

and oversee decisions with respect to the project. The Director of City Development is responsible for the interface between this sub-Committee, TEL and the TPB

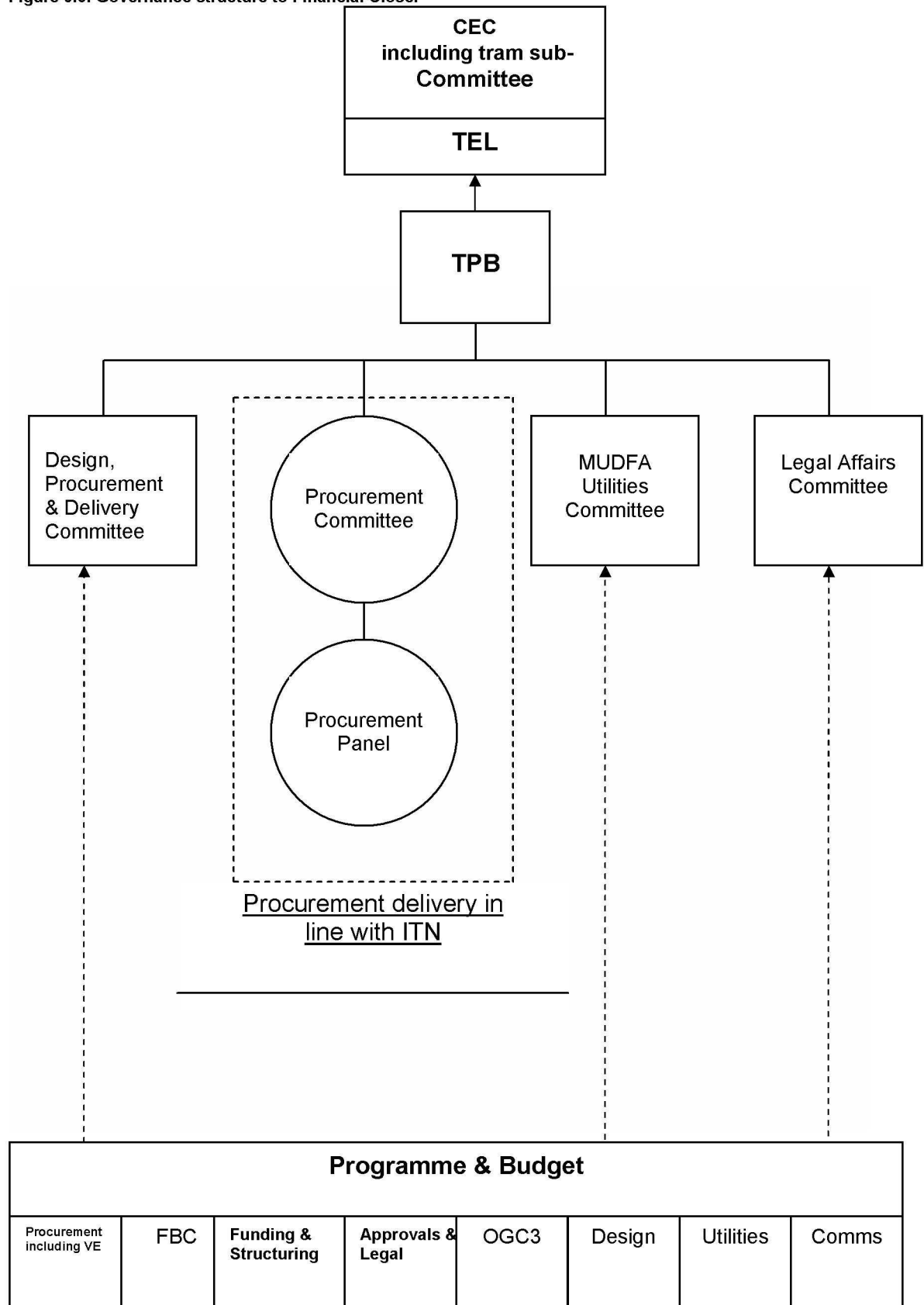
Project level

- 6.28 The role of the TPB was confirmed and the delegated authority arrangements (including the powers reserved to CEC), previously enshrined in the approved remit of the TPB, are contained in the revised Operating Agreements being prepared by the Council and which will be agreed with **tie** and TEL in advance of Financial Close. The membership and remit of the TPB was changed to accommodate the withdrawal of TS and further amendments to composition are planned to further reinforce the effectiveness of this body. In all other material respects the operation of governance by the TPB continued as in the period to mid-2007.
- 6.29 At a practical level, the following changes were executed to the TPB's committee structure:
- A new committee was established to oversee the execution of the utility diversion works under the MUDFA and related agreements;
 - The DPD committee continued to monitor and interrogate specific aspects of the procurement process for Infraco and Tramco, including the performance under the principal system design contract;
 - A second new committee was established to provide a top-down view of the emerging output from the procurement process in the context of available funding and related scope decisions. Additional machinery was created to ensure that the procurement process followed the mandated process.
 - A third sub-committee, the Legal Affairs Committee, was established to monitor the overall coordination of legal advice and to address any legal issues arising, including approvals processes. This committee focuses in particular on the risk transfer provisions in the principal contracts.

As in the previous period, all committees are designed to expedite review and resolution of key issues, but none have formal decision-making power, which is reserved to TPB under its own delegated authority.

- 6.30 The committee structure is designed to ensure that all key aspects of the project are addressed timeously and thoroughly during an intensive and critical period leading to award of the Infraco and Tramco contracts and finalisation of funding terms at Financial Close. Figure 6.3 summarises the governance structure currently in place and which will be the primary structure through to Financial Close.

Figure 6.3. Governance structure to Financial Close.



Governance structure – Construction period

6.31 The further changes proposed to be implemented in the period to Financial Close to prepare for the construction period are as follows:

Roles of TEL and tie Boards

6.32 The TEL Board is focussed on its overall responsibility to deliver an integrated tram and bus network for Edinburgh on behalf of CEC. It will make formal recommendations to CEC on key aspects of the project and matters which have a political dimension. The Board is responsible for compliance with its Operating Agreement and it will also address any matters outwith the direct arena of integrated bus and tram systems and any statutory TEL considerations.

6.33 For the foreseeable future, **tie** will have only one major project, the tram. It will maintain roles with certain smaller projects and will require to comply with normal statutory responsibilities as a limited company, including formal compliance with its Operating Agreement.

6.34 The **tie** Board presently comprises a group of Elected Members and a group of independent non-executive directors (NXD), under the Executive Chairman. The TEL Board presently comprises Elected Members and Council officials under the non-executive Chairman.

6.35 It is proposed that the composition of these two Boards is re-visited to ensure the following objectives are achieved:

- Ensure the TEL Board has the composition necessary to be the active arm of the Council in oversight of project delivery and preparation for integrated operations;
- Maintain the necessary strength of the **tie** Board to ensure that the **tie** Executive Chairman and management team continue to be kept under appropriate scrutiny, challenge and quality control;
- That **tie** Limited's contractual responsibilities are subject to proper stewardship; and
- Ensuring compliance with statutory requirements and with the terms of **tie**'s Operating Agreement.

6.36 The composition of the TEL Board, looking ahead to the construction period, will be based around the existing composition and consideration will be given to changes and new members in the period to Financial Close.

6.37 In overall terms, the composition of the **tie** Board will be maintained in its present form. The Board will maintain its Audit and Remuneration committees, membership of which are restricted to the NXDs. In addition, a new **tie** Board sub-committee will be established to address Health and Safety, chaired by an experienced NXD.

