

EDINBURGH TRAM PROJECT

SDS – DELIVERY AND CONSENT RISK MANAGEMENT

DRAFT v2

This paper is in draft form as at 22nd February 2008 and will be updated for any necessary changes up to Financial Close. This will apply to facts and judgements. The content of this draft is our current best estimate of how the final position will crystallise.

Background

Negotiations have taken place over a lengthy period of time with the objective of defining a process and set of contractual terms which will enable tie and CEC to manage the risks arising from the overlapping design and construction periods. This problem was not anticipated when the SDS contract was concluded in 2005. The recent discussions have taken place under the umbrella of the SDS Novation Agreement, but it is important to distinguish two groups of issues :

Cost certainty : The primary objective of the novation approach was to ensure that design work could commence long before commitment to the construction contract suite generating maximum construction price certainty and transferring design risk to the construction partner.

Outstanding design risk : SDS have resisted accepting liability to BBS for the timeliness of submission and approval of design packages after Financial Close. Their concern is that the risk is different from (and incremental to) the underlying risk arising from the quality of their work. A delay, they argue, could result in hefty exposure because of the linkage to construction programme delay. SDS did not anticipate this risk when committing to their contract - the expectation was that the majority of design scope and certainly all approvals would be complete prior to Financial Close.

The packages which have been delivered to BBS, with the requisite approvals, by Financial Close (“Approved Packages”) are subject to the Novation terms, which inter alia result in BBS accepting the design quality risk, with resort to SDS in the event of failure under the terms of the existing SDS agreement. The exposure to SDS could be potentially onerous, but was accepted when they entered into the existing contract and is not currently contentious.

This means that the primary objective above of cost certainty and risk transfer has been achieved relative to Approved Packages.

The problem relates to design packages which as at Financial Close are either :

- Submitted for Prior / Technical Approval but not yet approved (“Submitted Packages”) ; or
- Work in progress and not yet submitted (“Outstanding Packages”).

The rest of this paper provides an analysis of the residual risk to tie / CEC arising from these two groups of design packages. The paper does not address so-called “tie Consents” – TROs, TTROs and consents relating to statutory authority to implement the scheme - which have been accepted as outwith the responsibility of SDS and BBS, except that BBS (and through them SDS) have an agreed contractual responsibility to assist in the process.

Risk overview

The risks which arise from the overlap of design and construction periods are summarised below :

- A. The Submitted packages are not of requisite standard, preventing CEC from providing consent timeously and creating delay to the construction programme.
- B. The Submitted packages are of requisite standard, but CEC fail to provide consent timeously, creating delay to the construction programme.
- C. SDS fail to provide the Outstanding packages on a timely basis relative to the agreed programme, preventing CEC from providing consent timeously and creating delay to the construction programme.
- D. SDS fail to provide the Outstanding packages to the requisite standard, requiring rework and delay, preventing CEC from providing consent timeously and creating delay to the construction programme.
- E. CEC provide consents and approvals timeously, but SDS then fail to provide IFC ("Issued For Construction") drawings to BBS timeously creating delay to the construction programme.
- F. SDS provide the Outstanding packages on time and to the requisite standard, but CEC fail to provide consent timeously, creating delay to the construction programme.

It is not anticipated that the final Outstanding Packages will be delivered until Autumn 2008. The option of delaying Financial Close to eliminate the risk is therefore unattractive.

SDS have resisted accepting any liability in the event of any of these scenarios. Since the point of investing in a procurement of a design appointment in Autumn 2005 was to secure a completed approvals process with an advanced network design development, there was no allowance for the implications of a coincident design and construction process in the existing SDS agreement. Accordingly, tie / CEC's leverage over SDS on the issue is limited.

BBS have similarly resisted accepting any liability for the consequences of delay arising from the Submitted or Outstanding packages. Their position was reserved (as was Tramlines' position) at preferred bidder, pending due diligence on SDS, as they were aware of the issue at the Preferred Bidder stage, but again we have only limited sanction over them.

There has been no sustained attempt by BBS to sidestep the transfer of design quality risk once the Submitted and Outstanding packages are eventually signed over to them with consent. Accordingly, the risk is focussed on construction programme delay.

Resolving this issue has been made more difficult because of concern built up over a long period about the quality and timeliness of SDS's work on the part of tie, CEC and BBS.

There is also a concern that performance against the agreed submission programme could be obfuscated with the intent (or at least result) that design packages fall outwith BBS / SDS responsibility because of claimed failure by CEC. This could happen in four ways :

1. Confusion about submission date if a package is returned by CEC for quality improvement
2. Swamping CEC with a high volume of design packages which cannot be processed within the 8-week period
3. BBS and SDS by some means acting in concert to subvert the process
4. Lack of clarity about the quality of submissions

In summary therefore, tie / CEC are exposed to risks relating to timeliness of submission and / or quality. The risk could be heightened by deliberate or inadvertent actions by BBS / SDS. The next section describes the primary means by which these risks can be contained, through an effective management process controlled by tie / CEC.

Development of the design submission and approval management process

Recent process improvements

The process of managing SDS has not been smooth. The performance of SDS has been consistently disappointing on a number of levels and it is fair to say that weaknesses have also existed in execution by tie and CEC.

More recently, building on the existing Tram and Roads Design Working Groups, a number of important initiatives have been implemented to improve all-round performance. These have together improved both the rate of design production and the quality of those designs.

(1) Co-location of staff

The co-location of tie, CEC and SDS staff in Citypoint shortened lines of communication and promoted a healthy working relationship that has led to quicker resolution of issues.

