scheme have now been finalised at a level slightly below the DFBC estimate. Based on firm rates and prices received from the bidders for system construction and vehicle supply, the costs for Phase 1a, being the tram line from Edinburgh Airport to Newhaven, is forecasted at £498m. The costs to deliver Phase 1b (the tram line from Roseburn to Granton) is now forecast at £87m. The contractual arrangements permit CEC to commit to Phase 1b on fixed costs terms at any time until December 2008.

1.4 The Scottish Government and CEC have confirmed their commitment to funding contributions of £500m and £45m respectively. These commitments will be structured in such a way that the final aggregate funding reflects equivalent pro-rata contributions, with a cap of £500m on the Government contribution.

1.5 The recommendation of this FBC is that Phase 1a should proceed with funding of £545m committed to its delivery. Based on the forecast costs, additional funding would need to be generated by CEC to meet the costs of Phase 1b.

1.6 This approach was anticipated in the DFBC and now forms the basis on which the project will proceed. Most of the material that was produced at considerable effort and cost for the DFBC, remains valid and intact,

however, there has been some editing to update figures and to clearly define the initial Phase 1a approach.

1.7 **Background**

1.8 Substantial road traffic growth across the Edinburgh area combined with forecast population and employment increases will lead to significant growth in road congestion and demand for transport solutions. CEC has identified an integrated tram and Bus network as the preferred way to provide the backbone for a comprehensive, higher quality public transport system to support the local economy and to help to create sustainable development. The ETN ("the tram") has been central to transport policy and planning and the wider economic development aspirations of the city for more than seven years. The scheme has had in-principle funding support from the Scottish Government (now represented by Transport Scotland) since 2003.

1.9 Early 2006 saw the tram scheme reaching an important milestone as it received Parliamentary approval. Both the Edinburgh Tram (Line One) Act and Edinburgh Tram (Line Two) Act came into force following Royal Assent in May and April 2006 respectively.

1.10 Concurrent with the parliamentary process, a careful review of cost estimates was carried out which concluded that although Line 1 only or Line 2 only had a high degree of deliverability within the constraint of available funding, a complete network of Lines 1 and 2 was unlikely to be affordable in one phase of construction and that a phased approach to procurement and delivery would be implemented.

1.11 Under the definition of the original phasing proposed Phase 1 comprised two sub phases namely 1a: Newhaven to Edinburgh Airport and 1b: Roseburn to Granton Square. After consideration of the Scottish Government decision on 28 June 2007, and the commitment to the funding package of £500m, it is concluded that the core of the network from Newhaven to Edinburgh Airport (Phase 1a), via Haymarket and Princes Street, will give a good balance of costs and benefits, will present a high probability of being financially viable when integrated with Lothian Buses services and represents the optimal level of risk at this time. Details for the Business Case for Phase 1b are included separately in the FBC to promote further discussion about the option to commission this phase in 2008/09.

1.12 The proposed phasing also carries the support of Transport Edinburgh Limited (TEL), which is charged by CEC with the delivery and management of an integrated tram and Lothian Bus network and of Transdev, the future operator of the tram.

1.13 The three core tests examined to assess the continued viability of the scheme are:

- **Economic viability** – The quantified economic benefits and costs of Phase 1a of the tram as well as the wider benefits relating to urban regeneration; environment; safety; transport and land use policy integration; and accessibility and social inclusion.

- **Financial viability** – The way in which Phase 1a of tram will be integrated with buses under the umbrella of TEL in a manner which preserves and enhances the public transport service in the city and does so in a profitable manner. This is embodied in the TEL Business Plan.
- **Affordability** – The prospective deliverability of Phase 1a of the tram within the constraints of available funding.

A summary of these core tests is set out below.

Economic viability

1.14 The economic benefits and costs of Phase 1a of the tram have been assessed in accordance with Scottish Transport Appraisal Guidance (STAG) by Steer Davis Gleave, building upon the previous work submitted to Parliament in 2004 but updated where appropriate to reflect more recent and extensive transport modelling again led by Steer Davis Gleave. The following are the highlights from the assessment:

Economic regeneration

1.15 Phase 1a of tram is integral to the regeneration of the Leith Docks. Some 18,000 new residential units and over 106,000sq.m. of new office, retail and other commercial development is projected to be built in Leith progressively between now and 2020, reflecting the growth in Edinburgh's economy and population Without Phase 1a of the tram it is unlikely this large scale redevelopment would go ahead on the desired scale and timetable.

1.16 Significant new development is also envisaged in West Edinburgh with some 250,000 sq.m. of new office space (mostly at Edinburgh Park) and over 200,000 sq.m. of other commercial space, again predicted to be progressively built between now and 2020. Phase 1a of the tram will facilitate and encourage this new development and, crucially, provide improved public transport between the new housing in Leith and the new job opportunities in the West of the City.

1.17 In employment terms it is anticipated that at least 590 full-time permanent jobs in the City will be generated or brought forward by the development impact of Phase 1a of the tram. These jobs do not displace jobs elsewhere in Scotland. It should also be noted that a substantial proportion of the capital investment will be spent in Scotland, encompassing utility works, land purchase, civil engineering works and professional services.

1.18 The positive relationship between high quality transport capability – and specifically light rail – and enhanced economic development is a well-known phenomenon. There is also now little debate about the reverse scenario, the retarding impact on development of poor transport connections. The Edinburgh tram scheme is based on the need for improved transport connections to vital development areas and is a critical driver of future economic growth in Edinburgh and Scotland as a whole.

