tie Limited

Paper to	**:**	**tie Board / Tram Project Board**
Subject	**:**	**INFRACO OPTIONS ANALYSIS**
Date	**:**	**11th March 2009**

On 11th February and 19th February, the **tie** Board / Tram Project Board was advised of the difficulties being faced as a result of very poor progress by Infraco and an escalating series of disagreements leading to contractual dispute. The Board requested an analysis of both:

- Strategic commercial options available with a desired outcome of minimising further project delays, resolving commercial disputes within the bounds of the contract, turning around delivery performance and restoring confidence through an agreed programme and updated outturn cost estimate (See detailed paper at Appendix 1)

- Scope and funding options to provide 'safety valves' in respect of affordability if necessary and found to be acceptable by CEC and Ministers (See detailed paper on scope options at Appendix 2)

The following is an executive summary of these deliberations:

Preferred commercial strategy

In an environment where the consortium have refused to carry out work on the project, particularly on Princes Street, until the principal commercial disagreements have been resolved then the best outcome in any case is served by a rigorous and targeted pursuit of matters through the contractual Dispute Resolution Procedure (DRP) which demonstrates our determination to preserve the terms of the contract we have agreed, exposes the failures of Bilfinger to perform to other members of the consortium and helps minimise further delays as we can instruct the commencement of work whilst matters are being pursued through DRP. We have instituted DRP on the matters in dispute in relation to Princes Street.

The DRP process is governed by strict timetables and although it can be targeted a resolution of all significant matters in dispute would take several months during which time it would not be possible to provide stakeholders with the degree of certainty they require on outturn costs and programme. The DRP process and the way in which it will be targeted and progress monitored is the subject of a separate paper to the joint tie Board / Tram Project Board.

A prolonged DRP campaign is however unlikely to be in the interests of either party and our strategy is to use it as means to an end to force a more constructive resolution of issues in accordance with contract and delivery of cost and programme certainty. This would require a significant change in the contractual positions taken by Bilfinger as well as the ongoing quality of their engagement and delivery. It is likely this will require Bilfinger's consortium partners, in particular Siemens who are responsible for performance under the contract on a joint and several basis, to take steps to deliver these changes. We can see an outcome where this may require the replacement of Bilfinger as the civils partner in the consortium either by a new partner or by the civils capability of Siemens and/or their subcontractors.

At the time of writing we are already seeing significant progress in this regard as Siemens have proposed the establishment of a constructive 'Framework Management' group to Bilfinger which would work to resolve matters without resort to formal dispute and construction would progress on the ground without delay. Although Bilfinger have not yet formally responded to their partner's proposals it represents clear daylight between the positions of Bilfinger and Siemens. In any case we must keep up pressure of our targeted DRP referrals.

Other commercial options examined and considered sub-optimal were:

- Termination of the Infraco contract – even if we had confident grounds to terminate this would mean losing the hard fought contract we have, the Siemens and CAF capability we are broadly satisfied with and the supply chain Bilfinger have now assembled. This option also presents very significant uncertainties with regard to an acceptable re-procurement timescale and pricing as well as the greatest risk of loss of stakeholder support for the project.

- **tie** step into the civils role – discounted due the additional risks and interfaces we would need to manage – not in accordance with the Business Case.

- Negotiate a settlement of contractual disputes and programme – in essence what Bilfinger want and likely to be a very expensive option indeed. Under the current Bilfinger stance this would involve working on a 'cost plus' basis outwith the contract to be able to make acceptable progress with construction.

Programme and outturn costs consequences of commercial strategy

On programme –

We have reported an unmitigated potential slippage of revenue service into Q2 2012 and that tie considers recovery can be achieved to deliver a date in Summer 2011 – with an outcome within this range. The most important determining factors are that there is no further significant slippage in programme (eg work in Princes St and in other places must progress immediately) and the consortium must engage proactively in implementing recovery solutions.

This is only deliverable if we get reengagement of the consortium (eg through the Siemens proposal for a Framework Management group) in the near future. Any re-procurement (either or the entire consortium or of a new civils partner) or a prolonged DRP engagement would give rise to longer delays.

(To date we have not formally considered the programme (or cost) impacts of a staged opening of Phase 1a eg commencing services from the airport to Gogar or to Haymarket in advance of a full opening.)

On outturn cost –

In January we presented a revised outturn range of between £528m and £546m, including the Phase 1b cancellation costs of £6m and on the principal assumption of significantly improved engagement of the consortium on all fronts. In the event that engagement has not improved and on several issues has worsened. If we achieve reengagement on delivery and programme in the very near future the outturn costs can still be delivered towards the top end of this range ie within the £545m available funding.

Any significant further delays to construction or any required re-procurement of the consortium or civils partner are likely to mean additional time related costs and price premia taking the outturn costs above the £545m mark.

In the event we didn't prevail in our contractual position with regard to Infraco responsibility for design evolution or the consortium's historical failure to commence work where dynamic management of the programme would have allowed then additional costs above the £545m mark would also result.

