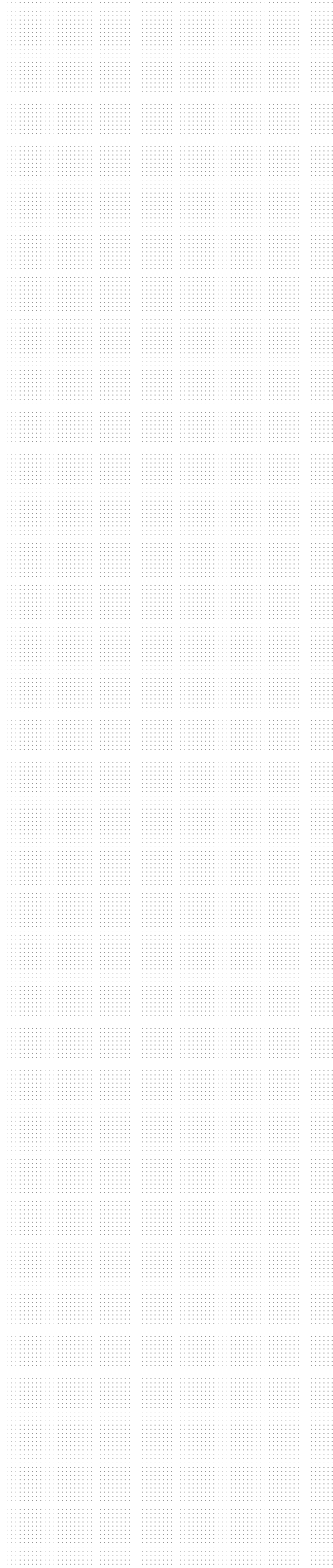


Edinburgh Tram Network

Draft Final Business Case

November 2006

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7. PROCUREMENT & IMPLEMENTATION

Introduction

This section of the Business Case sets out details of the Enhanced Conventional Procurement Strategy and how this aligns with and delivers the value for money benefits referred to in the Outline Business Case, and in particular details of the various contract packages, incentives and sanctions that deliver these benefits.

This section should be read in conjunction with the Section 10 Risk Management which refers also to the allocation of risk between public and private sectors.

Background to Procurement Strategy

The Procurement Strategy 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.

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.

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 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.

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 are not yet in procurement have the opportunity to learn from the issues which have arisen on both existing schemes and the stalled/cancelled procurements. The Procurement Strategy for the Edinburgh tram addresses this.

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 with 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

- Engaging with the bidder market in a consultation exercise.

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, that it will be able to offer the private sector 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 will be 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 will significantly reduce the cost of the overall project having significantly de-risked certain of the elements of the project that fall to the private sector to deliver.

Market consultation

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 in refining the Procurement Strategy. In particular:

- The proposed parallel procurement of Vehicles and Infraco: whilst maximising competitive tension, increased complication during procurement and potentially problematic uncertainty for Infracos in assessing and pricing vehicle integration risk (which is closely linked to the identity of vehicle manufacturers);
- Vehicles contract novation: this was a particular issue for two of the original potential Infraco bidders who had expressed interest. They who indicated problems in terms of achieving Board level approval for acceptance of the vehicle integration risk. (As a result only three Infraco Bidders have been prequalified with a possible impact on the overall strength of competition);
- Bidder protocol: need to ensure that the intended protocol would provide reassurance on issues of confidentiality and provide opportunity for Infracos' due diligence on contracts to be novated (vehicles – as above, SDS);

Objectives Of The Procurement Strategy

The objectives as summarised from the approved Outline Business Case are to:-

- 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

The Procurement Strategy that **tie** is following 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 differs 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.

The outcome of the Procurement Strategy will be 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 intention that the design, vehicle provision (including maintenance contract) will all be 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.

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. deliver value for money.

In summary the key attributes of the Strategy are:-

- The separation of Tram Network 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 single point responsibility for design, construction, commissioning and subsequent maintenance of the Tram Network, with the consequential transfer of performance risk.
- Maintenance of the Tram Network for up to 15 years post commencement of revenue service – 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 – to enable completion of the utilities diversions before ahead of commencement of infrastructure works in each area 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 – to provide the Project, and ultimately CEC, that the designs produced by CEC SDS will deliver the required performance.
- Incentivise completion to programme by adopting a milestone payment mechanism in SDS, Tramco and Infraco contracts, with a significant element of the price withheld pending completion of system reliability tests.
- Bonds and Warranties in the SDS, Tramco and Infraco contracts to provide recourse in the event of failure.

These arrangements provide:-

- Early involvement of the tram system Operator
- Risk transfer to the private sector
- At an affordable level
- A shorter overall programme
- A single point of responsibility for the delivery of the operating tram system and subsequent maintenance

Introduction of Operator at Early Stage

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 introducing early involvement of the operator were that it:

- Has ~~to~~ allowed **tie** to use the operator's knowledge and experience during the Parliamentary process, business case development, planning, design, and commissioning phases, to ensure that the system will be capable of being operated effectively
- ~~To~~ facilitates input from an experienced operator on issues such as
 - ~~fares and ticketing policy~~
 - review of designs from an operational perspective
 - input into the procurement process
- Has, in partnership with TEL, assisted in the proper planning of an integrated service network with the existing Lothian Bus operations.

Separation of Operations and System Delivery

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. It 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 think about procedures and risks that they do not necessarily understand.

Establishment of Joint Revenue Committee

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 City of Edinburgh Council decided to establish Transport Edinburgh Limited (TEL), to take on the responsibility for integrating the services of Lothian Buses and the tram.

As part of the process of coordination and integration of buses and tram, a Joint Revenue Committee (JRC) contract 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 TEL Business Case and ongoing revenue forecasting for TEL. The JRC contract was awarded to a joint team of Steer Davies Gleave and Sir Colin Buchanan & Partners in September 2005.

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 are appropriate and that the outputs from the model are robust. **tie** remains the contractual client for JRC.

The JRC modelling and Service Integration Plan have now reached conclusions as reported in detail in section [???]4 of the DFBC. The models have already proved to be a useful iterative tool to optimise integration of the bus and tram network service integration.

Procurement of Technical Support Services (TSS) provider

The resources provided under this contract facilitate validation of the SDS design to assure compliance with the performance objectives for the Tram Network, provide cost estimate

validation and a source of technical personnel to support the management and control of the Project.

