Edinburgh Tram Project
Commercial In Confidence

INFRACO INITIAL ANALYSIS AND UPDATED PROJECT ESTIMATE RESPONSE TO TRANSPORT SCOTLAND QUERIES DATE:- 8 February 2007

This paper relates to Phase 1a unless otherwise stated

1. NORMALISATION PROCESS

The normalisation process is summarised in Appendix A. The file references of the Adjustment Sheets for Scoop and Roley as inspected by Transport Scotland is "Infraco Reconciliation Rev 6 20_01_07.xls".

Our response to the queries raised by Transport Scotland is as follows:-

1. UTC Works Costs – The cost per junction within the Project Estimate is £53k. This compares with £44k per junction at Nottingham and £58k per junction at Merseytram. Our estimated cost for this element is considered to be within the feasible range of costs given the current state of the roads designs.

2. Basis for the Balgreen Road Estimate for a new bridge in place of refurbishment – Currently there are two options for this bridge a) Extending the existing structure and b) reconstructing the bridge deck. A decision has yet to be made on which option is the right solution. Option a) can be contained within the current estimate and option b) would add a further £300k. If option b) is adopted this would be funded from the scope development allowance within the Infraco element of the Updated Estimate.

3. Network Rail Possession allowances. The Adjusted Estimate allows for 8 possessions in respect of 6 structures namely Edinburgh Park, Murrayfield Underpass, Caricknowe Bridge, Balgreen Road Bridge, Haymarket and the Russell Road area. Our estimate has now been adjusted to include £1m for TOC compensation. These are the cost that have been advised by Network Rail for these possessions.

4. Major Interchanges. Bidders have priced the scheme as described on the Preliminary Designs. Scoop the bidder that we have used as the basis for updating the Project Estimate has now confirmed that the Charettes are included within their bid price. Recognising this we have reduced our allowance for these works to £4,379k for the normalisation adjustment applied to both bidders within our Project Estimate Update. The arrangements for changes to Leith Walk are at the option stage at the moment. For each of these options the physical work is considered minor and can be accommodated within the scope development allowances within the original bids.

The significant Assumptions & Omissions dealt with in the Normalisation Process are:-

- Allowance for inflation (one bidder)
- Network Rail Possessions Support (both bidders)
- Road refinished in initial area (both bidders)
- Element of charette charges (both bidders)
- Allowance for minor utility diversion (both bidders)
- Additional substations (one bidder)
- UTC signalling work

- Tram on-board signalling & comms (one bidder)
- Balgreen Road Bridge to be near structure (both bidders)
- Work to Murrayfield pitches (both bidders)
- Accommodation works (one bidder)
- Electrical Power for commissioning (one bidder)
- Allowance for road finished between tracks (one bidder)
- Allowance for delayed start (one bidder)

The difference between bids pre and post normalisation is:-

- Pre-normalisation – 4%
- Post-normalisation – 2%

2. PROGRAMME COMPLIANCE

Bidders have confirmed completion dates for Phase 1a generally within timeframes

- Roley advised completion in July 2010 as per the Project timeframes
- Scoop advises completion in Nov 2010. The principal reason for this is their longer duration in undertaking trackwork between Newhaven and Picardy Place..
- Bidder sequences differs in that one bidder plans to do structure early in programme whilst the other proposes to do them later.
- Bidders generally longer on street than on programme but their programmes based on conventional construction

The durations in each bidders programmes are achievable. The durations of the critical path activities that are set out in the bidders programmes are generally comparable to those within the Project's mater programme. These in turn are based on productivity levels achieved on other projects. Further details of this comparison are set out in Appendix B.

There are allowances within the risk register in respect of delay to programme during the construction phase.

The factor's that create risk to achieving the Dec 2010 delivery into revenue service date are:-

- Slower than expected productivity on site on the part of the contractor
- Disruption to work on site due to unexpected ground conditions, antiquities, unplanned events in Edinburgh etc
- Employer changes to scope
- Buildability problems with designs

The mitigations to theses risks are:-

- Slower than expected productivity on site on the part of the contractor – *gain agreement of CEC to optimum street possession lengths and working hours. This is planned to be agreed prior to nominating preferred bidder. The Delivery Director Susan Clark is responsible for ensuring that this is delivered.*
- Disruption to work on site due to unexpected ground conditions, antiquities, unplanned events in Edinburgh etc – *undertake extensive surveys in advance of works, provide all known survey data and records to bidders before their programmes are finalised*
- Employer changes to scope – *apply rigorous change control as noted below*

- Buildability problems with designs – *ensure that full design due diligence is undertaken before contract award and that designs are corrected for any buildability issues*

Generally current programmes can be shortened by the use of alternative track slab methodology than assumed in the current designs. This will also mitigate against the programme risks set out above and will also enable Scoop's current completion date to be brought forward.