In any event the negotiation of a settlement of contractual disputes and programme as Bilfinger are seeking, including the prospect of working on a cost plus basis outwith the core contract provisions, is likely to deliver a very unaffordable outcome.

We are not as of today in a position to determine with adequate certainty the impact of the above uncertainties on outturn costs. The consideration of scope and funding options below must be considered as scenario planning for circumstances where a 'safety valve' of say £30m is required.

Scope options

We have considered further value engineering of design ie delivering the same tram service for less cost and conclude that not only have all significant opportunities been reflected in the design already, the additional cost of delays and approvals risk associated with any material redesign activity would very likely outweigh the cost benefits.

We have considered a number of options for truncation of the Phase 1a scope, in essence delivering a shorter tram line as part of the first phase of construction than Phase 1a as defined. None of these options has been subject to the extent of detailed economic and financial appraisal as presented in the Final Business Case, but nevertheless we are confident that the analysis as sound. The following summarises our findings.

To the West the infrastructure must in all cases extend at least to the depot at Gogar. Truncation of the infrastructure from Gogar to the Airport is highly unlikely to be acceptable to Transport Scotland in light of the strategy to provide rail based connectivity to the Airport via the proposed heavy rail/tram interchange at Gogar.

At the other extremity of Phase 1a delaying the construction of the section from Ocean Terminal to Newhaven until the development of Western Harbour resumes in earnest would help match demand and developers contributions with construction costs. Forecast demand on this section is relatively small and could be met in the interim by enhanced feeder bus services. The delayed capital costs might be £15m but there would be an element of additional costs to enhance the infrastructure at Ocean Terminal to facilitate termination and turn-back in that location.

Truncation at Foot of the Walk (ie delaying construction in Leith Docks) would fulfil the imperative to serve the very significant demand on Leith Walk, removal of bus services on Leith Walk and interchange with bus services at Foot of the Walk but would be a delay in the delivery of the redevelopment enabling benefits of the tram in Leith Docks. Again we believe it would be practicable to meet demand from and to Leith Docks by implementing feeder bus services to the Foot of the Walk terminus until such time as demand dictated the construction of the tram infrastructure. However we would anticipate significant local and central government political opposition to this truncation, a possible move to reduce in Grant support below the £500m commitment and opposition from Forth Ports as a major stakeholder and source of developer contributions underpinning the Councils contribution to the project – albeit the delay of construction would better match the timing of receipts from Forth Ports with the incidence of construction costs.

Truncation at Foot of the Walk would delay capital costs (including reduced vehicle requirements) of around £38m although again the cost of infrastructure enhancements at the new terminus would need to be assessed and space restrictions on-street at Foot of the Walk could dictate a terminus a Bernard St as an alternative.

We have also looked at the option of terminating the first phase of construction at York Place/Picardy place – closely matching Line 2 as was approved by Parliament. However we believe that in addition to the loss/delay of economic benefits from Leith Docks this would mean delaying the section of Phase 1a on Leith Walk which presents the greatest opportunity to carry high volumes of passengers and reduce bus volumes. The delayed capital costs (including reduced vehicle requirements) would be in the region of £70m.

In each case the capital cost savings indicated should be considered order of magnitude and would be subject to loss of profit claims from the Infraco including CAF. We have not as yet considered any impact these truncation options might have on programme.

Funding options

There are various options which may be explored to deliver additional funding for the project which we suggest are debated at the Board, including Council borrowings to be repaid out of the future profits of the integrated TEL tram and bus business and Park & Ride revenues.

Appendices

Appendix 1 – Commercial Options Analysis
Appendix 2 – Scope Options Analysis

Prepared by: Stewart McGarrity
Recommended by: David Mackay
Date: 10th March 2009

This paper considers the principal commercial and procurement options which are available to progress the construction and completion of the first phase of the ETN in the context of the poor delivery by Infraco to now, the developing contractual disputes with the Infraco and the significant uncertainties we face with regard to the willingness and preparedness of the consortium (as currently constituted and managed) to progress delivery in accordance with the contract.

The foregoing uncertainties manifest themselves in our inability at present to provide our stakeholders with the requisite confidence regarding either an updated programme to complete Phase 1a of the project or the outturn costs thereof in relation to the current approved funding of £545m. In this context the path we follow must not only resolve our current disputes with reasonable and acceptable programme and cost certainty but also give us conviction that we can manage the project going forward without further significant disputes arising.

Option A - Terminate BSC and procure a replacement Infraco

Any decision to terminate the contract would require confident legal reasons to do so. The commercial behaviours of the Infraco to date do not accord with those of a willing contractor fulfilling their obligations but our lawyers are still completing the analysis of whether they constitute the persistent breaches which would allow us to terminate the contract and be confident of recovering our costs (and possibly damages) without being materially exposed to successful counterclaims by the Infraco.

A continued refusal by Infraco to carry out works when instructed to do so in respect of matters referred under the Dispute Resolution Procedure (DRP) would constitute a very signifcant breach of contract.