6.38 It is also envisaged that certain of the Elected Members of the **tie** Board and its independent NXDs will join (if not already members) the TEL Board or the Tram Project Board (including specific sub-Committees) to ensure consistency of approach and to utilise relevant experience productively. The re-deployment of the Elected Members and the independent NXDs will reflect :

- i. The emphasis of the TEL Board on oversight (on behalf of the Council) of matters of significance to the Elected Members in relation to project delivery and preparation for integrated operations ; and
- ii. The emphasis of the TPB on delivery of the tram system to programme and budget and the preparation for integrated operations.

6.39 The **tie** Board will delegate authority to its Executive Chairman to execute its contractual responsibilities for the tram project, but explicitly subject to the delegated authority structure within the tram governance model.

6.40 In the event that **tie** assumes responsibility for additional major projects in the future, the Board composition may need to be addressed.

- 6.41 It is recognised that there is inevitable duplication between the scrutiny by the **tie** Board of its Executive activities and the oversight role performed by the TPB. However, in a large, complex project, this seems a worthwhile price to pay for robust governance.
- 6.42 In addition to the changes to the **tie** and TEL Boards and as previously envisaged, the Council's majority shareholding in Lothian Buses plc will be transferred to TEL and parallel changes to the composition of the Lothian Buses Board will be effected in due course. There is an additional level of cross-Board membership and meeting attendance which improves consistency across key aspects of the project to deliver an integrated bus and tram system.
- 6.43 It is suggested that the TEL Board may meet no more frequently than quarterly during the period of construction, probably linked to progress reporting to the Council. This contrasts with an anticipated 4-weekly cycle for the **tie** Board and for the TPB / sub-committees and largely eliminates duplication between the TPB and the TEL Board's processes. The frequency of TEL Board meetings is expected to increase as operational commencement approaches. The TEL Board will receive a comprehensive progress report from the TPB, channelled through the Chairman.
- 6.44 The interface between the TPB, the TEL Board and the new Council Tram sub-committee requires further assessment to ensure good communication consistent with minimal duplication and this will be developed further. The focus of the Council sub-committee is around matters directly affecting the Council and providing assurance that matters which cross Council departmental boundaries are managed cohesively (for example, responsibilities for roads management and budgets).

TPB and its sub-committees

- 6.45 The TPB maintains its role as the pivotal oversight body in the governance structure. The TPB is established as a formal sub-committee of TEL with full delegated authority through its Operating Agreement to execute the project in line with the proposed remit set out in Section 6.32. In summary, the TPB has full delegated authority to take the actions needed to deliver the project to the agreed standards of cost, programme and quality. The TPB also exercises authority over project design matters which significantly affect prospective service quality, physical presentation or have material impact on other aspects of activity in the city.
- 6.46 The delegation of authority to the TPB will require to be formalised by the TEL Board in due course.
- 6.47 The suggested membership of the TPB is seven people (OGC constituency definitions "highlighted"):
- Chair (David Mackay);
 - Senior CEC Representatives - "Senior User Representatives" (Donald McGougan and Andrew Holmes);
 - TEL CEO and Project "Senior Responsible Owner" (SRO) (Neil Renilson);
 - "Senior Supplier" representatives (**tie** Executive Chairman and TEL Operations Director) (Willie Gallagher and Bill Campbell); and
 - Executive Member for Transport (Phil Wheeler).
- The Chair will continue to be the TEL Non-executive Chairman, rather than the Project SRO. Other parties, principally senior project management and advisers, will be called to attend as required, though it is anticipated that a common group of senior project directors will attend most meetings.
- 6.48 The TPB will meet on the 4-weekly cycle already established. The precise structure of the delegated authorities will be re-assessed in due course and if different from the current authorities will be subject to appropriate approval processes.

6.49 The current sub-committee structure will be dissolved and the new sub-committee structure will comprise:

Engineering and Delivery Committee (E&D)

- Delivery under contracts – Infracore, Tramco, utilities / MUDFA, design;
- Health and safety, quality and environment;
- Improvement initiatives – Value engineering, innovation, ICT; and
- Project interfaces and approvals – Land and property, traffic, third parties.

Financial, Commercial and Legal Committee (FCL)

- Financial management – Reporting, control, audit, risk management, insurance; and
- Contract management – Reporting, compliance, interface with delivery, claims and variations.

Benefits Realisation and Operations Committee (BRO)

- Operational and integration planning;
- O&M contract planning;
- Transdev; and
- Marketing.

Communications Committee

- Communications management – Utilities / MUDFA, construction, media, stakeholders

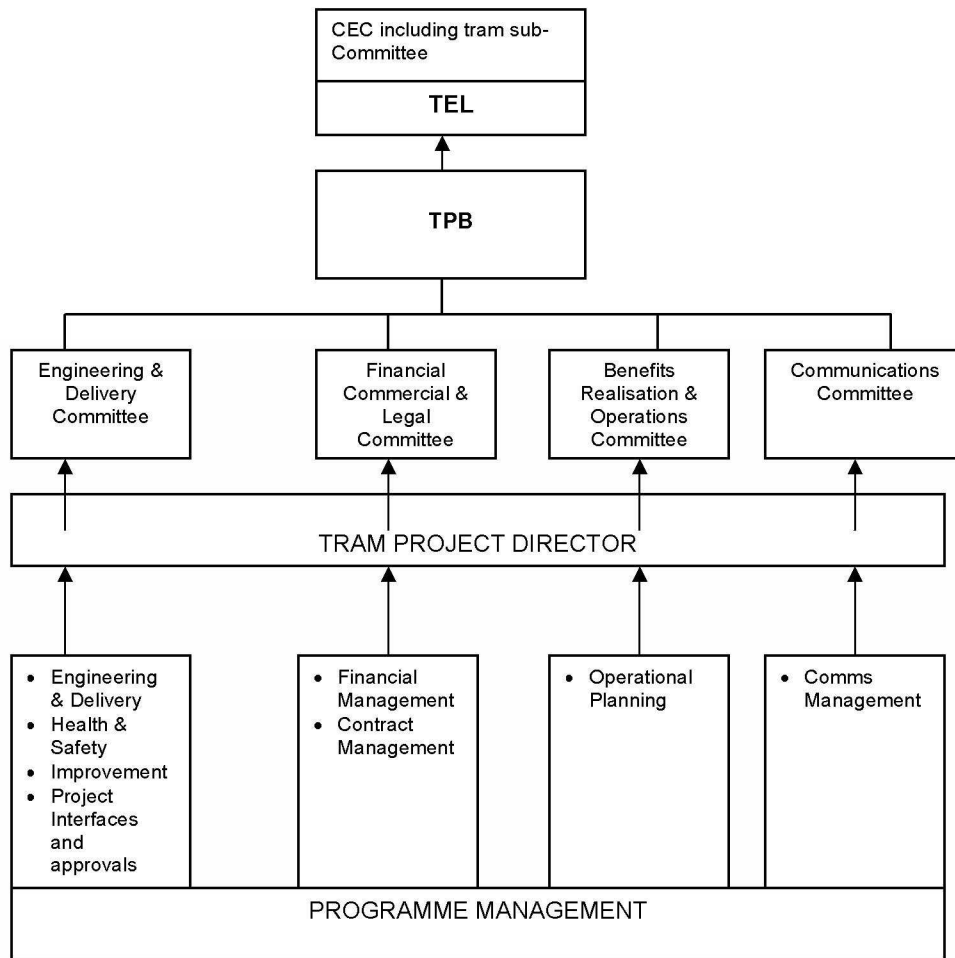
6.50 Detailed remits and attendees will be prepared in due course. Sub-committees will meet also on a 4-weekly cycle, supporting the TPB meeting.