Programme and time risk will be managed in similar manner to the quantified risks and will be monitored each Period as part of the project reviews. The assessment of time risk is due to be concluded by the end of March. Details of the process for quantifying time risks can be explained by the Project Risk Manager Nina Cuckow.

The references of the programmes submitted by bidders are:-

Rolly programmes
Both in Folder 1 of 4 Section 5D
Time Chainage - no reference number - title Tender Time Chainage Programme
Primavera - no reference number - title Tender Programme

Scoop
Folder Volume 7 Appendices A
Section 1.2.11 Time Chainage Ref. ET/TL/OTLS/TENDER/01DRAFT
Section 1.2.11 Primavera - Ref. ET/TL/OP3E/TENDER/01

3. CONTRACTUAL ISSUES

Both bidders have amended the terms and conditions. Whilst the amendments are substantial we have checked the bidders reasons for this. Which are that they are protecting their risk position pending receipt of more detailed design information and completion of due diligence. Both have confirmed that they will enter into a design and build style contract, with risk transfer associated with novation of designer and tram vehicle provider, of the nature currently in draft form but ,subject to resolution of the principal issues that they have raised.

The common contractual issues raised are:-

- Capping of liabilities
- Exclusion of liability for obtaining consents and approvals – essentially the political risk (they will deliver consents obtained)
- The level of retained cash within the current milestone payment regime
- That Transport Scotland underwrite payment obligations within the contract
- The level of performance bond
- Both have reserved their position in respect of the maintenance terms – this we believe is partly due to the fact that they do not understand the proposed arrangements.
- Qualifications to Infraco and Tramco novations (See item 4 Novations)

The draft contract terms included in the tenders transfer a high level of uncapped risk to contractors which the market will not accept. The exclusions proposed are as would be expected from the market for projects of this nature and complexity.

The proposed mitigations:-

- Capping of liabilities – *A level of cap will be negotiated that is significant such that to reach the cap level would result in serious financial pain i.e. a*

complete loss of margin and overhead contribution. To incentivise the contractor to ensure that the novated tram supplier performs the contractors margin on the vehicle will be put at risk and his milestone payments delayed where the vehicle provider does not perform. Where the cap is breached or forecast to be breached the Employer would have the right to terminate the contract.

- Exclusion of liability for obtaining consents and approvals – *This risk can be mitigated by tie taking responsibility for facilitating the obtaining of consents. This is appropriate as tie has more knowledge and leverage to obtain consents than either SDS or the Infraco contractor. In addition if the derisking strategy is followed and consents obtained before contract award, or at least commencement of physical works then there is no risk.*
- The level of retained cash within the current milestone payment regime – *A mixture of retained cash and retention bonds will be negotiated to maintain the incentive on the contractor to deliver a performing system to programme.*
- That Transport Scotland underwrite payment obligations within the contract – *An acceptable compromise is to be negotiated that satisfies the bidders need for financial comfort and provides Transport Scotland with a reasonable degree of independence from the contract*
- The level of performance bond – *It is proposed that performance bonds are obtained at the industry norm of 10%.*

From the discussions that we have had with bidders it is clear that they are prepared to negotiate on terms and conditions that transfer responsibility and liability for design and provision of trams vehicles and the delivery of a performing tram system, but that their risk exposure is capped.

The signed off evaluation methodology includes a plan to settle mutually acceptable terms prior to the return of Consolidated Proposals in early April. This will mitigate against delays to settling agreed terms and conditions affecting the award date. Within this programme the Project will deal with the major issues as a priority. In addition we plan to update the Infraco and Tramco terms and conditions to ensure alignment. This will assist in paving the way for a novation of Tramco to Infraco.

4. NOVATIONS

SDS

Introduction

Both bidders have qualified the novation provisions stating that at this point they reserve their position in respect of design risks. This is a position they have adopted pending completion of detailed design and the ability of bidders to undertake due diligence as referred to above.