We have paid the BSC consortium £77m to date (BB £28.6m, S £26.5m and CAF £21.9m) compared to our estimate of the true value of work done of £40m - a difference of £37m. As security we have the performance and retention bonds in the amount of £25m, the CAF advance payment bond and the 20% liability cap under the contract which is joint and several to Bilfinger and Siemens and backed by Parent Company Guarantees from both. A very large proportion of the value of work done to date represents soft costs and mobilisation rather than physical infrastructure delivered. We have no contractual right to cease payment of sums certifiable while our dispute continues.

There are a number of compelling reasons to consider termination as the worst of outcomes:

- **Doubts about the deliverability of a new procurement on the same terms** - The market appetite for the Infraco work on our contractual terms was poor first time round (we only had two serious bids to consider) and it may not have changed. Large construction companies appear to have become more risk averse – indeed BB have very publicly set out their stall in this regard. Only proper market consultation would help the clarification of this issue and any change to the underlying risk allocation principles in our current contract (including design novation) would require stakeholder endorsement of any additional risks being borne by the public sector. There is no legal way to reengage with the under bidder or any obvious price advantage in doing so.

However, a new procurement would be against the background of completed and consented design and completed utility diversions as was the intention of the original procurement strategy.

- **The BSC price may be very good value for money in today's prices** – BB have asserted they stand to lose £50-80m on the project based upon a current view of programme and direct costs. We don't have any visibility of these numbers or how much is to our account in terms of additional direct costs and programme extension/disruption. BB's subcontracts are not yet signed and we need to consider the possibility they have significantly underpriced elements of the civils work. It follows that any reprocurement would result in that mispricing being borne 100% by us.

  However, there is good evidence that civil construction costs have actually fallen in the past six months or so.

- **BSC are now mobilised and we have no big problems with Siemens/CAF performance** – Intransigence from BB senior UK and German management with regard to their commercial position must be viewed against an apparent readiness now to progress on the ground and the subcontractors ready (albeit not yet under contract) to do the job. On the face of it the working relationship developing between our respective PM teams is being hamstrung by the BB commercial imperatives coming from above.

  We still believe Siemens are best placed to deliver the non-civils infrastructure and are now delivering the specific engineering inputs to supplement SDS efforts and that CAF are performing as expected under their contract. This is true notwithstanding the fact that Siemens were equally as aggressive as BB during contract negotiation and despite allowing BB to take the lead in the current disputes will not hesitate to ask for compensation for proven or settled programme extension or disruption.

  The message is consider carefully throwing the baby out with the bathwater if it can be avoided – simplistically in the case of BB and S we'd be losing many months of accumulated knowledge of the project and the challenges to deliver and would end up paying for mobilisation twice.

- **Increased risk of loss of political and Grant support** – Our objective is to present our stakeholders with a way to achieve confidence on both programme and a value for money outturn cost estimate to complete the project. In doing so we must consider the increased risk that a proposal to terminate the Infraco contract might precipitate a loss of political support for the project or even a withdrawal of Grant funding. Any such action might be preceded by a disruptive and time consuming review of the project and/or our performance.

  The history of precarious political and public support for the project would weigh heavily on the minds of any new consortium considering a bid for the Infraco.

In summary termination is not an attractive option and should only be considered if:

1. The BB commercial position and commitment to improved management and delivery does not improve such that we have renewed confidence they can complete their obligations with respect to the contract with additional time and money awarded through the contractual mechanisms. Based on engagement to date this is very likely to require prior

resolution of the principle contractual disagreements through the DRP see Option E below; and

2. Neither Options B or C below (or variants thereof) prove to be deliverable or represent demonstrable value for money.

It may be that the threat of an impending termination and our visible commitment to go through with it would be required to bring the other partners in the consortium to the table in respect of Options B below.

Option B - Facilitate the removal of BB and replacement with a new civils partner

In the event we are unable to reach an acceptable commercial outcome with BB and/or are unable to satisfy ourselves that BB were willing and able to deliver the project in accordance with the contract then this is an attractive option. There is still a conviction that Siemens and CAF are the right partners to deliver the technically specialist areas of the project.

However the form is that our dispute is with the consortium as a whole and any decision to remove BB would be made by the other consortium partners not by us. This presents the challenge of exploring the position and objectives of Siemens as we engage in further discussions with the consortium. CAF seem genuinely perplexed by the current disputes and for the purpose of this analysis are held harmless whilst recognising they would be entitled to additional time and money flowing from the time consequences of what we agree with BB and Siemens insofar as they fall to our account.

The extent to which Siemens are fully complicit in the current contractual disputes is unclear. We know that Siemens were as commercially aggressive as BB during procurement and that they have continued to allow BB to lead the commercial engagement. Siemens senior management on site will be well aware of why we are experiencing delays to project delivery. Our engagement with Siemens commercial people on the financial valuation of the design programme v26 to v31 prolongation has been difficult as well. It is also significant that the £50-80m additional costs notified by BB were not accompanied by an equivalent figure from Siemens (or CAF) and none has subsequently materialised.