6.51 In order to create close cohesiveness between the TPB / sub-committee governance model and the project management structure, the sub-Committees will directly interface with the Project workstreams and the individual directors responsible.

6.52 To further reinforce cohesion, the **tie** Executive Chairman will Chair each of the sub-committees. The attendance of senior project and client officers, and the clear responsibilities allocated to individual Project Directors, will ensure that appropriate independence and challenge is achieved. As currently, the sub-committees will have clear remits and will focus on detailed interrogation of key issues, leading to recommendations to the TPB which retains decision-making authority over all key areas.

6.53 The Construction period governance structure is summarised in Figure 6.4.

Figure 6.4. Governance structure for Construction period.



Health and Safety (H&S) considerations

General

- 6.54 H&S obligations are well-understood and entrenched in the project governance and management structure. The increased level of physical activity which may give rise to H&S risks once construction commences reinforces the need to ensure H&S responsibilities are clear and that the highest standards of H&S management are applied. These considerations must be addressed on a daily basis in all actions and at all levels by parties involved in Project.
- 6.55 In overall terms, the key H&S considerations for CEC, TEL, the TPB and **tie** are:
- The health and safety of their people – the corporate H&S Management Systems address this responsibility;
 - Ensuring that CEC, TEL, the TPB and **tie** deliver against clearly stated H&S responsibilities in the framework of the project including working alongside third party H&S management systems;
 - Monitoring and reporting regularly that these responsibilities are being properly discharged;
 - Ensuring that all persons employed by CEC, TEL and **tie** are competent;
 - Ensuring that contracts entered into address H&S issues adequately; and
 - Ensuring that H&S ramifications are considered when key investments and business decisions are made.

- 6.56 These H&S considerations apply currently, throughout the period to Financial Close and throughout the period of construction and into operation of the tram system.
- 6.57 The H&S responsibilities are currently defined clearly to meet the demands of the current project activity including the utility works now underway. These responsibilities will require to be revised to integrate with the revised governance structure described in this paper and to enable effective management of the full-scale construction activity which will follow Financial Close. The narrative below provides a description of the responsibilities of the bodies involved in the project and has been drafted with the full involvement of DLA. A precise and legally supported H&S regime will be put forward for approval and then implemented in advance of Financial Close.

Relationship of revised governance model to H&S responsibilities

- 6.58 The TPB creates an inclusive decision making process which is important for the effective operation of the project. The TPB will be a formal sub-committee of the TEL Board so that members of the TEL Board on the sub-committee retain the formal responsibility for decisions taken at the TPB, with all other parties to TPB deliberations being participants or observers only. The TPB itself is not a shelter from health and safety liabilities or a clearing house for liabilities. Legally CEC, TEL and **tie** cannot delegate H&S responsibility to the TPB in the governance structure and thereby declare that they have discharged their H&S liabilities and have no further duty regarding input into or consideration of H&S issues.
- 6.59 The ultimate responsibilities for the TPB decisions flow up to the TEL Board and CEC. However, **tie** will have significant H&S responsibilities, including the intended election under the Construction Design and Management Regulations 2007 (CDM 2007) of **tie** as "Client" under those regulations. A Procurator Fiscal may consider that all parties (CEC, TEL and **tie**), together constitute the entity for the discharge of H&S obligations. As a result, H&S implications must be considered by all these parties when making significant decisions affecting design and implementation through the construction phase of the Project. The HSC guidance *Director's Responsibilities for Health & Safety* must be followed by CEC, TEL, the TPB and **tie**. Appropriate leadership should be demonstrated in this area by the boards and senior management.
- 6.60 Where changes are submitted for TPB approval, or are requested by the TPB, **tie** / TEL / CEC (and the appointed CDM 2007 parties) will be legally responsible for identifying and managing any impact that these changes will have on safety. The TPB will be responsible for ensuring that they understand and have responsibility for any decisions made in this respect. It is intended that **tie** will be mainly responsible for implementing the decisions made throughout the construction period.
- 6.61 It is considered that TEL / CEC would remain the "client" in terms" of CDM 2007 as the TPB is not a separate legal entity although it will make decisions on behalf of TEL / CEC. **tie** is responsible as the elected second client under CDM 2007 and the client / employer (for general health and safety regulations) for the overall project safety management for the development and implementation of the project. However, such an election is not a full delegation of all rights and responsibilities. **tie** and the TPB must ensure that its activities or its stakeholders or advisors do not undertake actions that encroach upon the role of the designer under CDM 2007, as this would mean that they would require to demonstrate competency in this role and fulfil added responsibilities.
- 6.62 The revised project governance structure described in this paper will distance TS from the H&S responsibilities, as their responsibilities are related to those of the principal funder of the project, in the absence of any material involvement in design or construction matters. However, they will incur H&S responsibilities if this relationship changes and TS become involved in such matters again.
- 6.63 Health and safety, quality and environment will form an element of one of the new TPB governance sub-committees. H&S matters within **tie** will be the responsibility of the Engineering and Delivery Director. In addition to the E&D Director's leadership on this issue,

a senior NXD will be the nominated chair of the HSQE sub-committee of the **tie** Board to add a further H&S check in the operation of **tie** and the TPB.

- 6.64 A regular safety report is produced and presented to the **tie** Board and to the TPB each month. The TPB will ensure that safety is a core agenda item for each meeting and will ensure that the safety report tabled at each meeting is actioned, where appropriate. Copies of these reports, or summary documents as appropriate, will be disseminated to TEL and CEC. This will ensure that H&S issues are considered at senior level on a regular and disciplined basis.

Legal backdrop

- 6.65 There may be occasions where a decision which is made by the TPB under its delegated authority from TEL is driven by one of the stakeholder directors to the exclusion of the other members of the Board. In the event of an incident, this may result in the contractual relationships or duties between the stakeholders being considered. Notwithstanding that financial indemnities could be put in place to cover losses suffered, if a particular party declares that it will be held accountable for a decision impacting safety, it is important to highlight that it is not possible to ensure that fines imposed as a result of prosecution can be the subject of an enforceable indemnity. It is not possible to contract out of criminal liability nor is it possible to insure against a fine. Although it may be competent to include a clause in a contract, it is possible that such a clause would be construed by the courts as unenforceable and contrary to public policy. In this context, the representative of each stakeholder would need to look to their employer, with regard to personal accountability.
- 6.66 The creation of appropriate safety responsibility structures, safety management systems and culture will form a key defence to any prosecution assuming all procedures have been followed. Clearly there could also be a number of other parties involved in a safety incident, for example contractors, sub-contractors, agency staff, designers, CDM-Coordinators and third parties.
- 6.67 The Corporate Manslaughter and Corporate Homicide Act 2007 will come into force on 6 April 2008. Corporate homicide will be committed where a death is caused by an unlawful or grossly negligent act of the senior management of an organisation. The management and organisation of activities by senior management must constitute a "substantial element" of the breach, in other words, partial delegation of the duty will not prevent liability attaching to senior management. Breach is punishable by a fine. Although directors do not face personal liability under the Act, the offence will make directors more vulnerable to disciplinary action and further crystallise their accountability for health and safety compliance to their stakeholders. It remains possible for directors and senior management to face personal liability if there is sufficient evidence to bring a prosecution under the existing common law or under the Health & Safety at Work etc Act 1974.

Summary

- 6.68 H&S is clearly of paramount importance both currently and in the construction phase of the Project. CDM 2007 will be a key focus and will be given appropriate prioritisation by all parties at all levels. The application of legal H&S responsibilities in the context of the governance and management of a large, complex project requires very careful analysis. A definitive structure will be developed, submitted for approval and implemented before Financial Close.