Early Involvement of Designer

Another key strand of the Procurement strategy was the early involvement of the design contractor. The design contract or System Design Services (SDS) contract was awarded in September 2005. This contract allows **tie** to advance design work for the tram route, thereby reducing the planning and estimating risks in respect of scope to which bidders for the infrastructure contract are otherwise expose. It also facilitates the opportunity to procure advanced works on utility diversions and identify at an earlier stage the land requirements and traffic regulation requirements, both temporary and permanent, of the identified network scope.

Utilities Diversions Undertaken in advance of infrastructure

A significant benefit arising from having undertaken early design work is that **tie** is 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

tie's approach of having separate competitions for infrastructure and vehicle provision means that it will have control 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 infrastructure contractors. Therefore, 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 Acquisition Process and Third Party Interface Agreements

Using the powers under the Acts, **tie** will project manage the acquisition of all land and rights in land, temporary and permanent, required to construct, operate and maintain the tram system. **tie** and its advisers will identify all parties with an interest in each parcel of land, identify the compensation payable, consult with interested parties as part of an overall communications strategy and give 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.

Summary of key contracts

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)
- Vehicle supply and maintenance (Tramco)

tie is developing a nested set of contracts for Infraco, SDS and Tramco (including associated maintenance) based on those used successfully on other projects but tailored to the Edinburgh Tram Project's specific needs.

Development Partnering and Operating Franchise Agreement (DPOFA)

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.

Transdev representatives are part of **tie**'s core team for the project, and have played an active role in the development of the subsequent 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

The principal attributes of 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 terminate the contract where there is failure to agree a revised performance regime.
- Reimbursable up to an agreed cap level based on demonstrated actual costs plus an agreed profit level for agreed specified personnel up to the commencement of the operating phase.
- During the operating phase the contract will move to a target cost incentivisation mechanism whereby actual costs are reimbursed with any saving or excess of expenditure against the target shared between Transdev and **tie**. Payment will also be adjusted for performance against set criteria. Certain elements of the cost are fixed for the first three years after which they are adjust under the performance reset mechanisms.
- Performance bond and 10% retention of fees until successful phase completion to provide financial recourse in the event of default by the supplier.
- Facility to novate the agreement to TEL at commencement of system operation.

Operation and performance risk

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 issues involved in bringing in 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.

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 to measure performance against the required service specification, and an agreed pain/gain sharing mechanism designed to minimise costs and maximise performance. The final element of the payment mechanism, namely the Vision Achievement Incentive, reflects a longer term goal to which the Operator should aspire. This payment will only be made in circumstances where the tram project's financial performance exceeds defined expectations, and where the quality of service delivery has been consistently maintained after an extended period to match a pre-agreed challenging target level.

The scope of cost responsibilities and the definition of the gain/pain share mechanism in the context of an integrated bus and tram system are under review to be resolved before the commencement of the Infraco negotiations phase.

Pricing and Revenue Risk

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 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. The Procurement Strategy proposes the retention of all of the farebox revenue and a proportion of operating cost risk with the public sector. Sharing the farebox risk with the Operator would create a disincentive to the integration of tram and bus services.

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.

The scope of cost responsibilities and the definition of the gain/pain share mechanism in the context of an integrated bus and tram system are under review. 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

During the development and procurement of the tram project, Transdev bring 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 assists in all aspects of design, procurement and operational planning including:

- Assisting the development of integrated service and interchange plans between-for tram and bus
- Generation of inputs and validation of outputs from the JRC modelling process
- Reviewing and advising on the design outputs from the SDS contractor
- Assisting and advising on the development of the contractual arrangements for the proposed Tramco and Infraco procurement structure.
- 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
- Assisting in the preparation of the TEL Business Plan

Throughout the Infraco and Tramco procurement Transdev are providing continuity and assist tie by being a key component of a group of advisors acting as the 'Intelligent Customer', assisting with the shaping and preparation of information for the market to ensure that tie creates the optimum offer for the market, thereby maintaining a healthy competition and consequent value for money.

During the construction phase as well as the testing and commissioning stages of the tram system Transdev will be a member of tie's project management team...~~and They will mobilise to provide support the resources~~ to operate the tram system enabling Infraco to deliver deliver the commissioning and trial running stages of their works. Such support will included in this agreement would include driver training, depot security, control room manning, safety and establishment of operating procedures.

During the trial running stage Transdev will fully mobilise, training drivers and other personnel to prepare for full operation and complete arrangements on service integration.

Post commencement of Phase 1 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

Prior to commencement of operation Transdev receives a time based fee subject to an agreed cap and a retention. During tram operations they will receive a payment comprising:

- Actual operating costs and an agreed fixed profit
- A share of over/underperformance against target revenues ~~and~~ operating costs against independently set targets reviewed every 3 years
- A performance regime payment calculated to incentivise performance against a set of KPIs including tram punctuality, reliability and qualitative measures.

These arrangements reflect the fact that revenue and costs are determined by a mixture of factors only some of which are controllable or capable of influence by the operator. This approach therefore avoids the risk premium that has been included in the pricing of other tram projects due to start up uncertainty, revenue uncertainty and other economic factors.

Finally, Transdev may be entitled to a Vision Achievement Incentive (VAI) if it satisfies certain longer term requirements. The VAI is a financial incentive dependent on achieving consistently high standards of performance as measured against KPI's over a 3 year period from commencement of operations. The scope of cost responsibilities and the definition of the VAI mechanism in the context of an integrated bus and tram system are under review with the objective of ensuring alignment in the commercial interests of the parties.

Benefits and risk allocation

The 2004 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.
- Operational requirements and specification of the tram system.

Early involvement in such areas ensures that the operator who will ultimately take 'ownership' of the tram system is able to influence the system design and configuration to optimise the

system for operation. This mitigates a key interface risk that under PFI type procurement arrangements would be priced at a premium.

Risks remaining with the public sector are as follows:

- The majority of revenue risk and an element of operating cost risk will remain with the public sector albeit this is 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 will remain with the public sector to the extent that losses incurred are not covered by DPOFA liability provisions in the Transdev contract
- The risk of Transdev not fulfilling their obligations pre or post commissioning resulting in the need to replace them. Again 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.

System Design Services (SDS)

Procurement Approach

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 3-4.5 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
- Performance bonds and warranties to secure redress in the event of major default

Introduction

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. Accordingly the SDS contract was awarded to Parsons Brinkerhoff in September 2005 following a competitive tender.

Development of the design ahead of and during the Infraco tender is helping to create 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 reduces or substantially removes the risks associated with planning approvals, Traffic Regulation Orders, Network Rail and other key stakeholder interfaces. As a result the work of the SDS contractor substantially reduces this risk for which the Infraco bidders would otherwise include significant risk pricing.