There is a nervousness on the part of both bidders in respect of the nature of the output, depth and delivery of buildable designs to programme by SDS. It is accepted this is not all of SDS's making, given that they are also reliant on the input of third party organisations such as CEC planners and roads personnel for critical decisions.

To maintain the strategy of novation we need the successful Infraco bidder to take detailed designs and responsibility for them. However, the clearest way of achieving this is to maintain the procurement strategy by novating the designer, SDS, to Infraco.

To achieve this, SDS's performance and their performance in the perception of the bidders needs to improve and bidders need to undertake due diligence on the designs before award, or for the critical risk and price elements before coming to a final deal on the Infraco contract in July 07. This means that critical designs must be completed well before contract award.

SDS Improvement Strategy

The strategy for improving SDS performance is:-

- Cultural
  - Create a strong break with the past – a 'clean sheet' fresh start.
  - Bring SDS fully into the team to improve communication and thereby efficiency. This will also enable them to be more closely aligned with the project's objectives in delivering contract award of Infraco enabling them to respond more quickly to our requirements.
  - PB have after consultation with tie appointed a new Project Director – Steve Reynolds. This creates an opportunity to start with a 'clean sheet' approach.
  - Co location of SDS, CEC, TEL, Transdev in a new larger office area within Citypoint offices so that reviews, validation and statutory approvals are virtually co incident with design production.
  - **tie** are also appointing a Project Engineering Director with an enlarged engineering led team.
- Process changes
  - Fully and finally define their detailed design deliverables, based on what we require them to do and what our Infraco bidders require them to do. For example they will not design power and comms systems beyond producing performance specifications. In this way we will focus their attention on the deliverables that matter in terms of achieving completed detailed designs that an Infraco requires a) to provide a price with minimum risk provision and b) to develop into full construction drawings that Infraco's will take over and be satisfied are buildable.
  - Improving the Project design review and approval process so that it is aligned with that of SDS and as far as possible integrated with it e.g. key project personnel being involved in SDS internal quality reviews of design outputs.
  - Develop an agreed programme of design deliverables that:-
    - aligns with the Infraco and Tramco procurement programme,
    - maximises the opportunity for aggressive negotiations with bidders,
    - for which deliverables are clearly defined and
    - which aligns with our emerging value engineering programme.

    This will provide outputs to meet Infraco's requirements for pricing and a timetable and clear process for the Infraco preferred bidder undertaking due diligence and which enables the Project to deliver value engineering savings with the minimum of abortive cost.
  - SDS are reviewing and aligning their project controls arrangements with those of the Project.
- Commercial changes
  - Re negotiate certain aspects of the current contract such that
    - Risk balance reflects what they can realistically influence and manage e.g. reducing the obligation to obtain consents and

approval from third parties such as CEC from the absolute obligation to one of providing all necessary designs, providing support and providing inputs at such time and standard so as to have a realistic prospect of obtaining consents to meet the programme
- A payment regime which does not unduly penalise them.
- We have an agreed basis of measuring deliverable output that is based on achieving deliverables rather than an earned value approach currently used.
- Principal sub contractor/partner agreements are aligned.
- Historical disputes are fully settled
- In moving forward the Project will demonstrate to them that they are being treated fairly and reasonably.

To deliver this strategy support will be required from CEC and TS in the form of:-
- Timely and appropriate decisions from CEC that take account of the Project programme and budgetary constraints, acknowledging CEC's statutory obligations.
- Support from Transport Scotland to reinforce to PB the importance of the effective delivery of services.

Confidence of Success

Results to date in implementing this strategy lead us to conclude that it will be effective in improving the performance of design delivery, including SDS improvement of performance. Evidence of this includes the significant response by SDS in:-
- Changing their senior management team,
- Stating that they need to deliver more to their client's expectations rather than a contractual approach.
- Supporting a more intrusive but collaborative approach from the Project Team e.g. aligning their internal design approval and project controls processes with those of the project.
- Effectively acting as tie's engineering department – including a greater level of integration in the programme team and changes to reporting processes.

TRAMCO

The main points from the Initial analysis are that:-
- Negotiations are required on the extent of liabilities
- One bidder advised a premium for integrating another party's tram. This is circa 0.5% and is therefore not significant
- We will use the Facilitated Negotiations phase of the evaluation of Infraco and Tramco to reduce uncertainties

Although there is nothing in either bidders proposals suggesting that the system integrator consortia member would not work with a third party tram provider the project is developing a fall back strategy should this eventuality arise.