A core part of our tactics to deliver Option B would be to

- Emphasise the delayed start to eg Princes St, the attendant risk to reputation and demonstrate our resolve (and, crucially, that of CEC and other stakeholders) and thereby bring about greater influence by Siemens in both the management of the project on the ground and in senior level engagement.
- Keep Siemens well briefed on the nature and extent of the principal contractual disputes we face and the detailed analysis of the issues and BB's delivery shortcomings rather than the high level generalised positions they have taken so far. This appears to be delivered through a targeted DRP campaign.

The financial stakes for Siemens are probably quite high – the delays to date if found to be substantially to our account would translate into significant prolongation entitlement to Siemens. If not then there is the possibility of a significant dispute within the consortium over costs as a result of BB delays. Again this points to a need to proceed to DRP to force Siemens hand.

We believe that Siemens material prices largely hold firm but that programme delay and disruption is a serious concern to them and the issue of design responsibility and responsibility for BDDI to IFC design evolution is still highly relevant to them given the reengineering of the SDS design of systems to match their proposals is not yet complete and as we do not have visibility of any incremental cost issues which may come out of that exercise.

Even if Siemens approached us prior to DRP with a view to engagement on a compromise settlement of affairs (with or without the removal of BB) it's likely we would be in much weak negotiating position, and therefore not achieving best value for money, without proving our points at DRP. That of course presupposes that our position on the matters we would refer to DRP is strong and we don't end up on the wrong side of a significant number and value of the determinations in any case.

It seems likely that should the replacement of the civils partner ultimately become desirable and necessary, the best result in terms of minimising time and cost impacts would be for Siemens themselves or the civils arm of their trackwork subcontractor BAM to undertake the role. Intuitively this would minimise the time to reassemble the complete consortium and we might expect the premium Siemens would try to negotiate to take on the civils work (and as general recompense for history) to be lower than that required by a new civils partner.

If BB was being replaced, the best outcome would be a preservation of the assembled BB supply chain as much as practicable and a continuation with programme critical activities whilst the new arrangements were being negotiated and put in effect. This probably dictates that we would like to see all the principal subcontractors committed (ie contracted and with collateral warranties to tie), fully mobilised and working first.

Option C – Facilitate the removal of BB and management of civils subcontracts directly by tie

The first reaction was that this would be an attractive option to examine as we could deliver the active project management we believe is missing from the BB input so far and make a significant saving by eliminating the BB "middleman" resource costs and mark-up. However this action would leave us managing risky contractual interfaces which are currently wrapped up in the Infraco consortium including:

- The engineering/design interface between the civils work and the following track and systems installation. We are aware of uncertainties regarding the final design (and approval) of system related elements is a concern to the consortium in relation to Princes St and other areas where they have yet to finish the reengineering of the SDS design to match the Infraco proposals. Presently that is a consortium risk and would present significant risks for us to manage stepping into the civils role.

- Delay and disruption to Siemens due to delayed completion by sub-contractors managed by us, very probably due to the very risks associated with obstructions and unforeseen ground conditions which BB is concerned about.

We do not have visibility of the extent to which BB has passed these risks through to its subcontractors and at what price. We could engaging with Siemens on a way to limit or cap exposure to such risks – but at a price which is unlikely to represent value for money. Alterations or supplements to the Infraco contract would also be likely to be significant and therefore time consuming and expensive to negotiate and get approval for.

A step into the civils role by tie would very likely meet stiff stakeholder resistance for the reasons above but also because it does not meet the minimum risk transfer criteria which were applied to the procurement strategy for the project in the Final Business Case. The extent of the allowance for these risks in our cost estimate could be very prohibitive.

Lastly – we would require to do due diligence on the contractual arrangements with the subcontractors negotiated by BB. We would need sound legal advice as to our competence under procurement rules to engage the subcontractors directly in the absence of concluded contracts and collateral warranties to tie which would provide our step in rights. In the absence of these arrangements there would be nothing to stop the subcontractors attempting to renegotiate more favourable terms.

For the foregoing reasons – the option for direct management of the civils by tie would appear to have very significant obstacles to delivery.

Option D – Negotiate a major variation to the Infraco contract to settle all outstanding contractual disputes

Engagement with Infraco (principally BB) to date has clarified their overarching position with regard to:

- BDDI to IFC issue - all marginal costs to the clients account
- There are pervasive obstacles (including incomplete design and utility diversions, unknown ground conditions, lack of access) which render them unable to work efficiently anywhere on the route - all delays and disruption to the client's account
- The best outcome for the client is to stop work for 6 months to complete design and remove aforementioned obstacles during which time they will present a new programme and cost to complete the project.
- They would require payment for any significant work in the meantime on a cost plus basis

It is unclear how this approach would relate back to the £50-80m BB loss which was tabled although that figure certainly did not include delay and disruption to Siemens and CAF. We could also expect that the delay to programmed opening would be 12 months or more (broadly the 6 mths stoppage plus a further 6 mths for the extent of delay already experienced which could not be recovered).