The 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 which bidders would apply due to uncertainty if they had to carry out all of the design work post contract award.

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 will mean that the SDS Provider will consider issues of practicality, cost and 'constructability' more than if it were simply **tie's** consultant. Infraco bidders will prepare their bids on the basis of the emerging SDS designs and the successful bidder will be required to adopt the SDS Provider's

design as at the date of Infraco contract signature. Variations to this design could be introduced with the agreement of **tie**, but at the risk of the Infraco.

tie will take account of the Infraco bidders common preferences for the extent of design work to be undertaken by SDS prior to novation and adjust the contract scope accordingly. This will:-

- Avoid the cost of unnecessarily duplicated design effort
- Maintain Infraco's flexibility in obtaining best price from their supply chain by avoiding unduly constraining design of performance specified systems e.g. communications, tram position indication system

Activities under the SDS contract

It is expected that the overall design work to detail design stage will be around 100% complete when the Infraco contract is signed. However by identifying key risk areas and prioritising SDS activities, **tie** is looking to have completed the key elements of the detail design prior to selecting the successful Infraco bidder in summer 2007. This will enable Infraco bidders to firm up their bids based on the emerging detail design and thereby reduce the scope and design risk allowances that they would otherwise include.

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, production of Management Plans together with 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 Multi Utilities Diversion Framework Agreement (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 Joint Revenue Committee (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, trackwork specifications. This information was issued to Tramco and Infraco bidders as part of the ITN's issued in July and October 2006 respectively. It is intended that further design information will be 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.
- Commencement of the *Detailed Design* phase which will develop the Preliminary Designs to the next level of detail, fully defining the scope of the Project, enabling the more accurate pricing of the works by Infraco bidders and enabling the various approvals required before commencement of construction to be obtained.

Control and management of activities under SDS

tie is monitoring the quality of the solutions being developed by the SDS Provider with the assistance of the Technical Support Services (TSS) provider, ~~and Transdev and TEL~~, and drawing on the significant experience of other schemes held by the **tie** team members. In particular TSS will validate that SDS have delivered their contract obligations, including that the designs will deliver the specified tram system performance.

This process together with value engineering exercises will mitigate the risk of 'gold plating' the design of the system, and any tendency towards low risk, high cost options which do not provide the overall best value for money that **tie** is seeking. **tie** is tracking the estimated cost

of the system throughout the design period, so that cost overruns can be identified quickly and mitigating actions taken while there is still scope to change the solution.

Payment mechanism and incentivisation structure

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
 - the proportions of the contract sum allocated to management activities and to each sub milestone
- Payment is made monthly for
 - Completed management activities
 - 80% of the value of completed sub milestone.
 - The remaining 20% of completed sub milestones where the sub milestone output has been accepted by **tie**

All as assessed by **tie**

This arrangement strongly incentivises SDS to:-

- Complete designs to programme, otherwise their cashflow is adversely affected
- Submit designs to that are complete and to the required quality otherwise again their cashflow is adversely affected.

Benefits and risk allocation

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. A reasonable estimate of this risk transfer, particularly if multiplied ~~compounded~~ by Infraco risk margins, would be significant.

Following novation of SDS, 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 full risk transfer to the private sector.

In more detail the key benefits of the SDS strategy are as follows:

- Shorter period from letting Infraco contract to completion of the system – this should also reduce the overheads incurred by the Infraco.
- Substantially reduced planning consents and Traffic Regulation Order risk for the Infraco bidders to price. This should be reflected 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 design enables commencement and completion before commencement of Infraco works which again reduces overall programme duration.
- Reduction in risks associated with utilities diversion and Network Rail Immunisation work - early completion of utilities diversions will mean a reduced likelihood that utilities works will disrupt with the main infrastructure works progress. It will also reduce 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 network which may avoid disputes and delays at a later date.
- Emerging certainty of scope and design is assisted the development of traffic and transport modelling by the JRC and hence a more reliable Business Case.

Key risks remaining with the public sector are as follows:

- **Potential reduction in innovation:** Advance design could limit Infraco's ability to innovate to realise possible cost efficiencies or design improvements. **tie** will mitigate this risk by consulting with Infraco bidders on alternative design solutions or technical approaches which they believe might offer improved value for money. **tie** will also critically review the proposals of the SDS Provider, with the assistance of the TSS consultants, Transdev, TEL and the expertise within **tie**.
- **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.

Joint Revenue Committee (JRC)

Procurement Approach

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.
- ??-10 year contract duration
- Lump sum price with the supplier taking the inflation risk
- Payment according to milestone achievement.????

Introduction

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 Lothian Buses and the tram.

Following a competitive tender the JRC contract was awarded to a joint team of Steer Davies Gleave and Sir Colin Buchanan & Partners in September 2005. In the ensuing year the JRC have developed a comprehensive and interdependent hierarchical Modelling Suite ("the Modelling Suite"). This suite includes 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 to **tie** along with the SDS Provider on a jointly and severally liable basis, for the elements of the Modelling Suite related to the design process.

The public transport model has been used by JRC to develop the patronage and revenue projections for TEL, including both tram and bus projections, which are detailed in this Draft Final Business Case. The JRC has also completed the STAG2 appraisal of the economic benefits and costs projected for Phase 1 of the tram project.

Further Work by JRC

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 impact of the introduction and promotion of different fare and ticketing strategies, including integrated ticketing; and
- 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.

Multi Utilities Diversion Framework Agreement (MUDFA)

Procurement Approach

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 remeasurable on completion
- 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 for to provide cost recovery in the event of delay to completion due to default on the part of the contractor.

Introduction

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.

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.

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 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.

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 will be separately procured by **tie** direct with the relevant utilities.

Activities under MUDFA

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.

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 temporary traffic regulation orders is highly innovative and maximises the opportunity to achieve the least disruptive and most productive solution with consequential cost efficiency.

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 in October 2006.

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 overhead line equipment). This represents a number of interfaces which would be a major risk for the Infraco, and this would be reflected in risk margins applied by Infraco bidders as they would not be in a position to manage this risk until after their appointment.

In the period between award of the MUDFA contract and commencement of physical work in spring 2007 the contractor will undertake 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. No actual utility diversions will take place until an instruction to mobilise is given to the MUDFA contractor by **tie**. This instruction will follow the approval of this Draft Final Business Case, anticipated in the first quarter of 2007.

The majority of utilities work is scheduled to commence in 2007 and end in summer 2008. This will result in significant utilities diversion works being completed prior to commencement of 'on street' works by Infraco so potential conflicts between the utilities and infrastructure works will be minimised; any remaining time overlap can be managed so as to avoid programme conflicts on the ground.