Environment

1.19 Phase 1a of the tram will make a positive contribution towards objectives of reducing emissions and improving air quality in the City Centre and in the transport corridor to the west of the City and the airport. Vehicles within the City account for up to 88% of emissions of nitrogen oxides and trams will provide a large number of journeys through the City Centre so improving mobility and accessibility but without adding to current levels of pollution. Trams are also a relatively quiet mode of road transport providing a higher quality environment for those living, working and travelling in the area. The tram's contribution to mode shift from private car to public transport (see below) will further progress the objectives set in the Air Quality (Scotland) Amendment Regulations 2002 and to national objectives to reduce emissions of greenhouse gases.

1.20 The construction and operation of Phase 1a of the tram will address potential impacts on the World Heritage Status of Edinburgh by applying design and mitigation standards set out in the Tram Design Manual approved by CEC planners. Details of mitigation measures to retain, protect and enhance or replace existing plantings and wildlife habitats on Phase 1a, including badger setts, are prescribed in the Environmental Management Plan and specific elements were approved during the Parliamentary process.

1.21 To the fullest extent reasonably deliverable, disruption during construction will be minimised. Clear and open communications will ensure that the effects of construction are anticipated and the construction planning will ensure that work is restricted to the shortest time period consistent with safe working practice. Schemes to provide financial assistance to local businesses affected by construction are under active development.

Safety and reliability

1.22 Personal security will improve, reflecting tram design elements (CCTV and help points at all stops and vehicles) and designed access arrangements aimed at enhancing security. The planned use of inspectors on vehicles will also assist this objective.

1.23 Trams will improve the overall reliability of public transport as they generally benefit from greater segregation from general traffic and priority at junctions and present an opportunity to significantly reduce the variability of dwell time at stops compared to a bus only public transport service. A significantly increased number of bus vehicles would be required on the main Phase 1a corridor on Princes Street and Leith Walk to cope with forecast increased demand in the absence of trams. Despite continuing implementation of a wide range of bus priority measures, buses remain vulnerable to the effects of increasing congestion across the City.

Accessibility and social inclusion

1.24 Areas around Leith Walk, Saughton and Balgreen in the West are areas where socio economic status is considerably less affluent than surrounding

areas and where employment, income levels and car ownership tend to be comparatively low. Opportunities for people living in these areas will be improved by direct connection via tram to the City Centre and other employment areas, including the new development in Granton, Leith and the West of the City at Edinburgh Park and the Airport.

1.25 Trams and tram stops will be fully accessible by people with mobility impairments, those travelling with small children and the elderly. These travellers will benefit from the design specification, ride-quality and reliable accessibility of trams. Where the distance between tram stops presents a challenge to accessibility, the service integration patterns with buses have been designed to maximise the continuing and improving accessibility of Lothian Buses.

Transport and land use integration

1.26 The tram will be particularly vital in responding to the expected growth in travel demand arising from the new development in the North of Edinburgh at Leith. Phase 1a of the tram will help ensure this new development can be delivered without exacerbating city wide congestion by ensuring that land use and transport policies are integrated. Any displacement of new development to greenfield and greenbelt sites would have planning implications and could result in a settlement pattern that would be more difficult to serve by public transport.

1.27 Carefully considered bus-tram service integration plans and ticketing arrangements will enhance the opportunity to make journeys on the public transport network. Effective interchange facilities will be provided at Ocean Terminal, the foot of Leith Walk, St Andrews Bus Station, and the Gyle Shopping Centre. The tram route will integrate with Ingliston Park & Ride, already operating successfully and planned for expansion, and with other park and ride sites are under active consideration. Phase 1a of the tram also provides an opportunity to significantly improve integration with other transport modes at Haymarket, Waverley and Edinburgh Park railway stations and Edinburgh Airport. These interlinking services, along with the proposed frequency of the service, means tram will afford easier access to employment, retail and leisure locations.

Patronage and transport mode shift

1.28 Extensive work has been undertaken to build new demand forecasting models to predict use of the tram and the impact upon use of other transport: bus, rail and car. The modelling deployed to support the Edinburgh tram scheme is recognised by the professionals involved as among the most sophisticated ever prepared in support of a large-scale transport scheme.

1.29 Annual demand for Phase 1a is predicted to be 11m tram passengers in 2011 and rises to 24m by 2031. This growth is predicated on a forecast of substantial growth in the total travel market, as well as the additional predicted commercial and housing development as a result of the scheme.

Between 2005 and 2031, demand for journeys by public transport is forecast to increase by 61% (1.8% p.a.). In the context of economic growth in Edinburgh and actual experience of patronage growth by Lothian Buses (LB), this is a conservative estimate. The tram will meet a large proportion of this increased demand which could otherwise be met only by cars or buses on increasingly congested roads.

1.30 Modal shift from car is a key objective of the Local and Regional Transport Strategies and is fundamental to achieving the environmental, sustainability, health and traffic aspirations of the tram. Phase 1 (Phase 1a and Phase 1b) of the tram project are forecast to generate 3m additional public transport trips in 2011 increasing to over 6m additional trips in 2031, mostly in areas directly served by the tram where the change from car to public transport use will be up to 10%. It is estimated Phase 1a will produce approximately 2.5m of these trips by 2011, rising to 4.2m by 2031.

1.31 In 2011, about 17% of tram patronage will be new to public transport rising to 20% in 2031 with the balance being predominantly those who would otherwise travel by bus and other modes of public transport. Congestion is characterised by the disproportionate effect that marginal increases in car use have on the total system. It is therefore very important to maintain downward pressure on additional road use and the proportion of tram patronage new to the public transport market is therefore significant. It is also in keeping with that achieved on successful tram schemes elsewhere such as Croydon Tramlink, Nottingham, and Dublin.