5. COST SAVINGS

Approach to realising savings

Cost reductions will be achieved in two ways:-

- Negotiated savings in bidders and their supply chain's margins
- Savings achieved through developing and implementing value engineering. These savings are categorised as:-
  - Those proposed by Bidders
  - Those identified by the Project and
  - Those that are common to both Bidders and the Project

Negotiated Savings

Introduction

The target for negotiated savings on margins is £14m, or higher, equating to a 5% reduction in current Infraco adjusted prices.

Negotiation Strategy

The outline negotiating strategy to realise these savings is:-

1. Creating expectation with bidders that savings on margins are required in order to enable the project to proceed. This will be done on part of the briefings given to bidders prior to return of consolidated proposals in April and will be referenced in the documentation provided to bidders to return their consolidated proposals.

2. Obtain greater clarity on the levels of margins built into bids by:

   - Obtaining detailed build-ups of current bids to identify margins and the proportion of work for major subcontractors work and proportion of work to be undertaken by the system integration consortia partner.
   - Configuring the pricing document for return of Consolidated Proposals to prompt bidders to disclose margins.
   - Obtain copies of consortia agreements to identify workload splits, risk and profit shares.

3. Apply leverage to encourage bidders to give up savings on margins by:

   - Emphasising the close proximity of the bids received i.e. that there is strong competition between bidders.
   - Reminding bidders of the predominance of price on the competition i.e. that they will need to reduce their prices to win.
   - Reminding bidders that savings are required in order to meet the final budget; that the gap with the budget is within reach i.e. bidders must also compete with the budget for the Project to proceed.

4. The stages for margin reductions are:

   - Initial reduction in Consolidated Proposal returns.
   - Further reductions during the negotiation phase.
   - Find reductions prior to nomination of Preferred Bidder.

5. During the negotiation phase set targets for further reductions in price, including identifying targets within bidders major sub-contractor work.

6. For the final reductions, prior to nomination of preferred bidder, undertake a final round of formal bidding on margins to focus bidders minds on offering up savings.

7. Identify the system integrator margin which is likely to be significantly higher than those of other consortia members and focus negotiation on reducing this.

8. Transport Scotland and CEC support negotiations by:

    - Continually reminding bidders of the need to make savings and of the expectation that this will come in part from reductions in margins.
    - Remind bidders of the significant buying power that Transport Scotland have e.g. the EARL, GARL, Borders, High Speed Link, Roads programmes of work, implying that co-operation will win a favourable view with Transport Scotland.
    - The Project liaising with Transport Scotland on the big negotiation messages that are to be reinforced with bidders. Establish regular high level meetings between Transport Scotland senior personnel and regional directors of the consortia members – preferably each consortia member separately to maximise competition between and within consortia members.

9. The consortia members are from large international corporations. It is therefore important to:

    - Create expectations early so that this is communicated up the management hierarchy.
    - Get local personnel 'on our side' so that they strongly argue our position and case within their own organisations.

The above approach will maintain competitive pressure on bidders throughout, maximising the potential to realise the targeted savings on margins.

In addition the same process will be applied to Tramco and we expect to achieve savings of up to £2m on this contract. This additional saving is not taken into account within the target of £14m.

Confidence That Savings Can Be Achieved

These are the opening prices in what is essentially an ongoing negotiation, a fact which the bidders are conscious of. Bidders generally do not enter negotiations without a negotiation margin built into their figures, as explained in our previous report.

There is latitude to negotiate reductions and achieve value engineering savings.The fact that prices are above the Preliminary Design Stage Project Estimate, figures which were benchmarked against and found to be comparable to the Merseytram contracts reinforces this view.

Both bids are sufficiently robust to form the basis of a strong competition which provides the commercial leverage to negotiate margin reductions.

Bidders are not only competing with each other but competing with the Project Estimate to win the work. This will assist in leveraging reductions in margins.

Negotiating Team

Negotiations will be led by Mathew Crosse and Geoff Gilbert supported by a team selected from the current Infraco/Tramco evaluation team. Recognising the importance of delivering on the negotiation target the negotiation plan will be developed with the information emerging from the bid clarification and evaluation stages. A lessons learned day and negotiation training session will be facilitated by PUK enabling the negotiation team to "brush up" on their skills.