This approach would be completely unacceptable to us on many levels:

- It does not respect the contractual obligations we believe they have with respect to design management and evolution
- A 6 mth stop and the resulting inflation and prolongation costs alone would make the project wholly unaffordable
- Any re-pricing would without respect to the fixed price we negotiated up to financial close and pass all historic pricing experience by BB back to us. Such an approach would likely be open to challenge under procurement rules in any case.
- A cost plus basis does not incentivise the contractor to deliver to time and budget and is not in accordance with the risk transfers objectives of our procurement strategy
- The stakeholders would not get renewed comfort with regard to programme and costs until several months from now.

For these reasons we have rejected outright their general proposals and have consistently stated our position that the project needs to be broken down into geographical sections and to consider the particular issues with each - broadly:

We dispute that BDDI to IFC is all to our account – but recognise explicitly that we will pay for changes which are outwith "normal design development" and which are due to risk that we are responsible for such as approvals and ground conditions. We recognise for instance that piled retaining wall construction instead of earth banking on parts of the railway corridor is outwith the definition of normal design development (albeit we have an issue with the original SDS design not taking account of ground conditions necessitating the change). There are similar issues on the railway corridor structures, the Murrayfield tram stop and at St Andrew Sq which we need to consider.

Our latest outturn estimate presented to the Board in January 09 included a high side £6m provision for design and other direct cost changes found to our account. BB verbally estimate their additional direct costs at £20m+ (part of the low end of the £50-80m additional costs range with no visibility of detail) and we are as yet unaware of additional costs which might come out of the Siemens re-engineering of SDS systems design.

We dispute that that all delays on the programme to date are to our account and have a conviction that the project needs to be considered section by section. We believe in particular that delays on the railway corridor and from the depot going west could have been significantly mitigated by good project management by Infraco and they have been obstructive in refusing to start work before changes have been agreed, by not providing the estimates and good project management service required by the contract to allow these works to proceed and by hitherto not having their supply chain mobilised to start work as scheduled. For our part we have acknowledged specific delays (such as access to the depot and other delays due to late completion of utility diversions) will need consideration by us and that there is a complex analysis of the delays to date which needs to be completed and which will be shared equitably by us and the contractor.

Our latest outturn estimate presented to the Board in January included a high side £10m provision for our share of prolongation and delay/disruption costs over the life of the project. BB verbally estimate their bill <u>so far</u> at £20m for prolongation and £10m for delay/disruption (no visibility of detail). Crucially the BB figures do not appear to take any account of the acceleration and programme integration opportunities we know exist and which would mitigate these costs as they have failed to provide the programme management service they are required to do under the contract. We are as yet unaware of the consequential prolongation and delay/disruption costs for Siemens.

We have also explicitly recognised that there are engineering and construction issues associated with the on-street sections which might need special treatment – the approach to dealing with the alternative road construction challenges on Princes St being a worked example of how a justifiable evolution of the contract principles can work in practice. BB have similar concerns regarding future disruption to works on Leith Walk due to unidentified obstructions and utilities as a result of experience with the limited work they carried out on Leith Walk prior to the Xmas 08 embargo.

The inescapable conclusion is that we are in no position to negotiate any significant variation to the Infraco contract even if we thought that was a wise way forward as:

- The Infraco has so far refused to engage or is unable to engage in a detailed analysis of the way forward area by area and an integrated programme reflecting a way forward overall. The notable exception to this is the constructive engagement on Princes St up until the point where it became a victim of the broader commercial disputes but nonetheless provides evidence that where there is a will there is a way.
- The Infraco wants agreement to disputed contractual principles before engagement on the detail and want all changes agreed before commencing work. It's important to remember that the latter positions have emerged over the past 6-8 weeks and have not been a stated and clearly communicated position since contract inception.
- There is no sense as yet that the Infraco would be willing to compromise or trade at an acceptable level – again assuming we could convince ourselves that was a value for money way forward in the circumstances.

Option E – Pursue the settlement of all significant contractual disputes through the DRP process under the contract

In the analysis of all options above it seems clear that if there is to be no significant u-turn by the BSC consortium on the significant contractual points in dispute then the best outcome in any case will be served by a prompt and uncompromising progression of the disputed matters through the DRP process.

The time imperative is critical – the DRP process is governed by strict timetables and whilst we cannot in any way compromise upon the quality of submission we make in each case we will require the indulgence of our stakeholders with regard to continuing uncertainty and continued expenditure on the project whilst we go through DRP until we reach resolution on all significant matters, hopefully by constructive engagement rather than a prolonged DRP "war" which would be in no parties best interests.

As previously stated the objective is to confidently present a revised programme and outturn cost estimate for the project and to be confident about having a constructive relationship with the consortium going forward. We anticipate that this will probably require intervention by the other consortium members and may even require the replacement of BB as in Option B.