7. Procurement

7.1 This section of the FBCv2 sets out details of the procurement strategy that was followed by **tie** leading to the recommendation of the preferred bidders for the Infraco and Tramco supply and maintenance contracts, including confirmation that the negotiated position achieved is within budget and basis of the conditional contract award recommendation. This includes how the strategy aligns with delivery of value for money benefits and in particular details the various contract packages, incentives and sanctions that deliver these benefits. This section should be read in conjunction with the section 11, Risk Management, which refers also to the allocation of risk between the public and private sectors.

Background to procurement strategy

7.2 The procurement strategy developed and applied for the tram addresses both the issues experienced on other light rail procurements in the UK and the specific circumstances affecting Edinburgh. The resultant structure is a series of contracts which, managed as a group, will transfer risk effectively to the private sector, advance the scheme as quickly as possible and provide strong value for money.

7.3 The UK light rail sector has encountered difficulties in the last six years. These have affected both existing projects and those in procurement. On the earliest schemes, it appears that the private sector showed over-confidence in respect of the risks it faced, and in some cases, the public sector showed a lack of foresight. This may have been related to a lack of understanding of the flexibility which is required to run a public transport system under a long-term contract and the risks in forecasting public transport revenues for a specific service over the long-term.

7.4 The result is that, on many of the projects that have been completed, neither the public nor private sectors are happy with the outcome. Contractors have lost significant amounts of money on the underlying construction projects due to changes in scope over which they have little control. Tram operators are facing escalating costs, competition from buses and revenues which fall short of what is required to cover fixed costs. Meanwhile the public sector has realised that it has little ability to control the behaviour of the tram operators due to the lack of suitable sanctions available under their project agreements.

7.5 This outcome has made the private sector extremely wary of light rail projects. This is documented in the National Audit Office report of 2004, commenting on the effectiveness of light rail schemes. Unfortunately, this industry feedback arrived too late to inform the development of a number of procurements in England, which have encountered significant affordability problems, with costs increasing due to bidders factoring in significant margins to deal with the risks that they have difficulty pricing accurately. These affordability issues have led to significant delays and, in several cases, the cancellation of the projects affected. However, schemes which were not yet in procurement have had the opportunity to learn from the issues that have arisen on both existing schemes and the stalled / cancelled procurements. The Procurement Strategy for the Edinburgh Tram addresses this.

7.6 **tie** has sought to harness first-hand experience from key individuals involved in those schemes. **tie** has successfully achieved this by:

- Recruiting individuals into the project team with breadth and depth of experience of other light rail projects;
- Engaging with TEL, who will be responsible for integrating the tram and bus services;
- Appointing an operator, Transdev, with experience of procuring and operating light rail schemes in the UK and overseas;
- Selecting advisers with a broad experience of light rail and other public / private procurements; and
- Engaging with the bidder market in a consultation exercise.

7.7 **tie**'s Procurement Strategy has resulted in it taking a greater degree of control over the process during the early 'development' phase, compared to what the public sector has done on other projects. This has resulted in **tie** progressing the overall project sufficiently in

advance of seeking bids from Infraco bidders such that it was able to offer the private sector Infraco and Tramco bidders a better defined basis on which to bid and a less onerous risk allocation (and in particular reducing the extent of design and approval uncertainty at bid stage). Therefore the private sector were able to price their bids with a greater degree of accuracy and certainty than has been achieved on other projects. In this way, **tie** believes it has significantly reduced the cost of the overall project, having considerably de-risked certain of the elements of the project that fall to the private sector to deliver. This is shown by the minimal risk allowance included in the Infraco and Tramco bids.

Market consultation

- 7.8 In October 2005, following the issue Prior Information Notices (PINs) in the Official Journal of European Union (OJEU), **tie** selected a shortlist of six potential Infraco bidders and five potential vehicle suppliers who were then invited to Edinburgh for discussions. The overall conclusions were that there were certain areas that merited further consideration and these have been reflected in the principles of the Procurement Strategy.

Objectives of Procurement Strategy

- 7.9 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 risks on takeover of the operation Tram Network

Key elements of Procurement Strategy

- 7.10 The Procurement Strategy that **tie** has followed for this project has been developed to address the common challenges faced by all light rail procurements and the specific issues associated with Edinburgh. It is a unique approach and this section sets out the main ways in which the Procurement Strategy differed from market norms. However, it is also important to understand that most of the differences relate to the process of procurement and not the outcome of the procurement.
- 7.11 The outcome of the procurement strategy is two contracts with different private sector entities: an operating contract, the Development Partnering and Operating Franchise Agreement (DPOFA) and an infrastructure (Infraco) contract. The Infraco contract will act as a “holding contract” with the design and vehicle provision (including the maintenance contract) being novated to the infrastructure provider (under the Infraco contract) at Financial Close as described at below. This outcome is not dissimilar to the approach adopted on, amongst others, Docklands Light Railway (DLR).
- 7.12 Whilst the light rail market does not have a fixed template for how transactions should be undertaken, there has been a general approach on projects to date whereby a single contract has been let for all key activities in providing the tram service. **tie**'s approach clearly differs from this, in the ways set out below. The entire Procurement 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. to deliver value for money.

- 7.13 In summary the key attributes of the strategy are:
- The separation of system delivery and operation to focus organisations on their strengths, minimising margin on margin and risk premiums;
 - Early introduction of the operator – to ensure effectiveness of design, construction and commissioning ready for operation;
 - Early commencement of design by SDS – to reduce scope and pricing risk in infrastructure and tram vehicle bids, together with a reduction in overall programme;
 - Separate procurement of the tram vehicle – to enable the selection of the optimum combination of the tram and infrastructure suppliers;
 - Re-aggregation of the supply chain – by novation of the design (SDS) and tram vehicle (Tramco) contracts to the infrastructure provider (Infraco) to create a single point responsibility for the design, construction, commissioning and subsequent maintenance of the tram system, with the 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 – to incentivise selection of components with ‘whole life’ cost in mind and to incentivise Infraco to mitigate the risk of latent defects arising during the operational phase;
 - Separate procurement of utilities works to enable completion of the utilities diversions before commencement of infrastructure works, thus reducing risk to 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 TSS and CEC expertise where appropriate – to provide comfort that the designs produced will deliver the required performance;
 - Incentivise completion in accordance with programme by adopting a milestone payment mechanism in SDS, Tramco and Infraco contracts, with significant cash retentions and retention bonds pending completion of system reliability tests; and
 - Parent company guarantee and retention bonds and warranties in the SDS, Tramco and Infraco contracts to provide recourse in the event of failure.
- 7.14 These arrangements deliver the strategy through:
- 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.

Introduction of operator at early stage

- 7.15 A key strand of the Procurement Strategy was the decision to select the operator for the system in advance of completing the parliamentary process which is a pre-requisite to the letting of contracts for the fabric of the system. The principal reasons for early involvement of the operator were that it:
- Has allowed **tie** to use the operator’s knowledge and experience during the parliamentary process, Business Case development, planning, design and procurement phase. The operator will continue to deploy their knowledge and skill during the construction, system integration and commissioning phases. This will ensure that the system will be capable of being operated effectively;
 - Facilitates input from an experienced operator on issues such as:
 - Review of designs from an operational perspective; and
 - Input into the procurement process; and
 - Has, in partnership with TEL, assisted in the proper planning of an integrated service network with the existing LB operations including fares and ticketing policy.

Separation of operations and system delivery

- 7.16 The separation of the day to day operation of the tram network from the initial construction of the tram system is a further characteristic or consequence of early operator involvement. This allows those parties responsible for providing vehicles and infrastructure to concentrate on their strengths, which ought to be reflected in more competitive contract pricing from those parties as they will not need to consider procedures and risks that they do not necessarily understand.