Recognising the importance of this phase of the Project both the Project Director and Commercial Director have contracts which commit them to the Project through the procurement phase.

Value Engineering (VE) Savings

Introduction

Value engineering has been undertaken at a number of stages through the project. Certain savings were identified prior to the finalisation of the Preliminary Design Stage Project Estimate and taken into account in it. Shortly thereafter recognising the need to achieve savings (as noted in the Tram Project Board minutes) the Project implemented a value engineering exercise in early December with a target of identifying £50m of savings.

The target for value engineering savings is a minimum of £14m, equating to a 5% reduction in current Infraco adjusted prices to achieve the £517.5m Updated Project Estimate (cautious view).

Process

Building on the work already in hand the process for the development and implementation of VE Savings is:-

1. Identify all potential savings from the Project's Value Engineering initiative and each bidders proposals and categorise into easy, medium and difficult in terms of realisation and implementation.
2. Assess the potential cost saving impact together with the impacts on design, consents, programme and stakeholder approvals.
3. Agree the list of potential savings within the Project and allocate responsibilities for developing and implementing.
4. For those savings ideas that are common to the Project and both bidders agree scope and programme for developing and implementing now e.g. raising the level of depot, trackform solution (agree Project proposals with bidders and gain their input and ideas)
5. Consult stakeholders and gain agreement on potential savings list.
6. Require bidders to submit more developed proposals for value engineering with their consolidated proposals. (These will not be part of the formal evaluation but bidders will be encouraged to submit on the expectation that this will improve their chances)
    - Validate bidders proposals for value engineering proposals within the Consolidated Proposals to Deliverability (construction, planning & approvals)
    - Impact on Programme and cost – is it deliverable?
    - Impact on Maintenance

- Impact on Operations

7. Before appointing preferred bidder, agree Value Engineering proposals to be taken forward and write into deal and agree the formula for firming up prices for adjustment of the contract price together with contractual mechanism for adjusting price for any remaining Value Engineering proposals that are not fully incorporated into the designs .
8. Once the Preferred Bidder is appointed they will be required to work with the designers (SDS and their own) during due diligence period to develop designs incorporating value engineering proposals.
9. Firm up savings where possible before award of contract.
10. As part of the planning and evaluation of proposals, the project will secure stakeholder and third party agreement and approval to proposals prior to contract close and approval. Change control will be applied when necessary.

Results to Date

From the work done to date proposals identified by the project and those proposed by the bidders, as endorsed by the Project, amount to £32m after factoring for the level of difficulty in implementation. Of this the "Easy" category savings amount to £22m which is considerably in excess of the £14m necessary to achieve the £517.5m Updated Project Estimate (cautious view) and this is before all proposals are priced.

Details of the value engineering savings proposed to be taken forward are listed in Appendix ???? These have been agreed within the Project as realistic areas for development.

The Team To Deliver Value Engineering Savings

Responsibilities for developing and implementing Value Engineering savings:-

- Mike Jeffereys supported by Andie Harper – Lead the identification and scoping of savings via the value engineering process already underway. Both the TEL and Transdev stakeholders are represented in the team delivering this process. CEC will be brought into the team once the proposals are more refined and have been fully assessed. They are expected to participate in late February.
- Susan Clark – Leads the implementation of savings proposals and manages the overall savings delivery programme.
- Resonsibility for delivering individual savings rests with the project manager for the area of the works within which the relevant saving is implemented. Implementation will be monitored as part of the project management process.

Confidence that savings can be achieved

Both bidders have stated that they see opportunities to value engineer the scheme to reduce costs and both have to a greater or lesser extent put ideas to us. In addition the Project has identified a number of savings proposals from the Value Engineering initiative currently underway.

<u>Avoidance of Post Contract Cost Creep</u>

A number of measures will be applied to maintain costs within the Project Estimate at the post contract stage. These will centre around:-

- Right Design - Fully implementing the de risking principle on which the Procurement Strategy is based so that designs will be completed by

SDS (in so far as is required by the Project) and due diligence undertaken by the Preferred Bidder such that they are fully accepted by Infraco as delivering the required performance and as being buildable. This will be completed before award of a contract.