Benefits and costs to Government

The benefits and costs of Phase 1a of tram calculated in accordance with STAG requirements are summarised in the table below. The FBC has been prepared on the basis that EARL is unlikely to proceed as per the advice received from the Scottish Government. The resulting Benefit:Cost Ratio for Phase 1a of 1.77 represents an excellent return and reflects significant increased decongestion benefits to other road users (including cars).

£m Present Value, 2002 prices	Phase 1a	with Earl
Value of scheme benefits	592	373
Value of scheme costs	335	340
Net benefits	**2.57**	**34**
Benefit Cost Ratio to Government	**1.77**	**1.10**

Financial viability (the TEL Business Plan)

Background to TEL

1.32 TEL was established by CEC to build on the success of the current Lothian Bus (LB) services through the delivery and management of an integrated tram and bus business. CEC requires TEL to achieve profitable operations, to meet its investment obligations and to continue payment of dividends at the level currently received by CEC from Lothian Buses.

1.33 Transdev are one of the world's largest Tram operators and were awarded the DPOFA contract in 2004, using their wealth of experience it will be their role to establish the Tram operating system, they will report directly to TEL.

1.34 However TEL, like LB, will also target the delivery of a 'social dividend' by maintaining realistic and affordable fares and a more comprehensive level of service provision than would normally be the case for a private sector transport operator. TEL's objectives are also aligned to the delivery of the wider economic benefits of the tram. The measure of success for TEL will be the overall performance in commercial, social, customer and financial terms of the integrated bus and tram network. The summary presented here focuses on the drivers of the forecast financial results of TEL.

1.35 Section 9 provides a detailed analysis of the financial viability as it is presented in TEL's full Business Plan, a copy of which is included at Appendix I.

Financial forecast highlights

1.36 The table below provides a summary of the financial highlights from the forecast of TEL's profitability operating with bus and tram.

Tram in service	Pre-tram						
Tram service pattern (see below for explanation)	n/a	n/a	6/12	6/12	8/16	8/16	8/16
Year	2006	2010	2011	2012	2016	2021	2031
Patronage (Pax m)							
Bus	108	117	112	114	125	132	148
Tram	-	-	11	14	18	20	24
Total TEL Patronage	108	117	123	128	143	152	172
Revenues and costs (£m)							
TEL Revenues	88	109	119	128	167	216	356
TEL operating costs			120	126	156	194	312
Pre-tax operating profit/(loss)			(1)	2	11	22	44
Tram lifecycle costs			-	-	1	2	2
Notional taxation			-	1	3	6	12
Dividend payment			-	-	3	3	5
Net TEL cash surplus/(deficit)			(1)	1	4	10	25

NB All £ figures inflated

1.37 The forecast represented in the table above has been developed using the patronage and revenue forecasts produced for the DFBC for both tram and bus developed using the transport model described above and validated by

TEL, tie and Transdev. The forecast reflects that TEL is prospectively both a cash positive and profitable business.

1.38 The forecasted patronage and revenues for tram in 2011 to 2014 have been conservatively reduced to take account of a ramp-up period as new services take time to be fully adopted by users. The forecast reflects that TEL's operational cash flow profile will be positive once the tram and bus patronage has stabilised after the first year of the ramp-up period in 2012.

1.39 It is assumed that the policy of maintaining the current level of LB dividend to CEC will be applied prudently and that the annual dividend might be reduced or foregone for short periods in response to lower profits or short term demands on TEL's cash-flows. In such circumstances, the dividends for future periods would be adjusted upwards to ensure the shareholders receive the target dividend on a cumulative basis.

1.40 The projected operating costs for TEL include provisions for:

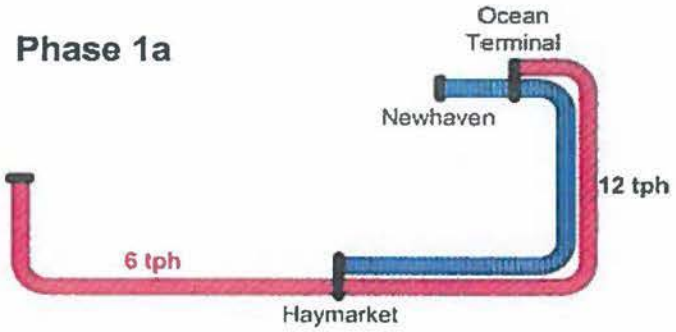
- the purchase of new buses to renew and/or expand the existing bus fleet;
- the required expenditure on the tram infrastructure and vehicles necessary to ensure effective performance of the tram assets during their useful likes, including half-life refurbishment of the Trams after 15 years.

1.41 Updated information received from the bidders confirm the costs included in the DFBC for this are conservative. (Note: The TEL Business Plan does not specifically provide for the major replacement expenditure which will be required after 30 years.)

1.42 Taxation is provided at the currently prevailing rate on forecast net profits, applied consistently with that of the DFBC. TEL, tie and CEC have begun to engage in the examination of tax mitigation opportunities in the same way as other commercial entities. It is likely that as a result the notional taxation applied in the table may be considered to be conservative.