Establishment of Joint Revenue Committee (JRC)

- 7.17 Edinburgh is in an almost unique position, in that the main bus operator in the city is owned by the public sector. Recognising the unique opportunity this presented, the CEC decided to establish TEL to take on the responsibility for integrating the services of LB and the tram and to seek appropriate arrangements with third party transport operators.
- 7.18 As part of the process of coordination and integration of buses and tram, a JRC was established with the objective of the development, testing and successful commissioning of a modelling suite to support the viability of the tram alone and the TEL Business Plan including LB and to provide ongoing revenue forecasting for TEL. The JRC contract was awarded to a joint team of Steer Davies Gleave and Sir Colin Buchanan and Partners in September 2005.
- 7.19 A Modelling Revenue Stakeholder Group (MRSG) was established to assist JRC to define the parameters and inputs which allows them to deliver the scope of services under their contract. The members of this group, comprising representatives of **tie**, TEL, CEC, Transdev and Transport Scotland, have ensured the inputs to the modelling process were appropriate and that the outputs from the model are robust. **tie** remains the contractual client for JRC.
- 7.20 The JRC modelling and service integration plan reached conclusions as reported in detail in sections 4 and 8 of the DFBC, approved in 2006. The models proved to be a useful iterative tool to optimise the bus and tram network service integration.

Procurement of Technical Support Services (TSS) provider

- 7.21 The resources provided under this contract facilitate review of the SDS design to assure compliance with the performance objectives for the tram and the sourcing of technical personnel to support the management and control of the project.

Early involvement of designer

- 7.22 Another key strand of the procurement strategy was the early involvement of the design contractor. The SDS contract was awarded in September 2005. This contract has allowed **tie** to advance design work for of the tram, thereby reducing the planning and estimating risks, in respect of scope, to which bidders for the Infraco contract are otherwise exposed. It has also facilitated the opportunity to procure advanced works on utility diversions and identify, at an earlier stage, the land requirements and permanent traffic regulation requirements of the identified Tram Project scope. During the Infraco procurement process, price critical design elements have been provided to bidders to refine their pricing and improve the reliability of the construction programme.

Utilities diversions undertaken in advance of infrastructure

- 7.23 A significant benefit arising from having undertaken early design work is that **tie** was able to procure the necessary utility diversions, to enable delivery of the permanent infrastructure work, prior to commencement of the system construction. This provides very significant construction programme benefits and, therefore, cost benefits, due to reduced risk exposure of the infrastructure provider, creating the best opportunity to minimise disruption and maximise infrastructure construction productivity.

Separate selection of infrastructure and vehicle providers

- 7.24 **tie's** approach of having separate competitions for infrastructure and vehicle provision means that it has flexibility to select the optimum tram vehicle. There are a relatively small number of vehicle providers in the light rail market, compared to the number of potential infrastructure contractors. Had **tie** adopted the conventional approach and asked the infrastructure providers and vehicle providers to team up and present a single proposal covering both, this would have restricted the range of choice available to **tie** and, hence, the effectiveness of the tram system procurement.

Land assembly process and third party interface agreements

- 7.25 Using the powers under the Acts, **tie** project manages the acquisition of all land and rights in land, temporary and permanent, required to construct, operate and maintain the tram. **tie** and its advisers have identified all parties with an interest in each parcel of land, determined the compensation payable, consulted with interested parties as part of an overall communications strategy and has given appropriate notification to enable CEC to take title in the land prior to the appointment of Infraco. This approach also reduces risk to the infrastructure works programme by bringing certainty to land acquisition at an early stage, thereby reducing the lead in time to commencement of construction works.

Outcome of procurement process – Summary

- 7.26 Both the Infraco and Tramco procurements have been concluded to Preferred Bidder stage. The Infraco and Tramco procurements have been negotiated to levels within budget levels and with a programme for Phase 1a completion and delivery into revenue service for first quarter 2011. Contracts will be finalised for award at the end of the Preferred Bidder period in January 2008.

Key contracts

- 7.27 Below is a detailed description and explanation of **tie's** approach to the key contracts that it has or will enter into. The key contracts are as follows:
- 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); and
 - Vehicle supply and maintenance (Tramco).
- 7.28 **tie** has developed a nested set of contracts for Infraco, SDS and Tramco (including associated maintenance) using procurement personnel and legal advisors experienced in this area and tailored to the Edinburgh tram project's specific needs.

DPOFA

- 7.29 **tie** believe many previous tram procurements have suffered from insufficient operator engagement throughout the Parliamentary and development phases of these projects. On this basis, **tie** decided to separate the operation of the system from its construction, and, following a competitive tender, appointed Transdev as the future operator in May 2004, under the terms of the DPOFA.
- 7.30 Transdev staff form part of **tie's** core team for the project, and have played an active role in the development of the design and contracts. It was **tie** and TEL's primary objective that this process would form the foundations for a strong and mutually beneficial long-term partnering relationship with Transdev for the later operation of the tram in Edinburgh.

Procurement approach

- 7.31 The principal attributes of the procurement approach for this contract are:
- Scope – Provision of consultancy advice during the design and construction phase, system operational support during the commissioning and trial running stages and subsequent operation of the tram system;
 - 15-year contract duration;
 - Performance reviews at three yearly increments, with provisions to reset the performance regime and an option for **tie** to voluntarily terminate the contract where there is a failure to agree a revised performance regime and **tie** chose not to follow the dispute resolution process;
 - Reimbursable up to a cap based on demonstrated actual costs plus an agreed profit level for specified personnel at agreed rates up to the commencement of the operating phase;
 - During the operating phase the contract will move to a primarily fixed cost mechanism; Payment will also be adjusted for performance against set quality criteria. The costs are fixed for the first three years after which they are adjusted under a review reset mechanism;
 - Performance bond to provide financial recourse in the event of default by the supplier; and
 - Facility to assign the agreement to TEL at commencement of system operation.

Operation and performance risk

- 7.32 Transdev have been awarded the contract to operate the tram and, ultimately, will be in day to day control of the quality of service provided to the public. However, responsibility for project development and delivery lies with TEL, **tie** and their advisors. One of the main advantages of involving an operator during the early phases of the project is to inject their perspective into the development of the network and, hence, to facilitate the development of the tram network operating at optimum performance level. This approach, which was endorsed by CEC, has helped facilitate the successful delivery of the project to date and will continue to do so.
- 7.33 To address performance issues during the operating phase of the contract, the DPOFA incorporates a payment mechanism which offers the operator an appropriate risk / reward balance. In summary, the operator will be incentivised under a regime based upon clearly defined and understood key performance indicators (kpis) to deliver performance against the required service specification, and this performance regime is designed to minimise costs and maximise performance.
- 7.34 The DPOFA has been renegotiated in order to align with the Infraco and Tramco Agreements and to reflect the integration under TEL of tram and bus operations, yielding synergies that have reduced costs and improved the ability to offer an integrated solution for the passengers.

Pricing and Revenue Risk

- 7.35 A key element of retained risk for the public sector relates to ongoing farebox revenue and operating costs. One of the factors influencing the decision to proceed with separate procurement of DPOFA and Infraco contracts was the past underperformance of a number of full PFI / PPP (private finance initiative / public private partnership) structures where 100% farebox risk was transferred to the private sector. In more recent deals, financiers have applied a heavy discount to revenue projections as a result of recognising that revenue is affected by many factors outside the operator's control and that operators therefore have great difficulty in forecasting it reliably and pricing the risk economically. However, TEL with the track record of the existing public transport market in Edinburgh, and with the role of integrating the bus and tram operations, is ideally placed to manage the tram revenue risk, which represents around a tenth of the existing bus risk.