- Right Process and Control - By rigorously applying the project change control procedure to control such that the Tram Project Board is able to decide on any such changes before commitment. This will be supported by:-
  - Early warning procedures being applied to identify any issues which may threaten cost and time enabling pre emptive action to avoid or mitigate where possible.
  - Period cost reporting to identify potential cost impacts of potential future changes.
  - Clear but limited delegation of authority to control the number of personnel who are able to instruct changes to work on site.
- Ensuring that consents are in place before work commences on site, thus limiting scope for:-
  - Design changes during construction to accommodate consents and
  - Awaiting delivery of consents after Infraco appointment resulting in high levels of standing costs.

Summary

This approach and results to date on value engineering savings reinforce the view that the savings that we are proposing, as a minimum at the cautious level, are deliverable. In addition the experience of The Project Director and the Project Commercial Director is that savings of this magnitude have been achieved previously. For example of one major project that the Project Commercial Director was involved in savings of 14% were achieved between nomination of Preferred Bidder and award of contract through value engineered savings and negotiated reductions in margin.

The approach to delivering negotiated and Value Engineered savings is summarised in Appendix D which summarises the stages through the process.

6. INDEXATION OF FUNDING

See separate EMail

7. RISK

The risks model has been re run so that the risks relating to Phase 1a are calculated separately from the current Phase 1a + Phase 1b model.

There are essentially three categories of risks:-

1. Quantified risks – with cost impacts assessed
2. “Black Risks” – risks that are largely political for which it is virtually impossible to calculate cost
3. Other risks – These are risks which either where contingency is included elsewhere or where cost allocation is inappropriate.

These are described in more detail in Appendix D.

A small number of recent new risks have been identified which are not in the Quantified Risks e.g. adverse impact of client behaviour (i.e. political preference in decisions on scope, for example a greater amount of accommodation works than can be funded from the 1m allocated in the estimate). These are difficult to quantify and any financial impact are for the moment assumed to be included within the headroom between current estimate and available funding.

The Other Risks category includes design development contingency within the Infraco estimate. This is in respect of potential additional costs of developing the designs from preliminary to detailed stages. The value of this allowance is 24m and equates to 7% of the Infraco price. This is an appropriate level for this stage of the design and tendering process.

Contractual negotiation risks are the other major element of Other Risks. It is generally inappropriate to allocate cost to these as it would be too speculative. The risk allocation between the parties will generally be as set out in the Draft Final Business Case. Our detailed negotiation plans will set out the target outcome, taking account of known market positions on the issues in question. Any residual risk, though not specifically identifiable, can be considered as being included in the headroom.

Whilst there are a number of mitigation plans in place for these risks a comprehensive review of mitigations is currently being undertaken with a view to confirming mitigation plans for the principal risks by the end of February and for all significant risks by the end of March.

Risks are considered on an event by event basis. Given that risks are considered on an event by event basis, risks are only counted once.

The allocations of Quantified Risk to the principal areas of the estimate are shown in Appendix D. Of these risks 45% relate to the Infraco contract, approximately 19m. It should be noted that the Quantified Risks now generally relate to the post financial close or construction phase.

8. AREAS OF DIVERGENCE WITH PRELIMINARY DESIGN STAGE PROJECT ESTIMATE AND BETWEEN BIDDERS

Preliminaries – Approach of two bidders is different. Scoop appear to have put negotiating margin / risk in preliminary £27m. Roley have spread risk through their rates