We face two broad but possibly challenges priorities in the conduct of the DRP process in that we want to refer issues in a way which will best facilitate the progression of the most urgent works to mitigate further delay to the programme and therefore delay related costs, but at the same time we want to establish our position on the broader points of dispute as quickly as possible to provide stakeholder comfort on costs and programme. The latter would involve the broader brush approach which BSC are seeking and we believe our interests would be best served by tackling the issues on a selective basis to flush out the technical and practical detail behind individual circumstances and sections of the route and thereby avoid getting picked-off on broad legal interpretation of the contract.

The mapping out of the DRP process is the subject of a separate paper and will encompass a series of "Stage-gate" reviews to take stock of our position, engage with independent legal and technical experts and report back to CEC and Transport Scotland.

Scope Options

In the face of the commercial and therefore programme and cost uncertainties we face while in dispute with Infraco, it is appropriate to examine the options we might have to reduce the scope of the project to mitigate the impact of any potential cost overrun in the context of limited funding currently available. To recap – the current Grant Offer dictates that that CEC and TS will bear the costs of the project in the proportion 8.3% and 91.7% up until the point where TS have reached a cap of £500m and all marginal costs thereafter – ie above £545m – will be 100% for CEC's account.

A justifiable reduction in scope, implemented now or at some point during the progression of the project, would provide a safety valve in the event we foresee costs going above £545m and there is no more funding available from whatever source. The objective would be to create a 'safety value' or 'headroom' now or to be exercised in the future if and when it became evident that costs would exceed funding available. The validity and value for money of any such option would obviously be the subject of close examination and scrutiny by the stakeholders ie CEC and the Scottish Government.

Options to reduce scope are considered under:

- **Value Engineering** – delivering the same functionality or outputs for less money in a way that does not degrade the asset by increasing lifecycle costs
- **Infrastructure or Service curtailment** – delivering less physical tramway and/or running a reduced service

Value Engineering

The design of the project, including the consents and approvals process, is now nearing completion and it is now unlikely that there are a significant number of new value engineering opportunities which have not previously been explored, which would not be very disruptive and time consuming in any case to progress including any necessary re-design and the attendant risk of failing to achieve timely approval or consent by the City planners and others.

There is no evidence that the design of the tram has in any way been gold plated as part of the design and consents/approvals process. There are several instances where the design has changed but for reasons other than gold plating eg to a slightly different alignment to accommodate road traffic arrangements or evolution of design of the structures on the railway corridor in response to ground conditions.

The overall conclusion is that any marginal cost savings as a result of further large value engineering opportunities are very likely to be offset by the additional design and time related costs associated with their implementation and will increase the risk profile of the project. We are of course actively seeking new value engineering opportunities throughout the construction period but these are unlikely to deliver significant savings relative to the overall cost of the project.

Infrastructure or Service curtailment

The viability of Phase 1a was examined in the Final Business Case (FBC) which included both an assessment of economic cost and benefits under STAG guidance and an assessment of operational viability as part of the TEL Strategic Business Plan for the integrated tram and bus business beyond 2011.

The FBC assessed the Benefit Cost Ratio of the Ph1a scheme under STAG to be £592m/£335m (PV in 2002 prices) ie 1.77. This means that in a world of unconstrained supply of capital the minimum test of viability by this measure – a BCR of greater than 1.0 – would not be threatened even with significant additional costs. The Borders Railway has proceeded with a BCR of just above 1.0. There is a broad range of BCRs which might be expected eg nature of road schemes is that the ratio of monetised travel time benefits relative to costs is usually pretty high and they deliver relatively high BCRs.

STAG guidance and investment decision making practice would dictate that each phase of the ETN built should be assessed as adding to the economic and operational financial viability of the public transport network in its own right ie assuming there are no further phases constructed. It follows that if we were to build a curtailed Ph1a as the first phase of tramway it would similarly need to pass these viability tests on its own.

The maxim above may be open to debate when the investment under consideration is a large network of infrastructure which could never be affordable in one phase and where the value of the end result or vision is the focus rather than the constituent parts. In any case, the consideration of possible infrastructure curtailments below would only be considered as further phasing of the ETN and that the totality of Phase 1 together with any future network extensions will be constructed as and when funds are available and/or demand dictates.

The choice of Phase 1a and the development of the Business Case for it was the result of two years plus work and this current review of options cannot begin to replicate the extent and detail of that work to demonstrate the viability of curtailed scope options. However it is possible to make some broad statements of principle the stakeholders would focus on.

We must assume that we can only consider curtailment from either end we consider two separate lengths of tramway to be very inefficient and expensive to operate, would involve an unacceptable additional interchange and significant additional capital costs (eg an extra depot)

Curtailment from Edinburgh Airport

The tramway going west must at least reach the depot at Gogar as it's reasonable to conclude that moving the depot to a different location is not possible without the time and cost consequences rendering the entire project unviable even if a suitable location existed. (We do have the Parliamentary powers to build a depot at Leith docks but that location for a single depot was discounted as being too small).