- 7.36 The means to manage the public sector's exposure to operating costs has been built into the DPOFA approach, in the form of the development of a pain / gain sharing mechanism. This mechanism, which rewards the operator for the degree to which actual costs outperform pre-agreed targets, has the joint benefit of incentivising the operator to minimise costs and maximise performance.
- 7.37 Critically, the management of the public sector's exposure to revenue risk is facilitated by the development of an integrated tram and bus business under TEL.

Activities under DPOFA

- 7.38 During the development and procurement of the Tram Project, Transdev have brought their wider commercial and practical experience of operating and maintaining tram (and bus) networks in the UK and elsewhere. During this phase of the project, supporting TEL and **tie**, Transdev have assisted in all aspects of design, procurement and operational planning including:
- Assisting TEL with the development of integrated service and interchange plans for tram and bus;
 - Generation of inputs and validation of outputs from the JRC modelling process;
 - Reviewing and advising on the operability of design outputs from the SDS contractor;
 - Assisting and advising on the development of the contractual arrangements for the Tramco and Infraco procurements;
 - Reviewing and advising on the documentation for the Tramco and Infraco tender processes;
 - Participating in the Tramco and Infraco tender evaluations;
 - Considering and advising on the underlying operational aspects of the tram project and including underlying demand assumptions and issues;
 - Considering and advising on the operational implications of the Procurement Strategy; and
 - Assist in the preparation of the TEL Business Plan.
- 7.39 Throughout the Infraco and Tramco procurement Transdev have provided continuity and assistance to **tie** by being a key component of a group of advisors acting as the 'Intelligent Customer', which assisted in shaping and preparing information for the market to ensure a healthy competition and consequent value for money.
- 7.40 During the forthcoming construction and testing and commissioning stages Transdev are a key member of **tie**'s project management team and are mobilising to provide support to operate the tram system, enabling Infraco to deliver the commissioning and trial running stages of their works. Such support will include driver training, depot security, control room manning, safety and establishment of operating procedures.
- 7.41 During the commissioning and trial running stage Transdev will fully mobilise, train drivers and other personnel to prepare for full operation and complete arrangements for service integration. Post commencement of operations Transdev will continue to fulfil a project development and procurement role, as required, in relation to any further expansion.

Payment mechanism and incentivisation structure

- 7.42 Prior to commencement of operations, Transdev receive a time based fee, subject to an agreed cap and retention. During tram operations they receive a payment comprising:
- Fixed operating costs including an agreed fixed profit; and
 - A performance regime payment, calculated to incentivise performance against a set of kpis including tram punctuality, reliability and qualitative measures.
- 7.43 These arrangements reflect the fact that operating costs are determined by a mixture of factors, only some of which are controllable or capable of influence by the operator. Therefore, this approach avoids the risk premium that has been included in the pricing of other tram projects due to start up uncertainty and other economic factors.

Benefits and risk allocation

- 7.44 The 2004 National Audit Office (NAO) report strongly supports early operator involvement as a means of improving the execution of tram procurement and achieving a stable and affordable system. This will be delivered by early operator involvement in areas such as:
- Service specification and timetable;
 - Specification and design of tram vehicles and maintenance facilities;
 - Specification and design of infrastructure; and
 - Operational requirements and specification of the tram system.
- 7.45 Early involvement in such areas ensures that the operator, who will ultimately take 'ownership' of operation of the tram system, is able to influence the system design and configuration to optimise the system for operations. This mitigates a key interface risk that, under PFI type procurement arrangements would be priced at a premium.
- 7.46 Risks remaining with the public sector are as follows:
- 100% of revenue risk and an element of operating cost risk will remain with the public sector, albeit this is partly mitigated by the incentivisation regime in place with Transdev. Critically, revenue risk is mitigated by the development of an integrated tram and bus business under TEL;
 - The risk of Transdev not being ready to operate the system when Infraco and Tramco commissioning is complete is now covered in the renegotiated DPOFA by Transdev's liability under the provisions of the DPOFA contract; and
 - The risk of Transdev not fulfilling their obligations pre or post commissioning, resulting in the need to replace them as operator. The public sector's protection against costs incurred in replacing the operator would be limited to the liability provisions in Transdev's contract and calling the DPOFA performance bond. However, the bonded amount has been doubled as part of the DPOFA renegotiation.

SDS

Procurement approach

- 7.47 The principal attributes of procurement approach for this contract are:
- Scope – provision of design work up to detailed design stage including obtaining all necessary approvals;
 - Approximately 3-year contract duration;
 - Lump sum price with the supplier taking the inflation risk;
 - Milestone payment regime to incentivise completion to time;
 - Provisions to novate the contract to Infraco; and
 - Performance bonds and warranties to secure redress in the event of major default.

Introduction

- 7.48 Commencement of design early in the procurement process, followed by a novation of the contract to the Infraco at financial close (as described below), is a key element in delivering the objectives of **tie's** Procurement Strategy objectives of reducing construction contractor risk premiums, reduced delivery programme and single point responsibility for delivery of the tram system. The SDS contract was awarded to Parsons Brinkerhoff in September 2005 following a competitive tender.
- 7.49 Development of the design ahead of and during the Infraco tender has helped to create improved scope and cost certainty and is significantly reducing the overall project programme and, in particular, the lead time between approvals and commencement of construction. It also substantially reduces the risks associated with planning approvals, TROs, NR and other key stakeholder interfaces. As a result, the work of the SDS contractor substantially reduces

this risk for which the Infraco bidders would have otherwise included significant risk pricing. This is born out by the low level of risk pricing included in the Infraco and Tramco bids.

- 7.50 The anticipated novation of the SDS contract to the Infraco will mean that responsibility for the design and all risks arising are transferred to the private sector system integrator (Infraco), without the normal disadvantage of an increased risk premium, that bidders would apply due to uncertainty, if they had to carry out all of the design work post contract award.
- 7.51 It is expected that the Infraco will benefit significantly from the SDS provider's work and its experience of the planning and utilities diversion processes. The planned novation to Infraco incentivises the SDS provider to consider issues of practicality, cost and 'constructability' more than if it were simply **tie**'s consultant. The Infraco bidders have prepared their bids on the basis of the emerging SDS designs and the successful bidder is required, following a process of due diligence of the design, to adopt the SDS provider's design as at the date of Infraco contract signature. Variations to this design can be introduced with the agreement of **tie**, but at the risk of the Infraco unless they represent changes to **tie**'s Employer's Requirements (ERs), which are at cost to the public sector.
- 7.52 **tie** are taking account of the Infraco bidders common preferences for the extent of design work to be undertaken by SDS prior to novation and are adjusting the contract scope accordingly. This will:
- Avoid the cost of unnecessarily duplicated design effort; and
 - Maintain Infraco's flexibility in obtaining best price from their supply chain by avoiding undue constraints on design of performance specified systems e.g. communications and tram position indication system.