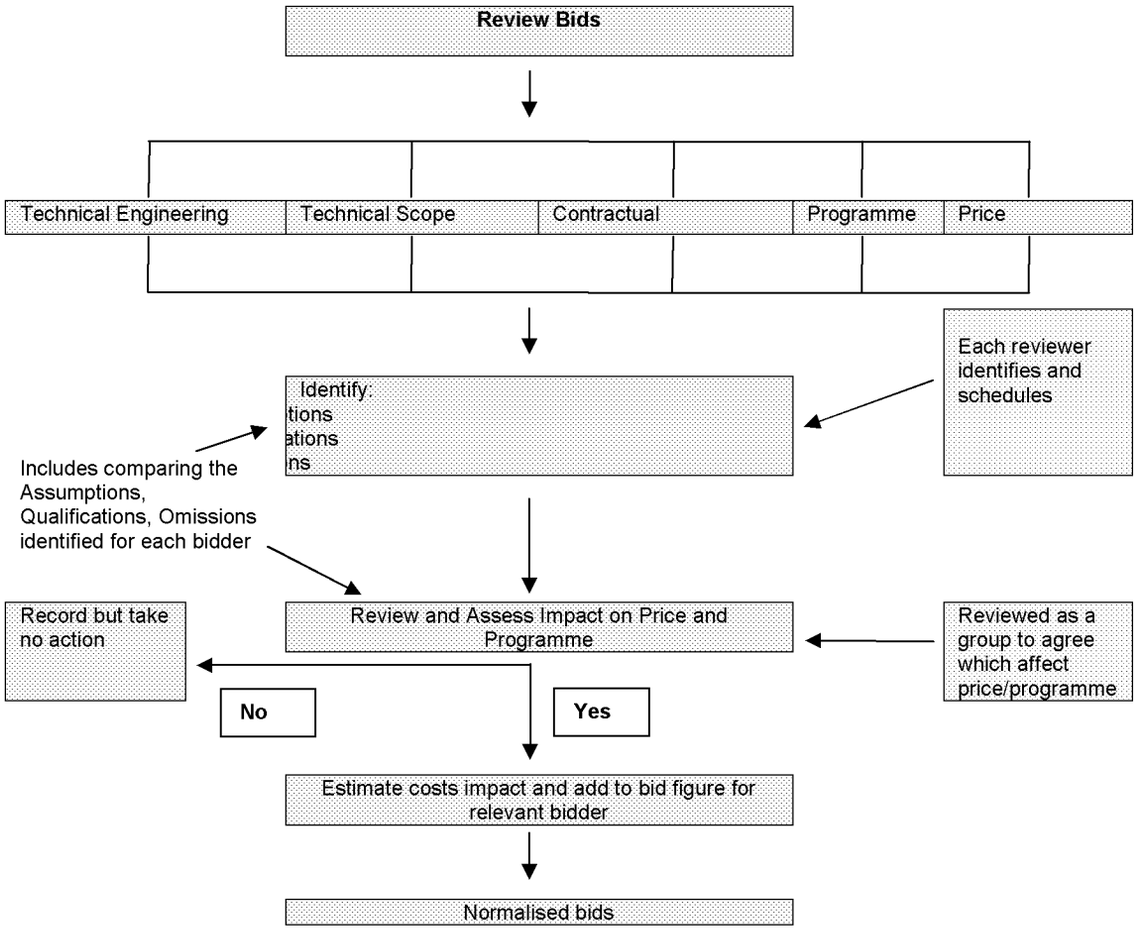
Structures – both bidders significantly higher than Preliminary Design Stage Project Estimate by £17m - £24m respectively.
Our PD estimates had access to designer's bidders. Our estimate should therefore be more reliable. This is considered to be a significant area of opportunity for reducing costs. Both bidders have confirmed this and it is included within the Schedule of proposed value engineering savings.

9. MONTHLY COST OF DELAYING THE PROJECT.

The cost of delaying award of contracts is:-

- Three months - £3.9m
- Six months - £8.2m

SUMMARY OF NORMALISATION PROCESS



Note:

Lowest bidder normalised bid cost used to update project estimate.