Payment mechanism and incentivisation structure

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 will be made each month by **tie** valuing the work in this way.

Incentivisation is difficult where the scope of the work cannot be defined in advance. To mitigate the consequential risk to programme and price **tie** will adopt 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

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.
- **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.

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) should effectively eliminate 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 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 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 remeasurement 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.
 - A contractor incentivisation scheme ("value engineering incentive"). In the MUDFA contract under which the contractor will share benefits arising from efficient delivery. This will help to ensure that it is in the contractor's interest as well as **tie**'s that the contract outturn cost be minimised.

Vehicle supply and maintenance (Tramco)

Procurement Approach

The principal attributes of procurement approach for this contract are:-

- **Scope** – Detail design, manufacture and commissioning into service of tram vehicles (capital works) and subsequent maintenance.

- Approximately 4 ½ year contract duration for capital works and duration of up to 15 years for maintenance.
- Lump sum price for delivery of vehicles for Phase 1a, with options for the supply of further vehicles for Phase 1b and to meet the 8/16 trams per hour operating service pattern. Lump sum mobilisation payments for maintenance.
- Prices include for inflation over the duration of the contract
- Prices include for exchange rate risk from award of contract (**tie** takes the exchange rate risk up to contract award)
- Milestone payment mechanisms for capital works with performance related payment mechanism for maintenance.
- Liquidated damages for delay to completion
- Performance bonds and warranties to secure redress in the event of major default
- Contractor's liabilities capped at predetermined levels

Introduction

The key objective with regard to vehicle procurement is to select the vehicle and vehicle supplier which best suit Edinburgh's needs. This contrasts with other light rail procurements, where vehicle suppliers and infrastructure contractors have bid as consortia, and the public sector has been unable to separately select both the best vehicle and the best contractor resulting in a sub-optimal compromise.

Bids to supply vehicles are being evaluated based on the price, including maintenance as well as the vehicles' qualitative features. Therefore the cost of spare parts, special tools and specific maintenance programmes, both annual and periodic, will be considered, in addition to the upfront costs.

Two separate but related agreements will be procured with the successful bidder: the Vehicle Supply Contract and the Vehicle Maintenance Contract. These contracts will be executed simultaneously. The Vehicle Supply Contract will cover the design, manufacture and supply of vehicles, capital spares, special tools and associated equipment. It will also include, as necessary, option prices for additional rolling stock should the anticipated further phases of the system take place and to facilitate the proposed phased approach to the procurement.

The maintenance element of the contract will be subject to variant bids similar to the Infraco maintenance contract. The reference case will be to provide tram vehicle maintenance for an initial 15 year operating period. Shorter maintenance periods with the option to extend in 3 yearly increments up to a maximum of 15 years will also be considered. This approach both maintains flexibility in terms of future maintenance provisions and tests the value for money of the reference case. At this stage it is envisaged that the vehicle supplier and vehicle maintainer, for the initial 6 years at least, will be the same company. However this policy remains the subject of further discussion and development within **tie** and TEL.

It is intended that both the Vehicle Supply Contract and the Vehicle Maintenance Contract will each be novated to Infraco as at financial close. The Vehicle Supply Contract is expected to have a warranty/defects liability period post full service commencement matched to the Vehicle Maintenance Contract duration. The intention is that on expiry or termination of the Infraco Contract, the Infraco will be contractually obliged to assign the Vehicle Maintenance Contract (and also the Infrastructure Maintenance Contract, assuming that neither have expired) to TEL or another suitable party.

Tramco procurement progress to date

The current status and plan for the Tramco procurement is:-

- Four bidders have been prequalified
- Four bids were returned in the 9th October
- Bids are currently being evaluated
- A supplementary information release is planned for December

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- Shortlisting and best and final offers submitted in first quarter 2007
- Pre-services agreement to be negotiated with Tramco to allow for simultaneous execution of Tramco and Infraco Contracts, followed by novation.

Payment mechanism and incentivisation structure – Vehicle Supply

Payment of Tramco for vehicle supply is contingent on the completion of 'fine grained' programme milestones. The principal milestones are:-

- Completion and approval of production design work
- Delivery of vehicles
- Successful commissioning into service
- Successful system reliability tests

The payment mechanism operates as follows:-

- The contract defines:-
 - programme milestones for each element of the work
 - the proportions of the contract sum allocated to each programme milestone
- Payment is made monthly for the value of completed milestone up to 85% of the contract sum.
- The remaining 15% as follows:-
 - 5% on completion of the successful commissioning of the vehicles into the tram system
 - 5% at the successful completion of trial running
 - The remaining 5% on successful completion of System Reliability Tests
- All as assessed by **tie**

This arrangement strongly incentivises Tramco to:-

- Complete vehicle design, supply and commissioning to programme, otherwise their cashflow is adversely affected
- Deliver vehicles to the required standard that are capable of being commissioned and integrated into the tram network, otherwise again their cashflow is adversely affected.

Additionally as a further incentive liquidated damages provisions are included in the contract. These represent the costs to tie of any delay to delivery and which may be applied in the event of default by the tram supplier.

Payment mechanism and incentivisation structure – Vehicle Maintenance

The tram fleet reliability and availability are crucial to provision of the high quality tram service required to encourage modal shift from private car to public transport. The Tram Maintainer is being procured under a Tram Maintenance Contract that covers vehicle maintenance services and vehicle spare parts.

The Tram Maintenance Contract has 30% of the annual maintenance services fee as a performance related payment based upon a punctuality and availability monitoring regime. Deductions in payment are proportional to the number of late departing trams compared to those timetabled to operate and tram availability including a 'hot spare' offered for service each day. There are two elements which will be used to determine the amount of each Tramco Maintenance Services Payment and incentivise the Tramco as follows:

- A guaranteed minimum payment - 70% of the monthly payment
- Tram Service Punctuality and Availability Service Element - 30% of the Maximum Performance Payment, electronically monitored actual tram departure times checked against scheduled departure times and availability.
- Reliability Bond, Parent Company Guarantee and retentions to ensure satisfactory performance of obligations

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Benefits and risk allocation

The key benefits of the vehicle procurement and maintenance strategy are as follows:

- No restrictions on the choice of vehicle ~~tie~~ can choose
- Value for money of maintenance contract market tested through variant bids.
- Creates the opportunity to match the best tram vehicle supplier with the best infrastructure and system integration supplier.