Activities under the SDS contract

- 7.53 The original assumption was that overall design work to Detailed Design would be 100% complete when the Infraco contract is signed. Due to a number of delays, largely outwith **tie**'s control, this is now not achievable. However, by identifying key risk areas and prioritising SDS activities, **tie** is completing several key elements of the Detailed Design in time to inform the Infraco bids on price-critical items. This has enabled the Infraco bidders to firm up their bids based on the emerging Detailed Design and thereby reduce the provisional scope allowances and design risk allowances that they would otherwise have included.
- 7.54 The status of SDS's work is as follows:
- Completion of the *Requirements Definition* phase of the design in early 2006, the key elements of which were the development of full system requirements specifications, and the production of Management Plans and Technology Reviews;
 - Completion of much of the survey and site investigation works including ground penetrating radar, geotechnical surveys, surveys of existing structures, noise and vibration baseline surveys, environmental and ecological surveys;
 - Provision of utility diversion Preliminary Designs to support the procurement of the MUDFA contract;
 - Establishing an interface and programme for submission of consents with CEC;
 - Stakeholder management support and development of traffic / transport modelling in conjunction with the JRC;
 - Completion of *Preliminary Design* (Stage 1) in mid 2006 including clarification, verification and update of the existing STAG drawings, route plans, sub-system specifications, outline system testing regimes, critical civil engineering specifications and trackwork specifications. This information was issued to Tramco and Infraco bidders as part of the invitation to negotiate (ITN) issued in July and October 2006 respectively. Further design information was released to the bidders during the tender process, as appropriate, to reflect further development of the design during the tender period;
 - Provision of quantified estimates for the Infraco and utilities diversion works based on the Preliminary Design outputs;

- Delivering of the Detailed Design phase which develops the Preliminary Designs to the next level of detail, fully defining the scope of the project and enabling more accurate pricing of the works by Infraco bidders and the process for obtaining the various approvals required before commencement of construction; and
- Supporting the Infraco procurement process by:
 - Providing the detailed design information for several key elements enabling bidders to price with more certainty;
 - Inputting into the technical evaluation of the Infraco and Tramco bidders; and
 - Commencing the design due diligence process with Infraco.

Control and management of activities under SDS

- 7.55 **tie** is monitoring the quality of the solutions being developed by the SDS provider with the assistance of the TSS provider and Transdev, and drawing on the significant experience of other schemes gained by the **tie** team members. In particular TSS are reviewing that SDS have delivered their contract obligations in respect of design, including verifying that the designs will deliver the specified tram system performance.
- 7.56 This process, together with value engineering exercises, is mitigating the risk of 'gold plating' the design of the system, and any tendency towards low risk / high cost solutions which do not provide the overall best value for money that **tie** is seeking. **tie** has been tracking the estimated cost of the system throughout the design period, so that cost overruns could be identified quickly and mitigating actions taken while there is still scope to change the solution.

Payment mechanism and incentivisation structure

- 7.57 Payment of SDS is contingent on the completion of 'fine grained' programme milestones within each phase of the service, these phases being Requirements Definition, Preliminary Design and Detailed Design. The payment mechanism operates as follows:
- The contract defines:
 - Programme sub milestones for each phase of the work;
 - General management activities to support delivery of design; and
 - The proportions of the contract sum allocated to management activities and to each sub milestone; and
 - Payment is made monthly for:
 - Completed management activities;
 - 80% of the value of completed sub milestone; and
 - The remaining 20% of completed sub milestones where the sub milestone output has been accepted by **tie**.
- All as assessed by **tie**
- 7.58 This arrangement strongly incentivises SDS to:
- Complete designs to programme, otherwise their cashflow is adversely affected; and
 - Submit designs to that are complete and to the required quality otherwise again their cashflow is adversely affected.

Benefits and risk allocation

- 7.59 The risk transfer to the SDS is substantial and the separation of designer from the delivery contractor during the procurement phase affords **tie** control over scope definition that would not otherwise be achieved where design is undertaken by the delivery contractor after contract award under more conventional procurement approaches.
- 7.60 Following novation of SDS, after completion of the design due diligence process at Financial Close, the design risks pass to Infraco (although **tie** will retain a collateral warranty over the work of the SDS provider), but without the disadvantage of substantial risk premiums applied by Infraco bidders where design works are executed post contract award. Therefore, **tie**'s

approach will provide the benefits of having a designer involved in the project from an early stage, whilst retaining substantial risk transfer to the private sector.

- 7.61 In more detail the key delivered benefits of the SDS strategy are as follows:
- Delivery of preliminary design and key elements of the detailed design has resulted in a reduction in risk pricing in the Infraco tenders;
 - Shorter period from letting Infraco contract to completion of the system – this also reduces the overheads incurred by the Infraco;
 - Substantially reduced planning consents and TRO risk for the Infraco bidders to price. This resulted in a reduction in the pricing premiums that bidders would otherwise apply to cover the risks of increase in scope, quality and construction period as a result of the approvals process;
 - Early design of utilities has enabled commencement and completion before commencement of Infraco works, which again reduces overall programme duration;
 - Reduction in risks associated with utilities diversion – early completion of utilities diversions will result in a reduced likelihood that utilities works will disrupt progress of the main infrastructure works. It has also reduced pricing premiums because utilities diversion cost is a risk that the private sector has found difficult to assess and then manage;
 - Greater level of support for compliance with undertakings – early SDS involvement will ensure that stakeholders have greater certainty and clarity about the plans for the tram system which may avoid disputes and delays at a later date; and
 - Emerging certainty of scope and design has assisted the development of traffic and transport modelling by the JRC and, hence, a more reliable Business Case.
- 7.62 Key risks remaining with the public sector are as follows:
- **Potential reduction in innovation:** Advance design has limited Infraco's ability to innovate to realise possible cost efficiencies or design improvements. **tie** is mitigating this risk by consulting with Infraco bidders on alternative design solutions or technical approaches which they believe might offer improved value for money. **tie** is also critically reviewing the proposals of the SDS provider, with the assistance of the TSS consultants, Transdev and the expertise within **tie**. **tie** has also implemented a design assurance process by SDS; and
 - **Risks associated with novation:** This strategy requires the Infraco to take over responsibility for the SDS design and contractual responsibilities at the point of novation. The novation risk is mitigated by:
 - Consulting with Infraco bidders to refine SDS design scope;
 - Flexibility within the SDS contract to adjust scope to suit the selected bidder's requirements prior to novation;
 - Detailed design being largely completed prior to award of the Infraco contract;
 - The absolute obligation to novate contained in the SDS contract; and
 - The preferred Infraco bidder's agreement to accept novation after successful due diligence.

JRC

Procurement approach

- 7.63 The principal attributes of procurement approach for this contract are:
- Scope – development of strategic models and their operation to provide patronage and revenue projections based on SDS tram system designs;
 - Lump sum price with the supplier taking the inflation risk; and
 - Payment against progress and milestones.
- 7.64 Edinburgh is in a fortunate position, in that the main bus operator in the city is majority owned by the public sector. Therefore CEC is exploiting this opportunity by establishing TEL, which will have responsibility for managing and integrating the services of LB and the tram.

- 7.65 Following a competitive tender, the JRC contract was awarded to a joint team of Steer Davies Gleave and Sir Colin Buchanan and Partners in September 2005. In the ensuing year the JRC developed a comprehensive and interdependent hierarchical modelling suite including a strategic model, a public transport model, a network assignment model and a micro-simulation model to support the development of the tram. The JRC is responsible with the SDS provider, on a jointly and severally liable basis, for the elements of the modelling suite related to the design process.
- 7.66 The public transport model was used by JRC to develop the patronage and revenue projections for TEL, including both tram and bus projections, which are detailed in the DFBC and this FBCv2. The JRC has also completed the STAG2 appraisal of the economic benefits and costs projected for the tram project.

Further work by JRC

- 7.67 In future the JRC will provide advisory support to **tie** and TEL in respect of modelling and advising:
- Both the short term and longer term target revenues for the tram;
 - The impact of specific system design features, interchange facilities and of service and frequency changes on revenue predictions;
 - The effect of changes in passenger numbers and fare structures on revenue;
 - The likely benefits and disbenefits of integration with other public transport modes and the likely short term and longer term revenue impacts of competition from other public transport modes; and
 - Support and development of the TTROs and TROs as well as establishing the impact of tram on the wider traffic network.