Integrated service patterns

1.43 Using the geographical analysis of where forecast demand is likely to originate / terminate, TEL has developed a service integration plan reflecting planned tram services and bus services beyond the introduction of tram. The service patterns for tram must provide sufficient and reliable capacity to meet the demand and ensure overcrowding does not dissuade passengers from using public transport. The planned service patterns for opening of Phase 1a of the tram are depicted below:



This diagram illustrates a service pattern tph=(Trams per hour)

1.44 The forecast of demand indicates that after the initial five years of growth, the '6/12' trams per hour service depicted above will require to be increased to provide sufficient capacity to serve demand on the Newhaven to Haymarket section and the TEL Business Plan assumes that from 2016, the service will be increased to an '8/16' trams per hour pattern. A further increase in services is likely to be required after the year 2027 to provide sufficient capacity to serve demand on the Haymarket to Edinburgh Park section of the tram network.

1.45 Amendments to bus service patterns are envisaged where the tram runs parallel or close to an existing bus route to prevent unnecessary overlap of services, the principle being that bus service reductions are only applied where the tram offers an acceptable alternative mode of travel. This approach will allow TEL to match the most effective mode of transport to levels of demand while the travelling public will continue to benefit from high quality public transport provision.

1.46 TEL's service integration plan aims to offer as near seamless a journey through the network as possible. The inconvenience of interchange is minimised by eliminating it where possible The service integration plan seeks to achieve optimal alignment of service frequencies at interchanges thus making interchanging as simple as possible and minimising the risk of loss of patronage. Key bus and tram interchange locations addressed by the service integration plan are the Foot of Leith Walk, St Andrew Square.

3rd party responses

1.47 Good relations with 3rd party operators are considered essential, not least due to the opportunities which enhanced integration with those operators may offer and the benefits of being part of the wider provision of public transport within Scotland. Dialogue is underway to develop appropriate service plans with these operators including common and through ticketing arrangements.

Fares and ticketing strategy

1.48 The TEL fare structure will be a single, fully integrated, flat fare for bus and tram regardless of the distance travelled. The only exceptions will be – as now - journeys to and from the Airport and night services. It is a fundamental assumption that TEL bus and tram will both participate in the national concessionary ticketing scheme. The relevant agreement has not yet been finalised although Transport Scotland have given support for this assumption in the preparation of the TEL Business Plan. Under the terms of the scheme, operators receive payment of 73.6% of the price of an adult single for each journey by concessionary travel holders and this currently applies to c20% of Lothian Buses patronage. This level of recompense is assumed to continue.

1.49 The assumption is that the average fares yield for TEL will be increased at the rate of the Retail Price Index (RPI) +1% growth per annum. This is in line with historical increases in fares by LB, meets political and stakeholder expectations and supports TEL's aim to provide transport services at an affordable price.

1.50 Tram tickets are to be purchased off-board and ticket machines will be provided at all trams stops and a number of bus stops. The only tickets to be sold on-tram are to be adult and child single tickets which will be priced at a premium above the price from ticket vending machines. TEL will continue and develop LB's current strategy to encourage wider use of pre-paid and/or multi-journey types of tickets by offering discounts to the standard fare.

Revenue protection

1.51 Fare evasion and fraud on the existing LB bus network has been limited. Trams, with multi-door boarding, require active processes in place to limit the opportunity for fare evasion and fraud in general as well as the particular need to enforce the premium Airport fare. TEL's revenue protection regime for trams is a combination of placing inspectors on each tram and providing ticket machines at all tram stops, with a significant price incentive to buy a ticket off-tram. The presence of inspectors has also been shown to promote a sense of security for passengers and be an effective deterrent to anti-social behaviour.

Other income opportunities

1.52 TEL with its combined bus / tram network offers attractive opportunities to generate additional revenues from advertising, small scale commercial development and marketing and tourism driven revenues. The TEL Business Plan includes a prudent assessment of the income which might be earned from these additional sources based primarily upon the existing experience of LB.

Operating costs

1.53 TEL's bus operating cost projections are based on the current experience of LB for buses. Tram operating costs are based upon the planned service patterns and required number of tram vehicles, validated by Transdev and

subjected to a thorough review and benchmarking process. Effective control over all aspects of operating costs is essential for TEL to achieve its profit objectives. However, the public's perception of the quality of services translates directly to patronage and revenue generation, therefore TEL must balance opportunities for cost savings against the impact this may have on the quality of services provided.

1.54 Maintenance services are being procured separately. A significant proportion of the maintenance fees accruing will be based on key performance indicators (kpi's) including punctuality, availability and presentational standards.

1.55 TEL's success in realising the benefits expected from the integrated bus and tram business will be measured using a number of developed kpi's, these have or will be incorporated into the relevant contracts and operating agreements with service providers to TEL including the operator of the trams, Transdev, and the maintenance providers for the tram system.

New development and economic growth risk to patronage and revenue forecasts

1.56 Phase 1a of the tram will encourage and facilitate the new development planned in North and West Edinburgh and stimulate economic growth in the City. However the forecast future TEL patronage and revenues, both for bus and tram, is in turn highly sensitive to the level and timing of new development and the underlying level of economic growth. Sensitivity tests indicate that with new development delayed by 5 years in other areas, overall TEL revenue would be reduced by 3% in 2011 (12% in 2031)

1.57 In the event of slower than expected development or a general economic downturn, TEL would plan and implement services to match the reduced demand. On the Phase 1a corridor, where there is already a high level of demand, the opportunities to implement revised integrated service patterns for buses and tram, with commensurate savings in operating costs, would significantly mitigate the risk of failure to meet annual operating profit targets. In 2011, approximately 30% of forecast demand between Leith and Haymarket and 50% of demand between Haymarket and the airport will be directly dependent on new development.

Affordability

1.58 The summaries above demonstrate that Phase 1a on its own can deliver significant economic benefits in return for the proposed investment. Here we consider the affordability of Phase 1a of the tram in the context of visible funding and the risks being borne by the principle funders, with a particular emphasis on the risks retained CEC. Section 10 contains the detailed analysis.