APPENDIX B

SUMMARY OF PROGRAMME ANALYSIS

Sub-Section	**tie** Programme Critical or near Critical Activity	Duration Weeks	**Scoop** Programme Critical or near Critical Activity	Duration Weeks	Roly Programme Critical or near Critical Activity	Duration Weeks
01	Depot - Site Clearance	7	Depot - Site Clearance	26	Depot - Site Clearance	8
01	Depot - Mass Earthworks	20	Depot - Mass Earthworks		Depot - Mass Earthworks	
01	Depot - Retaining Wall	26	Depot - Retaining Wall	25	Depot - Retaining Wall	See Note 1
01	Depot - Access Bridge	30	Depot - Access Bridge	See Note 1	Depot - Access Bridge	23
01	Depot Building	75	Depot Building	71	Depot Building	52
01	Depot - Yard & Sidings	59	Depot - Yard & Sidings	193	Depot - Yard & Sidings	See Note 1
11	Baird Drive Retained Embankment	37	Baird Drive Retained Embankment	See Note 1	Baird Drive Retained Embankment	49
11	Murrayfield Retained Embankment (South End of Stadium) - S21D	14	Murrayfield Retained Embankment (South End of Stadium) - S21D	See Note 1	Murrayfield Retained Embankment (South End of Stadium) - S21D	19
11	Balgreen Rd Retaining wall	18	Balgreen Rd Retaining wall	See Note 1	Balgreen Rd Retaining wall	3
11	Roseburn Street/Murrayfield Viaduct	40	Roseburn Street/Murrayfield Viaduct	35	Roseburn Street/Murrayfield Viaduct	45
11	Murrayfield Underpass	25	Murrayfield Underpass	See Note 1	Murrayfield Underpass	22
11	Murrayfield Retained Wall - S21B	15	Murrayfield Retained Wall - S21B	See Note 1	Murrayfield Retained Wall - S21B	30
11	Track (approx.800m) - 5a.3	7	Track (approx.800m) - 5a.3	6	Track (approx.800m) - 5a.3	23
11	Track (approx.800m) - 5a.2	2	Track (approx.800m) - 5a.2		Track (approx.800m) - 5a.2	
15	Road & Trackworks	38	Road & Trackworks	52	Road & Trackworks	36
16 & 34	Road & Trackworks	68	Road & Trackworks	104	Road & Trackworks	100
19	Trackworks	5	Trackworks	25	Trackworks	33
21	Road & Trackworks	36	Road & Trackworks	1	Road & Trackworks	39
23	Road & Trackworks	48	Road & Trackworks	79	Road & Trackworks	51
24	Road & Trackworks	37	Road & Trackworks	1	Road & Trackworks	64

Notes - 1. The construction durations for these items are included in the overall build durations covering trackworks/roadworks in the section.

1. The activities listed are the main ones recognised to be part of or near the critical path of the current **tie** Master programme.

2. The Depot section on the **tie** programme was generated by utilising the SDS Construction time chainage format which was based on the proposed Liverpool Depot site of a similar size. This was then further reviewed by **tie** Project Managers and adjusted.

3. Track construction rates on which the **tie** programme is based have been derived from Projects in Nottingham (Line 1), Brussels (2 separate visits) and information supplied by internal reports and 3rd parties. This was then further informed by a SDS review of the sequencing and estimated durations required and presented in time chainage format.

4. Structures durations have been indicated on the SDS Construction time chainage programme as indicative construction durations.This was validated internally by **tie** and has been cross-referenced to the bidders suggested durations.

SUMMARY OF PROGRAMME ANALYSIS

Process for Delivery of Savings

		Preferred bidder		Final Deal	Award
	Clarification Phase	**Evaluation Phase & Negotiation**	**Facilitated Negotiation**	**Final Negotiation**	**Recommendation and Consultation**
			Design Due Diligence		
Negotiated Savings	Setting expectations: ○ Communicate to bidders that need to make savings (competition with budget) ○ Emphasize that bids are close and that there is everything to play for ○ We expect competitive margins in consolidated proposals	Negotiate reductions on margins (before nomination of PB will settle margin reductions). ○ Take bidders to a second round of competition before nominating preferred bidder			
Value Engineering Savings	○ Communicate to bidders that required more developed VE proposals and estimated reduction as part of consolidated proposals ○ Schedule all savings opportunities ○ Categorise Opportunities ○ Review and identify savings to assess impact in areas other than cost and assess deliverability against constraints ○ Work with bidders to settle savings proposals that are common to all e.g. depot related savings	Validate Bidders' VE proposals for: ○ Deliverability ○ Cost reduction ○ Programme input ○ Maintenance input ○ Impact on operations ○ Impact on performance ○ Impact on Business Case		Preferred bidder works with designers to implement all VE savings in detailed designs	

APPENDIX D

RISKS AND CONTINGENCIES

See Separate Excel File

RISKS AND CONTINGENCIES

Edinburgh Tram Project
Project 1A Only
Risk Allocation

	Total Risk Allocation £	Risk Allocation (%age Base Estimate Item)
Utilities Diversions (MUDFA)	8,401,968	17.1%
Tram Vehicles (TramCo)	1,832,782	3.3%
Infrastructure (InfraCo)	19,631,901	8.5%
Other 3rd Party Works	13,131	0.7%
Land & Property	7,739,356	35.8%
Design (SDS)	799,857	3.6%
Project Management	4,881,005	6.5%
TOTAL	43,300,000	
Inflation on Quantified Risk	5,337,000	
TOTAL QUANTIFIED RISK	48,637,000	
Scope contingency in Infraco estimate	24,000,000	
TOTAL RISK AND CONTINGENCIES	**73,637,000**	