Extending the Tramway to Edinburgh Airport was an integral part of the Scottish Government's and Scottish Parliament's deliberations in 2007 which culminated in the cancellation of the EARL project and continued but capped Grant support for tram and with the construction of a heavy rail/tram interchange at Gogar as the rail based connection to Edinburgh Airport. For this reason it seems reasonable to assume that there would be significant resistance from the Government/Transport Scotland to the first phase of tram <u>not</u> going to the airport.

For the reasons above alone it is considered that curtailment from Edinburgh Airport is highly unlikely to be an acceptable proposition to stakeholders and it is it in any case practicable to terminate before depot at Gogar. A consideration here may the view taken by BAA if there is no tram to the airport.

Notwithstanding the foregoing the FBC predicts significantly lower demand in absolute terms for tram travelling east at all stops towards the City Centre than it does travelling south-west from Leith towards the City Centre. As described in the FBC, there are fewer opportunities to integrate bus and tram services from the West of the City.

However the tram from the Airport to the City Centre is still a significant part of the predicted mode shift from cars to public transport achieved and connects to the existing Park & Ride sites at Ingliston and prospective new site Hermiston Gait. There is a symbiotic relationship between the demand for tram travelling east and the forecast growth in passengers at the airport and the development at Edinburgh Park and the Gyle Shopping Centre and high quality public transport will be an integral part of future plans to develop the Sighthill area and its Universities. The accessibility and social inclusion objectives achieved by tram serving the high density, low car ownership areas from Edinburgh Park to Haymarket remain valid.

Curtailment from Newhaven

For this analysis we might look at different termination options:

• **Ocean Terminal** – The section from Ocean Terminal to Newhaven was an "add-on" when the scope of Phase 1a was being finalised. The FBC patronage forecasts are for less than 1,000 passengers per hour to board the tram at Newhaven at the AM peak even in 2031 and a principal source of patronage is the new residential development in Western Harbour.

Not extending to Newhaven may be a matter of concern to Forth Ports plc on whom CEC are relying for a substantial portion of the future developer contribution receipts they will ultimately rely upon to underpin their £45m contribution to the project. However it is rational to assume that further development at Western Harbour is now going to be significantly delayed – possibly by several years. Delaying tram construction to Newhaven until the pace of development is clearer and demand builds up is common sense without materially impacting in the broader economic benefits or regeneration encouraged by extending the tram onto Leith Docks.

CEC could also better match the timing of developer contribution receipts with payments for tram construction in this area. It's also likely that demand could be mopped up by bus services until such time as building the tram was sensible. It is also true that doubt in the minds of Forth Ports plc that the tram construction is certain may be no bad thing.

The capital cost deferred by this truncation to the first phase of the infrastructure could be in the region of £15m gross. However there would be a cost and potential delay associated with the design and approval of required amendments to the turn-back facilities already included at Ocean Terminal to allow trams to terminate and turn round there.

• **Foot of the Walk (or Bernard St)** – This truncation would involve stopping short of actually extending the tram onto the Leith Docks area and becomes far less justifiable as a logical phasing to match demand as the tram is seen as a key stimulant of the future development which will give rise to that increased demand. It may even be asserted that increased public transport capacity, journey times and quality is a necessary condition of the new development being permitted. Adapted from the FBC:

In the parts of Edinburgh served by tram such as Leith Docks regeneration is a key priority. The tram will connect core development areas across the city and minimise the need for dependence on private car to access employment, residential and retail areas. Equivalent to a new town in scale, Edinburgh Waterfront is the largest brownfield development in Scotland. Phase 1 of the tram will support and catalyse this development by providing sustainable transport connections to areas where public transport service could be improved or which are or will experience congestion, particularly at peak times. This can significantly contribute to city regeneration. The major developments at Leith Docks will be more likely to succeed, and do so in a shorter timescale, with Phase 1a of the tram. These developments will bring high quality living, leisure and employment opportunities to the area.

Without Phase 1a of the tram it is unlikely the large scale redevelopment of Leith Docks could go ahead in the same timescales or to the same extent. The new developments will bring high quality living, leisure and employment opportunities. In addition to opening up brownfield land for redevelopment, it is highly probable that the tram will have a positive impact on the image of the area and hence help to stimulate further inward investment. For certain employers whose workforces may be more than usually reliant on public transport access, the tram should act as a catalyst to encourage them to locate in areas that they would have previously discounted. In addition, by contributing to reducing growth in congestion, the tram will be assisting with maintaining the economic viability of North and West Edinburgh.

A significant proportion of the monetised economic benefits from Phase 1a originate in the Leith Docks area. Further the modelling to support the FBC predicts that the introduction of Tram in the Leith Docks area would result in up to a 10% change in mode share from cars to public transport.

The FBC forecasts of loadings at Foot of the Walk travelling towards the city centre to be in excess of 2000 pax per hour in the AM peak in 2011 increasing to around 6,000 pax per hour in 2031. There is a very detailed modelling exercise which could be carried out to examine the ways in which high quality feeder bus services from around the Leith Docks development area to a tram terminus at Foot of the Walk could mitigate any loss of economic benefits or public transport patronage and mode share arising in the short term from the delayed construction of tram on Leith Docks to a later date. However serving full demand and delivering the long term benefits described in the FBC would require Phase 1a to be completed in full in due course.