Risks remaining with the public sector are as follows:

- Maintenance and lifecycle risks beyond the chosen maintenance contract period
- All other risks associated with the cost (initial and ongoing) and on time delivery of the vehicles will pass to the private sector via the novation of the vehicle supply and maintenance contracts to Infraco.
- Costs in excess of the liability caps specified in the contract.

The procurement phase for this contract is ongoing and the arrangements outlined above may be adjusted to achieve the optimum value contract arrangement with the successful Tramco bidder.

Infrastructure provider and maintenance (Infraco)

Procurement Approach

The principal attributes of procurement approach for this contract are:-

- Scope – Single point responsibility for detail design, construction and commissioning into service of Phase 1a of the Edinburgh Tram Network (capital works) and its subsequent maintenance. Options included for Phase 1b and subsequent Phases.
- Design liability and capability transferred by novation of SDS contract into Infraco
- Tram vehicle supply, commissioning and subsequent maintenance liability and capability transferred by novation of Tramco contract into Infraco
- Approximately 4 ½ year contract duration for delivery into service of Phases 1a and 1b. Maintenance duration of up to 15 years.
- Lump sum price for delivery into service of the Edinburgh Tram Network. Lump sum payment for maintenance mobilisation works, subject to performance adjustment
- Price adjusted for inflation by applying RPIx (Retail Price Inflation index excluding mortgage payments).
- Prices include for market price change over the duration of the contract
- Milestone payment mechanisms for capital works with performance related payment mechanism for maintenance.
- Liquidated damages for delay to completion
- Performance bonds and warranties to secure redress in the event of major default
- Contractor's liabilities capped at predetermined levels (yet to be negotiated)

Introduction

The Infraco will be responsible for integrating the outputs of SDS, Tramco under the novated contracts, and its own subcontracts. The Infraco will be required to carry out and/or manage a comprehensive turnkey contract including the design (effectively only and remaining detailed design and installation/fabrication design), construction, installation, commissioning, vehicle procurement, system integration, infrastructure maintenance, vehicle maintenance and supply of related equipment and materials in respect of the tram system, the tram vehicles and related infrastructure. Certain of the system performance obligations will persist for the duration of the maintenance contract period.

The evaluation of bids to construct the infrastructure will be evaluated based on the price for the delivery of the infrastructure together with maintenance and lifecycle costs, as well as

qualitative features. Unlike the vehicles contracts, **tie** proposes to procure the initial construction and the ongoing maintenance under a single overarching contract with the successful bidder.

In order to provide flexibility for future alternative contractual structures during operation and eliminating layers of margin and administration, an Infrastructure Maintenance Agreement has been provided for the Infraco to effect between themselves and their Maintenance Contractor. This will allow the possibility for both the Infrastructure Maintenance Agreement and the Tramco Maintenance Agreement to be novated to TEL or to the Operator should this be deemed appropriate.

The maintenance element of the Infraco contract will be subject to variant bids similar to the vehicle maintenance contract. The reference case will be to provide infrastructure maintenance for an initial 15 year operating period. Shorter maintenance periods with the option to extend in 3 yearly increments up to a maximum of 15 years will also be considered. This approach both maintains flexibility in terms of future maintenance provisions and tests the value for money of the reference case. However this policy remains the subject of further discussion and development within **tie** and TEL.

Infraco procurement progress to date

The current status of the Infraco procurement is:-

- Two bidders have been prequalified from a list of three applicants. One bidder no longer has the necessary capability to deliver and has withdrawn.
- The Infraco bid document was issued on 8th October 2006-11-14
- Final bids are due back in the Spring of 2007
- Concurrent award of Infraco and Tramco proposed for October 2007.

Whilst the loss of one bidder reduces competition this will be mitigated by adopting a robust negotiation strategy to press for the optimum price and by benchmarking prices returned against those received on other tram projects.

Payment mechanism and incentivisation structure – Capital Works

Payment of Infraco for capital works is contingent on the completion of 'fine grained' programme milestones. The principal milestones are:-

- Completion and approval of production design work
- Successful commissioning of the system into service
- Successful system reliability tests

The payment mechanism operates as follows:-

- The contract defines:-
 - programme milestones for each element of the work
 - the proportions of the contract sum allocated to each programme milestone
- Payment is made monthly for the value of completed milestone up to 85% of the contract sum.
- The remaining 15% as follows:-
 - 5% on completion of the successful commissioning of the Edinburgh Tram Network into operation
 - 5% at the successful completion of trial running
 - The remaining 5% on successful completion of System Reliability Tests
- All as assessed by **tie**

This arrangement strongly incentivises Infraco to:-

- Complete system construction, commissioning and delivery into service to programme, otherwise their cashflow is adversely affected
- Delivery of the system to the required standard and performance, otherwise again their cashflow is adversely affected.

Additionally as a further incentive liquidated damages provisions are included in the contract. These represent the costs to tie of any delay to delivery and which may be applied in the event of default by the Infraco, including any default by Tramco or SDS under the novated contracts..

Payment mechanism and incentivisation structure – Infrastructure Maintenance

The Infrastructure Maintenance Contract has 40% of the annual maintenance services fee as a performance related payment to incentivise the Infrastructure Maintainer to provide and present the Edinburgh Tram Network to a high standard. In addition a team of inspectors making qualitative assessments against established criteria will check items such as cleaning, tram system repairs and maintenance, cctv, passenger information displays, poster and information cases and signage and public address and help points.

In order to incentivise timely fault correction for items of the tram network that are not covered by the punctuality or the qualitative regimes a part of the annual maintenance fee is made based upon actual fault correction against target correction times.

The regime allows for positive and negative performance points to be awarded each period in order to both incentivise good performance and penalise bad or deteriorating performance. The regime is based upon an existing arrangement on a tram system

The four elements used to determine the amount of each Infrastructure Maintenance Services Payment and incentivise the Infraco are:

- Guaranteed minimum payment - 60% of the monthly payment
- Tram Service Punctuality Service Element - 30% of the Maximum Performance Payment, measured electronically comparing actual tram departure times checked against scheduled departure times.
- Edqual Service Element - 7.5% of the Maximum Performance Payment, Tramstops, the Depot, car parks and/or any other part of the Edinburgh Tram Network (including areas adjacent to it) assessed against documented criteria by inspectors.
- Fault Correction Service Element and Information Provision Service Element – together 2.5% of the Maximum Performance Payment. The Infrastructure Maintainer provides a record of faults reported, the action required and time taken to correct. If the time taken to correct the fault exceeded the correction time limit then a penalty is levied.

Poor performance 'ratchets' are included for repeated periods of poor performance and increased monitoring and remediation plans by the contractor..