Cost Estimates

1.59 Building on the detailed cost estimates prepared in November 2006 and incorporating the firm rates and prices received from bidders in 2007, the updated project cost estimates reflect the agreed scope for Phase 1a and a programme for delivery of Phase 1a in the first Quarter 2011. If the option for Phase 1b was exercised within the window of opportunity to December 2008, it could commence revenue service in 2012.

1.60

Phase 1a	**£498m**
Phase 1b	
	£ 87m
Phase 1 in total	**£595m**

1.61 There is a high level of confidence in these estimates. Almost 98% of the costs included are based on the rates and prices for firm bids received for Infraco, Tramco, MUDFA and SDS, the remainder are based on known rates and prices for personnel and in the case of Land from the District Valuer's assessments. Those elements of the infrastructure works (Infraco) for which there is currently insufficient design certainty will be adjusted prior to Contract Award when designs are produced and will be based on agreed rates and prices. This accounts for XX% of the project estimate. The overall level of confidence is reinforced by benchmarking against other tram schemes and the provisions for risk included in the estimate as explained below.

1.62 The updated estimates comprise base costs and an allowance for risk and uncertainty. A rigorous Quantitative Risk Assessment has been applied to identify Project Risks to derive a risk allowance to deliver a very high level of confidence (statistically at a 90% confidence level meaning that there is a 90% chance that costs will come in below the risk-adjusted level). The level of risk allowance so calculated and included in the updated estimate represents 11% of the underlying base cost estimates. This prudent allowance for cost uncertainty reflects the evolution of design and the increasing level of certainty and confidence in the costs of Phase 1a as procurement has progressed through 2006/2007 and fixed priced bids for the Infraco and Tramco contracts have been received.

1.63 tie and CEC will continue to analyse, quantify and mitigate risks during the period through to final negotiation and award of the tram vehicles (Tramco) and infrastructure (Infraco) contracts and during construction with the objective of reducing or eliminating the impact of individual quantified risks and thereby the element of the allowance for risk which crystallises into actual costs.

1.64 The principal elements of the base cost estimates are:

- **Utility Diversions** - The Multi Utility Diversion Framework Agreement (MUDFA) was awarded in October 2006 and rates, prices and allowances in the contract have been reflected in the updated estimate
- **Tram vehicles** - Tenders were received for Tramco in October 2006 and the updated estimate reflects those of the recommended Preferred Bidder.
- **Infrastructure** – Tenders were issued for Infraco in October 2006 and the updated estimate reflects those of the recommended Preferred Bidder. The cost estimates have been benchmarked against other comparable tram schemes.
- **Land compensation costs** - Estimates have been provided by the District Valuer and are subject to regular review. Reviews performed in spring 2007 confirmed the adequacy of the estimates.
- **Internal costs** – Comprises mainly the firm price SDS design costs as contracted plus the costs of project management team and overhead, legal costs related to procurement and support of approval processes and the support of the operator, Transdev, all of which have been estimated using a detailed resourcing plan to which staff costs and rates agreed with service providers have been applied.

1.65 The Infraco and Tramco contract cost and the MUDFA contract rates are fixed at outturn price levels. The base estimate costs for remaining items, principally internal costs, are based on fully inflated costs estimates supplied by service providers and on industry standards for salary cost inflation

1.66 In summary, the cost estimate reflects substantial external validation from the procurement process for the major contracts and contains a sensible level of risk contingency.

Measuring affordability

1.67 On 28th June the Scottish Government confirmed support for a £500m capped funding for the Edinburgh Tram scheme. In January 2006, CEC made an in-principle commitment to make a contribution of £45m towards the capital cost of Phase 1. The benchmark total funding package is therefore £545m. The updated cost estimates above reflect that Phase 1a, at a cost of £498m, is affordable within this level of funding with a 9% headroom over and above the 11% risk allowance provided for in the cost estimate.

1.68 It should be noted that a substantial proportion of this capital investment will be spent in Scotland, encompassing utility works, land purchase, civil engineering works and professional services.

Application of available funding

1.69 Payment for capital costs will be made by tie in accordance with principles of the contractual payment mechanisms for each contract. A detailed table showing the profile of planned expenditure is included in Section 10. Funding from the Scottish Government and CEC is for capital expenditure only. All operating and lifecycle costs in relation to the tram will be borne by

TEL. This means that CEC in its capacity as sole shareholder of TEL is explicitly bearing the risks in relation to revenues, operating costs and the long term maintenance of the tram insofar as these risks are not wholly or partly passed to the private sector as part of tie's Procurement Strategy.

1.70 CEC must balance its desire to support the project with its fiduciary responsibility and limited resources. CEC's contribution, therefore, comprises only such amounts as could reasonably be expected to be funded from future tram related development income and receipts, rather than from general funds or from Council Tax. The anticipated sources of such receipts include land contributions by CEC, anticipated development gains accruing to the Council on Council owned sites, Section 75 planning agreements already negotiated and anticipated future agreements, third party developments around the tram route and anticipated capital receipts from tram related Council owned sites.

1.71 Transport Scotland and CEC have agreed to work together to regularly review and revise (as necessary) the contribution schedule, as required by the Grant process.