The success of the interchange between tram and bus at the foot of Leith walk is already a vitally important part of the integrated service plans and has been designed into a very restricted space. In the event of truncation at or near the foot of the walk there would be a significant engineering challenge to enhance the turn-back facilities in this space and to be able to conduct turn-back operations whilst accommodating other road traffic.

Termination before Leith Docks would certainly get the attention of Forth Ports plc but as above that may be considered as no bad thing. This truncation would also mean no direct tram service to the Scottish Executive building, which may be a sticking point for the Government, or to the destination of Ocean Terminal and its shopping and leisure attractions.

The capital cost deferred by this truncation to the first phase of infrastructure could be in the region of £30m gross. However there would be additional costs and potential delay associated with the design and approval of necessary enhancement to the turn-back facilities already included.

If the enhancement of turn-back facilities at Foot of the Walk to a terminus was to prove an impracticable option then termination at Bernard St would still be an option but with higher capital costs for the first phase.

- **York Place / Picardy Place –** In addition to the drawbacks from not extending into Leith Docks as described above, truncation at York Place / Picardy Place (ie the trams would not extend down Leith Walk in the first phase) would have one very significant drawback that being that Leith Walk offers the greatest opportunity to remove substantial numbers of buses and replace them with trams in an effective manner which improves journey times and cuts congestion.

As noted above, the FBC forecasts of loadings at Foot of the Walk travelling towards the city centre to be in excess of 2000 pax per hour in the AM peak in 2011 increasing to around 6,000 pax per hour in 2031. On Leith walk itself such loadings were forecast to increase to nearly 8,000 pax per hour in McDonald Road exceeding the capacity of the initial 12 trams per hour service on Leith Walk and requiring an increase to 16 trams per hour by 2016. There is a very convincing need for tram on Leith Walk by virtue of the sheer volume of forecast demand alone and truncation at York Place / Picardy Place is sub-optimal for this reason.

There are currently turn-back facilities included in the design at York Place. However the very strong preference may be to move the terminus to Picardy Place to better interface with the existing and proposed leisure, hotel and shopping developments in the area and to create effective interchange with bus services running on the Bridges to Leith Walk/London Road corridors. It would be important to retain the desired relationship between the proposed Henderson Global's developments at St James Square.

The capital cost saving from this truncation to the first phase of infrastructure could be in the region of £50m gross.

This option would very closely resemble the Line 2 proposals as approved by parliament and for which a STAG appraisal was prepared which concluded Line 2 was viable. However it must be noted that the bus/tram service integration proposals included in the Line 2 STAG supporting the parliamentary proposals were fundamentally reviewed during the preparation of the FBC which reflects far fewer opportunities to reduce bus services from the West of the City on introduction of tram and forced interchange onto trams from buses at the West End / Haymarket (thereby substantially reducing buses on Princes St) is not considered to be a viable proposition.

Service curtailments

An initial review of the tram services required to operate the above curtailed infrastructure options indicated that less tram vehicles (at an approximate cost of £2m per vehicle) would be required as compared to the 27 vehicles (including spares) included in our contract with CAF. Terminating at:

- **Ocean Terminal** - No change

- Foot of the Walk – 4 less vehicles reducing first phase capex by a theoretical £8m
- York Place / Picardy Place – 10 less vehicles reducing first phase capex by a theoretical £20m – based upon a service of 8 trams per hour in each direction from the airport to Ocean Terminal (compared to the full planned Phase 1a service from 2015 of 8 tph from the airport to Ocean Terminal plus an additional 8 tph from Haymarket to Newhaven)

The capital cost reductions are described as theoretical as there would be a significant commercial discussion to be had with the tram supplier CAF since the price for tram reflects an allocation of significant fixed costs and their profits over a larger order and they would wish to recover these.

Additional bus service costs associated with curtailment

It's very important never to lose sight of the full financial impact of curtailment on the lifecycle costs and revenues to the Council of providing public transport in the city. To the extent public transport demand is not met by trams and buses together it would have to be met by buses alone. As well as the attendant costs of buying and servicing more bus vehicles, there is a trade off point where operating costs per passenger become lower on trams when they reach a critical mass of usage – such as we expect to achieve on the lothian road corridor (this ignores depreciation). There is also a theoretical loss of gross revenue as the incremental patronage and revenue to TEL with the trams compared to demand for buses only without trams is lost.

Commercial impact of curtailments on Infraco and MUDFA

All other things being equal, any significant curtailment in the extent of the tram infrastructure as above would give rise to claims for loss of profits from the Infraco consortium. It is worth mentioning that the construction on Leith Walk will possibly be the riskiest and most disruption prone section of Phase 1a construction.

Decisions would also be required as to what utility diversions to complete. A simple view would be to complete all diversions underway including Leith Walk and the separately procured diversions at the airport, but in the event of curtailment on Leith Docks and the extension to Newhaven we would not divert the utilities in these areas in the first phase.