Benefits and risk allocation

The key benefits of the Infraco procurement strategy are primarily in the novation of the SDS and TRAMCO contracts and the transfer of risks to the Infraco which are difficult to quantify. The benefits include:

- Single system integrator responsible for implementation of design, construction and of Edinburgh Tram Network and its subsequent maintenance
- Full design risk passed to Infraco post contract award, including critically the deliverability of the design
- Full vehicle risk passed to Infraco post contract award, including the deliverability of the design
- Reliability of Infraco supply chain and products to be supplied within it
- Infrastructure and vehicle maintenance risk passed to Infraco
- Value for money of maintenance contract market tested through variant bids.

- Enables the Infraco bidders to minimise risk pricing
- Enables delivery of the Edinburgh Tram Network within the optimum programme

Risks remaining with the public sector are as follows

- maintenance and lifecycle risks beyond the chosen maintenance contract period
- costs incurred above the Infraco contract liability caps in the event of default

The procurement phase for this contract is ongoing and the arrangements outlined above may be adjusted to achieve the optimum value contract arrangement with the successful Infraco bidder.

Novation strategy

Rationale for novation

A key element in achieving value for money through the Procurement Strategy is the disaggregation of the procurement of the separate contracts required to deliver the tram into service. This enables:-

- early commencement of design for both utilities diversions and infrastructure thus reducing overall programme
- improved certainty of scope definition minimising risk pricing by Infraco bidders
- selection of the optimum combination of vehicle and infrastructure providers

However, **tie** also recognises the benefit of single point responsibility delivered by a consortium structure which would normally be achieved through a single integrated procurement process. **tie** therefore aims to retain as many of these benefits as possible by reaggregating the structure within the Infraco contract.

It is intended to achieve this by novating the SDS and Tramco contracts to the Infraco. While this carries risks, **tie** believes that these can be managed through a robust procurement process. This concept has been tested during extensive market consultation and received positive feedback. The proposed structure will transfer all of the systems integration and interface risks to the Infraco, with the exception of such risks associated with MUDFA, JRC and DPOFA which remain with the public sector.

This approach is entirely analogous to that taken on the Docklands Light Railway projects.

Novation of SDS to Infraco

The terms of the SDS contract was provide for full novation of the contract to the successful Infraco bidder and consultation with Infraco bidders has been positive in this regard. However, it is still possible, in theory, that a situation may arise where the preferred Infraco and Parsons Brinkerhoff will have difficulties accepting the novation. For example, disputes may have arisen between the two parties on contracts elsewhere that were not known at the time of tender. Infraco bidders have been consulted on the novation of SDS and all accept as a principle the novation of the Parsons Brinkerhoff SDS contract to Infraco. Therefore this eventuality is unlikely to occur.

Nonetheless, if this was the case **tie** may need to take a view on whether to enforce the novation. Under the terms of the SDS contract **tie** has the right but not the obligation to require the SDS contract be novated to the Infraco. Therefore, **tie** will be acting completely within its rights if it were to decide not to novate the SDS contract when signing the contract with Infraco. If **tie** chose to continue to novate then it could be faced with either an Infraco tenderer which is unwilling to close the contract, or Parsons Brinkerhoff terminating its relationship with **tie** (and therefore avoid being forced to novate to the Infraco). Termination in such circumstances by Parsons Brinkerhoff is not permitted and therefore, such termination would amount to a breach of contract.

The risks of failure in this aspect of the novation strategy are mitigated by:-

- The absolute obligation in the SDS contract to accept novation of the contract to Infraco
- The ability under the SDS contract to omit work which will enable scope of service to be tailored to the preferred Infraco bidder's requirements prior to novation.
- The fact that the detailed design work will be complete before award of the contract.
- The preferred Infraco bidder will have undertaken due diligence on the key aspects of the design prior to contract award and therefore could be persuaded to take the design liability without novation of the designer.
- **tie** facilitating discussions between the preferred Infraco bidders and SDS to agree and finalise the practicalities of scope of service definition, programme and due diligence programme prior to novation.

If the Infraco refuses to sign the contract because it does not want to novate the Parsons Brinkerhoff contract, **tie** could reconsider whether to insist on novation, or take up negotiations with another bidder. An Infraco would be unlikely to want to do this because it has the right to amend the scope of the SDS contract post novation (**tie** having made proposals to amend such scope a part of the tender process), and could effectively take on only the warranty benefits arising from the contract. In addition, Parsons Brinkerhoff's knowledge of the planning process is likely to be attractive to any Infraco.

If the SDS contract was to be retained by **tie**, this would not remove the Infraco's requirement to implement the elements of design already developed by Parsons Brinckerhoff, because these would be included in the contract. The Infraco would also be required to complete the design, presumably using its own selected designer. **tie** would not be required to pay the Infraco to provide a duplicate design. However, **tie** would be required to pay the Infraco to carry out due diligence on the design prepared by Parsons Brinckerhoff, so as the Infraco could accept full design liability if this was desired by **tie**.

This highlights that the benefits of the novation of the SDS contract accrue in the main to the Infraco, and this should be reflected in the pricing of tenders.

Novation of Tramco (supply and maintenance contracts) to Infraco

During consultation with bidders it became clear that the Infraco bidders would have a strong preference for the identity of the vehicle manufacturer to be known prior to the tendering process for the Infraco contract being complete as it could have a material impact on the integrity of the delivery of their contract obligations. In particular the technical aspects, commercial terms and programmes of both the Infraco and Tramco preferred suppliers will need to be aligned and agreed prior to novation.

It is proposed that this alignment will be created by **tie** facilitating negotiations between the two preferred bidders.

Additionally, the issues that both Infraco or Tramco may have with each other which could prejudice a successful novation will be identified in early stage negotiations with all bidders. These will either be practical issues capable of resolution through exchange of information or tactical commercial positioning in which case **tie** will, at an early stage, apply pressure through negotiations to overcome this.

This will mitigate the risks of the novation process failing due to material objections on the part of either the Infraco or Tramco preferred bidders. Nonetheless a risk remains that this novation could fail or become expensive to implement. **Tie** will monitor this aspect closely through the early evaluation and negotiation phase of the tender evaluation process.