Procurement strategy and risk allocation

1.72 The Procurement strategy followed by tie responds to feedback from the National Audit Office in 2004 on the effectiveness of light rail schemes. The objectives of the Procurement strategy are summarised as follows:

- Transfer design, construction and maintenance performance risks to the private sector
- Minimise the risk premium (and/or exclusions of liability) that bidders for a design, construct and maintain contract normally include. Usually at tender stage bidders would not have a design with key consents proven to meet the contract performance obligations and hence they would usually add risk premiums for this.
- Mitigation of utilities diversion risk (i.e. potential impact of delays to utilities diversion programme on Infraco works).
- Gain the early involvement of the operator to mitigate the risk relating to the future operation of the tram.

1.73 To date, tie has entered into 4 key contracts:

- **Development Partnering and Operating Franchise Agreement (DPOFA)**
  Awarded to Transdev in 2004
- **System Design Services (SDS)**
  Awarded to Parsons Brinkerhoff in September 2005
- **Joint Revenue Committee (JRC)**
  Awarded to Steer Davis Gleave in September 2005
- **Multi Utilities Diversion Framework Agreement (MUDFA)**
  Awarded to Alfred McAlpine in October 2006

1.74 This leaves the two main contracts to be placed, namely:

- **Infrastructure provider and maintenance (Infraco)**,the tender process concluded and Preferred Bidder selected, contract to be awarded in January 08 on conclusion of final negotiations and completion of design due diligence.

- **Vehicle Supply and maintenance (Tramco)** Tenders process concluded and Preferred Bidder selected, contract to be awarded in January 08 on conclusion of final negotiations and completion of design due diligence.

1.75 The Infraco will act as a "holding contract" with the intention that the design and vehicle provision (including maintenance contract) will be novated to the Infraco at the point of award. The entire strategy has been developed to help facilitate the speedy implementation and completion of the construction phase of the project and to remove uncertainty and therefore cost from bidders' proposals i.e. deliver value for money.

1.76 In summary, the key attributes of the strategy are:

- The separation of system delivery and operations - to focus organisations on their strengths and to minimise mark-ups and risk premiums.
- Early introduction of the operator – to ensure effectiveness of design, construction and commissioning ready for operation.
- Early commencement of design by the SDS contractor – to reduce scope and pricing risk in Infraco and Tramco bids and to reduce the overall project programme.
- Separate procurement of the tram vehicles – to enable the selection of the optimum combination of tram vehicle and infrastructure suppliers.
- Re-aggregation of the supply chain at the point of award – by novation of the SDS and Tramco contracts to Infraco, thereby creating single point responsibility for design, construction, commissioning and subsequent maintenance of the tram system, with consequential transfer of performance risk to the private sector.
- Maintenance of the tram vehicles and infrastructure for up to 15 years post commencement of operations by Tramco and Infraco – to incentivise selection of components with 'whole life' costs in mind and to incentivise Infraco to mitigate the risk of latent defects arising during the operational phase.
- Separate procurement of utilities works under MUDFA - to enable completion of the utilities diversions before commencement of infrastructure works thus reducing risk during the construction phase and avoiding the risk premiums that would otherwise be included if this work was included with the Infraco package.
- Validation of the SDS designs by a Technical Support Services (TSS) consultant – to provide comfort that the designs produced will deliver the required performance.
- Incentivise delivery in accordance with programme - by adopting a milestone payment mechanism in the SDS, Tramco and Infraco contracts, with a significant element of the price withheld pending completion of system reliability tests.

1.84

1.85 **Milestone Programme – Key dates**

Milestones	Date
Approval of Draft Final Business Case by CEC	21 Dec 06*
Approval of Draft Final Business Case by Transport Minister – approval and funding for utility diversions	16 Mar 07*
TRO process commences	28 May 07*
Tramco - complete initial evaluation/negotiation	07 Mar 07*
MUDFA - completion of pre-construction period of MUDFA contract	30 Mar 07*
MUDFA - commencement of utility diversions	09 July 07*
Infraco – return of stage 2 bids	08 May 07*
Tramco - appointment of Preferred Bidder	10 Oct 07
Infraco - completion of evaluation/negotiation of bid	19 Sep 07
Infraco - appointment of Preferred Bidder.	10 Oct 07
Tramco/Infraco – Final facilitation of novation negotiation complete	31 Oct 07
Tramco/Infraco - final negotiation and appointment	19 Nov 07
Infraco - negotiation of Phase 1b complete.	12 Nov 07
Approval of Final Business Case by CEC and Transport Scotland – approval and funding for Infraco / Tramco	21 Dec 07
Tramco/Infraco - award following CEC/TS approval & cooling off period.	28 Jan 08
Construction commences Phase 1a	18 Feb 08 (S) 01Feb 08 (R)
TRO process complete	02 April 10
Construction complete Phase 1a	23 Aug 10 (S) 27 Sep 10 (R)
Operations commence Phase 1a	27 Dec 10 (S) 25 Feb 11 (R)

(R)-Roley (S)-Scoop
*completed

The business case for Phase 1b

1.86 Phase 1 b (Roseburn to Granton Square) has a strong economic business case, but in the context of the £500m capped funding from the Scottish Government, the Project funding position and risk appetite at this time, a

- Bonds and Warranties in the SDS, Tramco and Infraco contracts - to provide recourse in the event of failure.

1.77 These arrangements provide early involvement of the tram system operator, risk transfer to the private sector at an affordable level, a shorter overall programme and a single point of responsibility for the delivery of the operating tram system and subsequent maintenance.

1.78 Section 7 provides a detailed analysis of the procurement strategy and Section 11 describes the approach to risk management in all aspects of the project.

Risks retained by the public sector

1.79 The Procurement Strategy when fully implemented will be effective in transferring a very significant number of risks to the private sector. However, as explained above, the strategy is also predicated on delivering value for money and certain risks are retained in the public sector where they can be effectively managed. tie maintains a comprehensive register of all identified risks in relation to the project and has an active management and mitigation plan for each risk. Where these risks can be quantified they have be assessed and included in the risk allowance in the capital cost estimates.