MUDFA

Procurement approach

- 7.68 The principal attributes of procurement approach for this contract are:
- Scope – Delivery of multi service utilities diversions, including pre construction phase programme development, design and constructability advice;
 - Approximate two year contract duration;
 - Priced bills of approximate quantities with work re-measurable as work is completed;
 - Prices include for inflation over the duration of the contract;
 - Interim payments made each month based on the prices contained in the bills of approximate quantities applied to the completed volume of work;
 - Liquidated damages to provide cost recovery in the event of delay to completion due to default on the part of the contractor; and
 - Cost incentivisation to encourage efficiency of outturn costs.

Introduction

- 7.69 It is clear from other light rail projects that the risks associated with utilities diversions are among the most difficult for the private sector to manage and price and have been a barrier to progressing with light rail schemes as highlighted by the NAO. One of the underlying reasons for this is that utility companies are not usually willing to negotiate with the private sector while there remain several competing bidders. However, in situations where utility diversions are included in the scope of the Infracore (or equivalent), all bidders still need to price utility diversions for their specific solutions, making suitable allowance for significant uncertainty of scope and the uncertainties of the prices that statutory utilities companies may subsequently charge.
- 7.70 This means that much of the work related to utilities is delayed until after a contract is signed. The process of agreeing a programme, designing the solution and carrying out the utility diversion works adds significant cost, time and risk to the development programme. A consequence of this is that there is a risk that utilities work can delay the scheduled

construction works and that the works are priced at a premium at bid stage. Increased forecasts of the costs of utilities diversions have been one of the significant reasons for cost overruns on other tram procurements.

- 7.71 The scope of this contract was determined by **tie** based on advice from the SDS provider, the TSS provider and input on scope from the utility companies themselves. The SDS provider determined the area of the track bed and which utilities apparatus underneath it will need to be replaced elsewhere, diverted or protected. The utilities affected are waste water, potable water, gas, telecommunications and power.
- 7.72 Diversion and protection of high pressure gas, high voltage power and certain BT and other telecommunications utilities are outside the scope of the MUDFA contract and have been separately procured by **tie** direct with the relevant utilities.

Activities under MUDFA

- 7.73 **tie** and CEC have already used their powers under the Tram Acts and as the Roads Authority to negotiate with the utilities, with the objective of securing their participation in MUDFA. Under the agreements the utilities companies have consented to the MUDFA contractor carrying out diversionary works on their respective utility apparatus which will be affected by the construction of the tram. These agreements also deal with the payment of costs and require the utilities companies to work with the MUDFA contractor and the SDS provider.
- 7.74 These negotiations have resulted in a number of positive solutions for utility issues, highlighting the benefits of early engagement with the utilities companies which would have been impossible if utility diversions had been left to the Infraco. The overall strategy of trying to achieve the utility diversion works under one contractor, digging one trench and securing one set of TTROs is highly innovative and maximises the opportunity to achieve the least disruptive and most productive solution, with consequential cost efficiency.
- 7.75 **tie** is retaining and managing the significant risks associated with utilities diversions and is implementing the utilities diversions through a single framework agreement. Following a competitive tender, the MUDFA contract was awarded to Alfred McAlpine (AMIS) in October 2006.
- 7.76 The practicalities of construction sequencing mean that certain utilities diversion work will remain the responsibility of the Infraco (e.g. relocation or protection of utilities where road kerb lines are to be cut back, re-siting of, or working around, utilities as a consequence of the location of supports for OLE). This presents a number of interfaces which the Infraco preferred bidder will manage out in conjunction with the designer prior to contract award.
- 7.77 In the period between award of the MUDFA contract and commencement of physical work in summer 2007, the contractor has undertaken a series of pre-construction activities including working with the SDS provider to optimise the design of the utilities, minimise disruption to the City of Edinburgh and maximise construction productivity. Other significant works undertaken by the MUDFA contractor relate to excavation works for the Gogar depot. In line with the agreed strategy for advance works and following a commercial review of their proposals, AMIS are undertaking ground preparation and excavation works at the site. This has substantial advantages as it streamlines the flow of works leading up to the start of Infraco construction works and allows to have the site well established, with access arrangements in place and temporary office arrangements being facilitated. To date the contractor has performed well within budget and ahead of schedule.
- 7.78 The physical diversion of utilities commenced in July 2007 and is scheduled to end in winter 2008. This will result in the majority of utilities diversion works being completed prior to commencement of 'on street' works by Infraco. This means that potential conflicts between the utilities and infrastructure works will be minimised and any remaining time overlap can be managed so as to avoid programme conflicts on the ground. To date work has commenced on some of the most congested sections, such as Leith Walk, and it is expected to be complete on cost and programme.

Payment mechanism and incentivisation structure

- 7.79 The MUDFA contractor is paid the value of the final scope of work delivered, based on the prices contained in the approximate bills of quantities. Interim payments are made each period by **tie** valuing the work in this way. Further, a pain / gain-sharing scheme has been developed by **tie** to incentivise the contractor at sectional and contract level to optimise the efficiency of the works and reduce costs.
- 7.80 Additionally, to manage the risk to programme and scope inherent in utility diversions, **tie** have adopted an intrusive management and supervision regime to ensure control to deliver the works within budget and programme, thus mitigating the risks to the commencement of Infraco works by the due date.

Benefits and risk allocation

- 7.81 The key benefits of the MUDFA strategy are as follows:
- **Cost and disruption minimised** – Allows the public sector to use its greater negotiating power to develop single contract solutions for all utilities in an area - thereby reducing cost and disruption to the public;
 - **Increased confidence in overall programme** – Removes design of diversions, negotiations with utilities and carrying out of diversion works from being critical path activities for the Infraco – thereby removing substantial time related risk from the overall programme. Also allows utilities work to progress in advance of the Infraco appointment;
 - **Price uncertainty for Infraco significantly reduced** – Removes a large source of cost uncertainty and, therefore, risk premium from the Infraco contract; and
 - **Allows better forward planning for utilities** – This avoids the utilities having to make difficult decisions about whether to tackle problems now or wait and see whether there will be a diversion required on the problem area later.
- 7.82 Key risks remaining with the public sector are as follows:
- **Potential reduction in innovation** – If utilities were the Infraco's responsibility then they would have the opportunity to propose an alternative approach to utilities which could potentially be more cost effective. However, **tie** believe the scope to innovate with regard to utilities under the swept path of the tram line is very limited and the SDS provider has the specific remit to devise innovative, but robust, solutions to utilities diversion issues. This, coupled with the appointment of the MUDFA contractor (who are specialised in utility diversions), effectively mitigates this risk.
 - **Scope and time** – These risks will remain with **tie** under this approach. Therefore, **tie**'s ability to manage these risks will be critical. The MUDFA contractor and the SDS provider will be carrying risks under the terms of their respective contracts. However, the cost of the risk to **tie** under this approach is considerably lower than would be the case had Infraco managed the utility diversions directly. This is because Infraco would have found it difficult to quantify the risks in advance of bidding, and the knock-on effects of those unquantifiable risks to Infraco's programme would be considerable.
 - **Price risks** – MUDFA is essentially a re-measurement contract and there are a number of areas in which there is a risk of price increase including extension of time, unforeseen obstructions and work which was unquantifiable at the time of tendering, but is reasonably foreseeable. These risks are managed in a number of ways:
 - The use of prime cost sums in the bill of quantities to make a provision for foreseeable but unquantifiable work;
 - The use of provisional items in the bill of quantities. These work in a similar way to prime cost sums, but are used where there is more doubt about whether or not the work in question will be required; and
 - Contractor incentivisation scheme in the MUDFA contract under which the contractor shares benefits arising from efficient delivery. This helps to ensure that it is in the contractor's interest as well as **tie**'s that the contract outturn cost be minimised.