Procurement process to financial close

The key steps to concluding the procurement process to financial close and award of the Infraco contract are:-

- Initial evaluation and clarification of Tramco bids
- Provision of key detailed design information to Infraco bidders early in the new year
- Return of Infraco bids
- Initial negotiations with Tramco bidders
- Initial evaluation and clarification of Infraco bids
- Initial negotiations with Infraco bidders
- Selection of preferred Infraco and Tramco bids
- Release of detailed design information to preferred bidders
- Facilitated Infraco/Tramco negotiations (facilitated by **tie**)
- Facilitated Infraco/SDS negotiations (facilitated by **tie**)
- Due diligence by Infraco on key elements of the SDS detailed designs
- Final negotiations with Tramco and Infraco
- Conclusion of the basis for contract award with both Tramco and Infraco
- Preparation and review of contract award recommendations
- Award of Infraco and Tramco contracts and concurrent novation of SDS and Tramco to Infraco

Stakeholders will be briefed and consulted throughout the above process with a view to awarding contracts in October 2007.

System integration strategy

The principal reason for procuring a consortia Infraco contractor is to provide the vehicle with the demonstrable capability to deliver system integration.

Bidders will be required to provide a project specific integration plan as part of their bid. These plans will be reviewed and validated by **tie** and its technical advisers TSS to ensure the robustness and reliability.

tie's Employers Requirements embodied within the Tramco and Infraco contracts set out the requirements for proving the key stages of integration to conclusion of tram system delivery. These requirements include:-

- Test and inspection plan requirements
- Factory Acceptance Test Requirements
- System Acceptance Test Requirements
- Commissioning plans and records

These tests will need to be successfully completed and requirements complied with in order to commence the trial running phase. The trial running phase and the subsequent system reliability tests will prove the system in operation. The payment mechanisms for Infraco and Tramco incentivise the contractors to successfully deliver a fully integrated system.

Approvals and 3rd party works strategy

tie has negotiated approximately 50 third party agreements which have already been or are about to be concluded between CEC (as the Promoter) and either private individuals or commercial interests which are affected by the installation and ultimate operation of the Edinburgh Tram Network and who lodged formal objections. These agreements commit CEC to acquiring land under certain conditions or to ensuring that works carried out are performed in accordance with the requirements of the affected party. A further category of agreements deals with simple reinstatement or accommodation works.

Many of these agreements are with significant commercial property owners or enterprises whose business operations may be impacted or interrupted by the Tram. Others such as First ScotRail, Forth Ports, Network Rail and BAA also have significant operational interface between their commercial interests and the design, construction and operation of the tram as well as planned advance utilities diversions.

First ScotRail

tie secured agreement with First ScotRail not to object to the Tram Bills in exchange for agreed protection of its interests at the Haymarket Depot (primarily access during, and reinstatement after tram construction works). A formal station change procedure is also required in relation to the physical reconfiguration necessary at Haymarket Station to accommodate the integration of the new tram stop. This involves not only ScotRail but other Train Operating Companies: GNER and Virgin and possibly Freight Operating Companies. This process will be administered by Network Rail as station owner and will ultimately result in an assessed cost (covering claims from the TOCs and FOCs) to the tram project. SE is addressing First ScotRail's submission in relation to loss of car park revenue directly under the ScotRail franchise agreement.

Forth Ports

Forth Ports has entered into an agreement with CEC regarding the protection of its interests during construction and operation of the tram network. The most immediate issue is the need for an arrangement permitting **tie** rights to procure advance utilities diversions in connection with the alignment of the tram proximate to and crossing Forth Ports land. The identified (and possibly unidentified) affected underground apparatus belongs to Forth Ports with the utilities companies acting as service providers. **tie** is in the process of securing Forth Ports agreement to participate in the MUDFA arrangements.

Network Rail

Due to cost constraints, **tie** was not able to commence preliminary discussion with Network Rail (NR) regarding their objections to the tram Bills lodged in March 2004 until late autumn of that year. Following intensive activity during March and April 2005, **tie** agreed a set of Protective Provisions (PPs) with Network Rail (NR). In common with other light rail projects that have interfaces with NR, the PPs are a pre requisite to NR removing their technical objection on the basis that they are satisfied that their assets are safeguarded. Neither tram Bill contains any provisions regarding NR protection and this has been negotiated as a separate agreement.

tie have a dedicated NR Interface Manager and legal team and are also drawing on the experience of Transdev and a number of external specialists with experience of brokering similar agreements with NR.

tie in conjunction with DLA Piper (legal advisors) have established the scope of the PPs in conjunction with NR template agreements as follows:

1. Basic Services Agreement ("BSA") which permits the formal , commercial and technical engagement of NR on the project at **tie's** cost;
2. Basic Asset Protection Agreement ("BAPA") which sets the conditions under which **tie** may have access to NR operational railway property; and
3. Development Services Agreement ("DSA") which will engage NR in the process of reviewing and agreeing the tram scheme design in relation to interface with the railway network.

One of the early requirements on NR under these agreements is to allow the SDS Provider access to NR information, personnel, and surveys and to gain necessary method statement approvals. It will be an important task of SDS to begin the process of securing track possessions from NR.

Downstream of this there will be a requirement for **tie**, with the support of SDS and TSS, to broker further necessary agreements between NR and the Infraco for the infrastructure works. NR will, in all likelihood, require that **tie** are a party to any agreement entered into by Infraco with NR concerning accommodation works and **tie** will include specific delegated functions in the Infraco contract to perform any agreements reached between **tie** and NR.

The three most important issues which will require management in relation to NR are:

1. the time that it will take for any decision, negotiation and agreement with NR to be achieved if NR deviates even slightly from its codified approach;
2. the effect of any NR policy change; and
3. the generally risk averse nature of NR to all projects which affect their operations.

Scottish Executive assistance and oversight on this matter will be important, given the new relationship between the Executive (through the Transport Agency) and NR.

BAA

tie has been discussing the tram alignment and related issues with BAA since early 2003. A series of meetings has also been held to discuss jointly ETL2, EARL and the Ingliston Park & Ride to facilitate an integrated approach to planning and implementation of these schemes.

An agreement has been concluded after lengthy negotiation with Edinburgh Airport Limited (BAA's operating subsidiary) which deals with the removal of BAA's objection to the Parliamentary Bill for ETL2, subject to a range of commitments given by CEC. The most significant of these commitments is that CEC has agreed not to exercise its Compulsory Purchase Order powers in respect of BAA land. In return BAA has agreed that the land at the airport on which the tram alignment will be constructed is to be licensed to CEC during construction and upon completion leased to CEC for 175 years by BAA. It is extremely important that the Infraco adheres to the requirements of BAA regarding minimising disruption during construction and complying with the Construction Code of Practice since BAA retains the right to suspend or curtail the licence granted to CEC for any material breach of conditions.

tie has agreed with BAA to include BAA's participation in MUDFA.