1.80 As the project moves towards construction, the following are the most significant risks which could impact on the delivery of the project on time and within the capital cost estimates (including risk allowances):

- **Utility diversions – tie** will manage the interface between utility diversions and the follow on works by Infraco. A significant delay in the hand over of worksites to the Infraco could result in significant financial penalties to the extent these are not met by the MUDFA contractor's liability limits. For this reason, a prompt start to these works was made in 2007, including advance works at the Gogar Depot site. This allowed some of the delay caused by the review of the Tram Project earlier this year to be absorbed. The current programme is fully aligned the preferred Infraco bidder's programme of works and progress to date has been excellent with no major issues encountered so far.

- **Changes to scope or specification** – A great deal of care has been taken in defining the scope and specification of the tram project throughout the Parliamentary process and during design development with input from TEL and Transdev and extensive consultation with CEC and Transport Scotland. However significant unforeseen changes to scope and specification could have a very significant impact on the deliverability of the project. Similarly, any changes introduced by stakeholders that are over and above the approved scope will increase the project estimate. Effective management of the consideration of changes through the Governance processes implemented for the project will be vital to mitigate this risk.

- **Obtaining consents and approvals** – Responsibility for the preparation and application for most necessary consents and approvals has been passed to the SDS provider and this risk will pass to the Infraco at the point of novation. However **tie** and the other stakeholders must continue to ensure there are clear strategies and effective processes to deliver all consents and approvals including planning approvals and Traffic Regulation Orders.

Implementation

1.81 **tie** has developed a number of key strategies and management plans to ensure the successful implementation of the construction phase of the project. They cover land acquisition, obtaining required approvals and consents, compliance with statutory requirements and side agreement with third parties, as well as traffic management plans and a people strategy. These are based on the policies developed through either public consultation or testing and consideration during the parliamentary process. They set out tie's approach to mitigate the likely impacts of both the construction and operation of the tram.

1.82 Extensive work has been undertaken to establish the impact of tram on the wider traffic flows in Edinburgh and the finalisation of traffic modelling will include any necessary changes to the traffic arrangements that are indicated to be beneficial to the public.

Programme

1.83 The table below summarised in chronological order the key milestones achieved since the approval of the DFBC in December 2006 and the next stages of the project up to commencement of revenue service of Phase 1a. The detailed programme from which these dates have been extracted are described in Section 12 and has been prepared on the basis that contracts for Infraco and Tramco will be awarded in January 2008 with construction commencing in February 2008. The immediate start of construction is predicated on some limited mobilisation in late 2007.

Phase 1a only approach is suggested. However given positive circumstances it will be possible to progress with the additional phase with no significant financial penalty for this staggered approach. It should be noted that this is a window of opportunity which will close by the beginning of 2009 and, following which, there would be substantial additional cost for this asynchronous approach.

Economic viability

1.87 The strong incremental economic benefit of completing the network with the Roseburn to Granton tram line is a striking factor. There is a close relationship between this assessment and the scope and timing of new development at Granton, which carries both risk and opportunity. The economic benefits, alignment to planning objectives and financial implications that are specific to Phase 1b are summarised below.

1.88 The tram is again integral to the regeneration of the brownfield area in the North of Edinburgh at Granton Waterfront (served by Phase 1b). Some 7,800 new residential units at Granton and nearly 244,000 sq.m. of new office, retail and other commercial development at Granton is projected to be built in North Edinburgh progressively between now and 2020, reflecting the growth in Edinburgh's economy and population. The absence of Phase 1b of the tram is likely to have a substantial adverse effect on the scale and timetable for this redevelopment.

1.89 The forecasts reflect that by 2015 more than 5,000 residential units and 114,000 sq. m. of employment related development will be not be built in the absence of Phase 1 of the tram. Granton will account for most of the additional residential units and over 50,000 sq.m. of the additional employment related development. Beyond 2015, the predicted level of new development in the absence of tram recovers but ultimately it is predicted that 2,800 residential units (mostly at Granton) and 34,000 sq.m. of new commercial development will not be built without Phase 1b of the tram

1.90 In employment terms it is anticipated that more than 930 full-time permanent jobs in the City will be generated of which circa 340 can be attributed to Phase 1b. These jobs do not displace jobs elsewhere in Scotland.

1.91 Granton and Pilton to the North on Phase 1b are areas where socio-economic status is considerably less affluent than surrounding areas and where employment, income levels and car ownership tend to be comparatively low. Opportunities for people living in these areas will be improved by direct connection via tram to the city centre.

Benefits and costs to Government of a composite Phase 1a and 1b

1.92 The benefits and costs of Phase 1 of tram calculated in accordance with STAG requirements are summarised in the table below. The appraisal assumes that the Edinburgh Airport Rail Link (EARL) as discussed previously will not proceed. The table below assumes that construction of

Phase 1b would be commissioned prior to the end of December 2008, if not there will be substantial penalty cost

£m Present Value, 2002 prices	Phase 1	Phase1 a	Incremental Phase 1b
Value of scheme benefits	982	592	336
Value of scheme costs	431	335	96
Net benefits	**551**	**257**	
Benefit Cost Ratio to Government	**2.31**	**1.77**	

Note: Phase 1b is only operationally viable as part of the wider network of Phase 1, therefore no separate assessment of the NPV and benefits per £1 cost is performed

Financial forecast highlights Phase 1b included

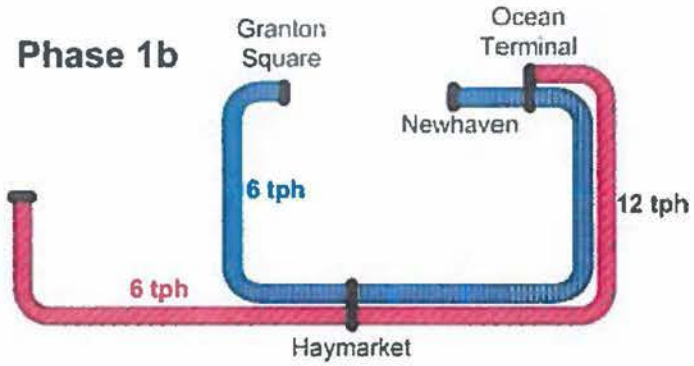
1.93 The table below provides a summary of the financial highlights from the forecast of TEL's profitability operating with bus and tram, this based on a Phase 1a + Phase 1b approach and remains valid until December 2008 providing 1b is commissioned by that date:

Tram in service	Pre-tram		Ph1a Only	Phase 1a plus 1b				
Tram service pattern (see below for explanation)	n/a	n/a	6/12	6/12	6/12	8/16	8/16	8/16
Year	2006	2010	2011	2011	2012	2016	2021	2031
Patronage (Pax m)								
Bus	108	117	112	110	112	121	128	142
Tram	-	-	11	13	16	23	26	32
Total TEL Patronage	108	117	123	123	128	144	154	174
Revenues and costs (£m)								
TEL Revenues	88	109	119	119	128	168	216	357
TEL operating costs			120	121	127	157	195	312
Pre-tax operating profit/(loss)			(1)	(2)	1	11	21	45
Tram lifecycle costs			-	-	-	1	2	2
Notional taxation			-	-	-	3	6	13
Dividend payment			-	-	-	3	3	5
Net TEL cash surplus/(deficit)			(1)	(2)	1	4	10	25

NB All £ figures inflated

Integrated service patterns

1.94 TEL's strategic operational plan fully incorporates Phase 1b as an option. The planned service patterns for opening of Phase 1b representing the completion of the combined Phase 1 (Phase 1a + Phase1b) are shown in the schematic below:-



1.95 The operational assumptions and strategies that apply to an integrated bus and tram network including Phase 1b are the same as for that based on Phase 1a alone, in terms of service integration, ticketing and operating costs. The financial highlights above show that TEL is still potentially a very viable and profitable business. However, there is a higher level of uncertainty attached to the forecasts for patronage and revenue on Phase 1b. Although forecast patronage on Phase 1b in 2011 amounts to approximately 30% of total tram passengers, nearly 70% of that demand will be directly dependent on the new development at Granton waterfront. In context this represents a relatively small proportion of TEL's total revenue.

1.96 On Phase 1b the opportunities to mitigate the impact on operating profits of short term lower demand are less than on Phase 1a, since a greater proportion of the patronage will be carried by the tram on 1a. However, opportunities will exist to reduce the planned level of tram services to mitigate any negative impact.

Affordability

1.97 There is no doubt that pursuing Phase 1b in tandem with Phase 1a or within the window of time up to December 2008 which allows a staggered start without substantial cost penalty provides an enhanced business case. It is recognised however that it comes with a greater risk profile and that, simply put, there is currently insufficient funding to cover however attractive the case. Nevertheless there is a period of c 15 months during which this case can be reflected on, risks currently pertinent on 1a will crystallise / disappear during this period and this may give impetus to the possibility of undertaking and completing Phase 1b in an overlapped timeframe with 1a.

Funding requirements

1.98 To date, Transport Scotland and CEC have approved sufficient funding to meet forecast expenditure up to Financial Close, scheduled for January 2008. This included funding for compensation under a General Vesting Declaration

process to secure land required for the construction of Phase 1a insofar as it is not already owned by CEC or contributed under section 75 agreements and for the design, development and commencement of Utility diversions.

1.99 Upon approval of this Final Business Case, tie will require approval and release of the additional funding for the project as per the milestone drawdown schedule agreed between CEC and Transport Scotland.

Summary of specific approvals arising from this business case

1.100 To approve the recommendation that the Edinburgh Tram Project Phase 1a proceeds at an estimated cost of £498m.

1.101 To approve the selection of the chosen preferred bidder for the Infraco and Tramco contracts

1.102 To approve the commencement of limited mobilisation and advance works to protect the construction programme and price.

Conclusion

1.103 The Edinburgh tram project has now been under assessment for more than seven years. During that period, the underlying rationale for the project, support to the growth of the Edinburgh economy by providing high quality transport connectivity, has been reinforced by events. The city's economy and population continue to grow and the prospects are that this will continue. The Scottish economy as a whole is strongly influenced by the success of Edinburgh.

1.104 The business case seeks to set out in an objective and clear manner the advantages and disadvantages of the proposed scheme as a means of providing the enhancement to transport provision which the city will require if its growth ambitions are to be realised. The documentation reflects the scale and complexity of the scheme and the need for rigorous, professional analysis of the proposal. In its entirety, the document should represent a "balanced scorecard" assessing all the key aspects of the proposal. The document also sets out the means by which the project may be implemented in a risk-controlled manner, should the business case be approved.

1.105 The responsibility for delivering this document was given to the Tram Project Board by the City of Edinburgh Council through Transport Edinburgh Limited and by Transport Scotland. It is these organisations who now have the responsibility of concluding on the way forward for the project, based on the evidence presented in this business case.