Land assembly

The Acts confer rights on CEC to compulsorily acquire the land required for the tram. These rights include taking temporary possession of land for construction purposes and rights to enter land, following appropriate notice, to conduct various surveys as required. There are also powers with regard to wayleaves and fixings to buildings. Many agreements have been reached with land owners that include limiting these powers to a degree, whether in the extent of land taken or in the timing of taking it. In some cases, the temporary possession of land will be controlled by a licence.

A number of agreements have been put in place, or are in the process of being put in place, with key third parties such as Network Rail, BAA, Forth Ports and all the major utilities to facilitate the design process both from an access to land viewpoint in terms of the actual siting of the tram network and in terms of agreeing the responsibility for and management of utilities diversions works.

Although **tie** will project manage the land acquisition process, title in the land will be taken by CEC. Appropriate advice has been sought to determine the party best placed to take title with regard to tax efficiency and this is CEC. All land will be acquired immediately prior to the appointment of Infracore. **tie** recognises that with the number of land transactions involved, by leaving them all open until immediately prior to award of the Infracore contract, there is a risk that some may not be concluded in time. Having recognised this potential risk, **tie** is developing a risk management strategy that minimises the likelihood of delay based upon early communication and resolution of issues with the parties concerned.

A robust estimate of the compensation payable for land and property acquisition has been compiled. Valuations of each parcel of land have been conducted by the District Valuer. These valuations have been factored up to add in **tie** management costs and land owner legal costs. They have been further augmented to allow a prudent contingency; that contingency includes possible blight payments. Finally, all the costs have been inflated to the appropriate time. In addition to these compensation payments for land acquisition, a budgetary allowance has been made for Part 1 Claims. These are made in respect of diminution of property values due to operational effects such as noise, vibration and light pollution. Such claims can not be made until one year after the commencement of operations. The estimates have been inflated accordingly. In all, this represents a robust budgetary allowance for compensation.

tie will lead this process with advice and resources from D&W and from the District Valuer. Further advice as appropriate will be provided by DLA and PwC. The Books of Reference that were prepared for the Bills process will be updated and used for the notification processes. Its scope will be increased to include all interested parties that need to be consulted and notified such as for wayleaves, consents for building fixings and indeed compensation payments. **tie** has developed a Communications Strategy that includes an element for the land acquisition process. All notifications will be preceded by less formal correspondence explaining the purpose, process and timescales.

Environmental management plan

VfM Assessment

Introduction

The value for money case for adopting tie's Enhanced Conventional Procurement has previously been demonstrated.

This was based on tie's preliminary qualitative VfM assessment of the option to procure the Tram via a PFI route prepared during the spring of 2005 together with the subsequent further work consisting of:-

- a) A comprehensive qualitative and quantitative **ETN Procurement Route VfM assessment** comparing the 'enhanced' procurement route being followed by tie to a PFI route.
- b) Confirmation that the conclusions drawn in a) are still valid in light of the truncation of the initial scope of the project.
- c) A series of value for money risk transfer mechanisms to be implemented for the Vehicle and Infrastructure contracts to incentivise the private sector in a manner similar to PFI whilst minimising the funding costs and risk premia which might be borne by the public sector.

The key driver for the Enhanced Conventional Procurement approach is the need to construct a procurement arrangement that delivers an affordable scheme cost with significant risk transfer to the private sector.

Value For Money Risk Transfer Mechanisms

Consistent with the principals of the Enhanced Conventional Procurement approach value for money risk transfer mechanisms have been incorporated into the principal contracts, namely Tramco and Infraco. In summary these mechanisms are:-

1. The creation of a single point contract, Infraco, with responsibility for the design, construction, system integration, commissioning and subsequent maintenance of the Edinburgh Tram system, including tram vehicles. This transfers the following responsibilities and hence risks to the private sector:-
 - System integration – that all components, subsystems and systems are integrated together such that Edinburgh Tram Network delivers the specified performance and maintenance delivered such that level of specified performance is delivered during operation.
 - Design – that the design completed by SDS prior to contract award delivers the required Tram Network performance
 - Interface management – The effective management of the interfaces between suppliers and sub contractors to deliver the specified performance within the agreed programme.
2. The creation of the Infraco contract as a lump sum contract transfers the pricing risk to the private sector. Finalisation of the Infraco contract price on the basis of SDS detailed design significantly reduces their scope and performance risk pricing premium that would otherwise be necessary under conventional design and construct or PFI approaches.
3. Incentivisation to deliver the operating Tram Network into revenue service to programme and to the required performance and standard by:-
 - 'Fine grained' milestone schedule payment mechanisms in Infraco and the two contracts novated into it. Critically in the Infraco contract:-
 - Retention of the final 10% of value pending demonstrably successful completion of trial running and subsequent successful completion of

system reliability tests on the operating Tram Network during revenue service.

- Liquidated damages for over run on completion due to default by the contractor.
 - An ongoing maintenance obligation of up to 15 years such that any oversight or skimping on the quality of components and system integration is likely to result in a financial penalty during the operating phase.
4. Incentivisation to deliver maintenance services during tram operation via the performance payment mechanism in the Infraco and Tramco contracts. These will penalise the contractor financially should performance fall below the specified thresholds.
 5. The Infraco's obligations are underwritten by bonds to the value of 15% of the underlying contract during the construction phase, stepping down during the operating phase in line with confidence in the integrity of the Tram Network. In addition the Infraco's obligations are underwritten by Parent Company Guarantees with each Infraco consortia party.
 6. Early involvement of the operator under the DEPOFA contract ensures that the operator is content with the system proposed and delivered and provides operational expertise to the design and procurement phases and resources to support the commissioning and trial running phases.

The above mechanisms provide value for money through a sensible risk allocation with the private sector with the requisite incentivisations and sanctions. In addition tie's strategy of the separate procurement of the principal elements of the supply chain and their subsequent reaggregation further improves value for money by reducing overall programme duration, and hence cost, plus avoiding the risk premia that bidders would inevitably otherwise include under PFI style arrangements. This is achieved:-

1. By procuring the design early via the SDS contractor reducing scope uncertainty at the close of the Infraco and Tramco bids.
2. By procuring the tram vehicle separately enabling the optimum combination of vehicle and infrastructure suppliers and maintainers.
3. By procuring the utilities diversion work separately (predominantly under the MUDFA contract) avoiding the time delay whilst diversions are scoped and designed and prices agreed with utility companies.

In summary the Enhanced Conventional Procurement arrangement tie firmly believe that the structure outlined above will deliver the required risk transfer provisions to maintain a high level of incentivisation throughout the contract period. tie also believes that the cost of the incentives package will compares favourably to the cost of finance incurred in PPP projects.