(2) Improved contract management arrangements

tie has increased the number and calibre of resource devoted to managing the design contract, strengthening both its capability to deal with engineering issues and to manage the overall relationship including commercial management and issues resolution.

(3) Focus on resolution of outstanding design issues

By instituting the weekly critical issues meeting with attendance from tie, CEC and SDS aimed at clearing critical issues so that they did not hold up design production, tie brought together the relevant individuals, assigned clear responsibility for securing resolution and monitored progress. In recent weeks that has resolved almost all issues that are holding up SDS design and allowed a number of designs that were almost complete to take the critical final step to full completion and submission for approval.

(4) Closing out third party agreements

Many of the outstanding design issues involved reaching final agreement with third parties. Although steady progress had been made with many third parties a small number of third party negotiations were not moving to a satisfactory conclusion. tie devoted additional resources to closing out these issues and worked closely with CEC and SDS to ensure final agreements were reached.

Documentation of process and execution

The management process is captured in the Design Management Plan (“DMP”). In recent months, SDS has had much greater clarity over the reasonable expectations of the approvals bodies. All of SDS’s design packages are clearly defined. A programme has been agreed for the submission of each and the quality of information to be provided with the submissions has been defined. In this context, “quality” relates to an objective assessment of the fitness for purpose of the package, not a subjective assessment of the aesthetic character of the content. A well-defined process of informal consultation prior to submission with relevant CEC people is in effective operation. Once submitted, CEC have an agreed period of 8 weeks to deliver Prior and / or Technical Approval as necessary (“consent”) for each package.

Following novation of SDS to Infracore at Financial Close, tie will continue to use the DMP, working with CEC, to manage the design and consent process and maintain the improved performance in design production and approval. The DMP has been updated to incorporate the role of Infracore in managing SDS following novation but the key principles and initiatives remain in place. This process will be applied to complete the consent process for Submitted and Outstanding Packages as defined above.

tie is holding daily meetings with SDS and CEC to maintain the focus on delivery of individual Outstanding Packages and identify any problems early enough for them to be resolved with minimum impact on the programme. This will continue (also involving BBS) once the contract has been awarded.

CEC’s involvement in the daily meeting ensures that there is timely and effective feedback from the approval body of progress with Submitted Packages. It also allows CEC to raise any issues that need to be resolved before a submission can be made.

Whilst some of the Outstanding Packages lie on the critical path for construction, many do not. This means that there is still reasonable flexibility in the agreed approvals programme. Management of that flexibility lies with tie and CEC and BBS/SDS can only take advantage of the flexibility with tie’s consent.

There will be some changes to the design that SDS submits/has already submitted. Mainly these are necessary refinement of the detail of items where the detailed design will be completed by BBS and these have been allowed for within the programme. Where BBS is proposing an alternative design to that already submitted by SDS, BBS will be responsible for securing approval of that alternative design. In these cases BBS will draw on the experience of SDS to manage that consultation and approval programme.

Contractual underpinning

The contractual terms which capture these arrangements reflect :

- The contractual responsibility for managing SDS design and development work supporting Submitted and Outstanding Packages sits with BBS;
- BBS are contractually obliged to follow the regime under the Design Management plan, as are SDS;
- SDS agree to liquidated damages to be applied by Infracore regarding late or deficient submissions to CEC;
- Contractual clarity as to primary responsibility for categories of Consents
- Excusable delay in failure to obtain CEC Consent entails evidence of full compliance by SDS/BBS with agreed regime: timing, sequence, quality, notification;
- The absolute nature of SDS contractual responsibility to obtain all Consents has been adjusted to reduce tension surrounding interface with CEC;
- The risk of prolongation cost as a result of SDS failings in terms of causing delay (through not obtaining Consent) is to be taken by tie.
- the risk to programme (and generally) of SDS consented design containing a quality deficiency is ultimately taken by SDS and, in the first instance, by BBS. tie will hold a collateral warranty from SDS.

Finally and critically, the overall programme for consents is not only embedded in the SDS Novation agreement to which SDS and BBS are parties, but the programme has been interfaced in detail with the construction programme.

In summary, there is confidence among the tie and CEC managers involved that the management process can be executed rigorously after Financial Close.

Focussed risk analysis

In addition to executing effective management control across all design packages, it is useful to identify those packages which carry the greatest risk. This facilitates prioritisation and mitigation action and also creates a clearer view of the residual risk arising from the overlapping design consent and construction programmes.

On 15th February 2008, CEC and tie jointly reviewed the status and risk profile of every Submitted and Outstanding Package relating to Phase 1a, allowing for anticipated progress to Financial Close. The review will be updated through the period to Financial Close, allowing a fresh assessment of risk at both point of Notification of Award and at Financial Close.

The best estimate of progress by mid-March will be that 6 Prior Approvals and 9 Technical approvals will have been achieved, making a total of 15 Approved Packages.

The review of the Submitted and Outstanding Packages assessed for each design package seeking Prior and / or Technical Approval :

1. The risk arising from the criticality of the package relative to the construction programme ; and
2. The risk arising from the quality and complexity of the package, which could affect timely consent

A graduated risk measurement was applied to each package for each of the two risk criteria : those packages which were required for the earliest stages of the construction programme having a higher risk rating than those required for later stages ; and more complex or sensitive packages or those with known quality issues were given a higher risk rating than those of a simpler character. The two risk ratings were multiplied together to give a risk rating tabulation across the whole population of Submitted and Outstanding Packages. The tabulation was then stratified into Critical, High, Medium and Low categories based on the risk ratings.

The people who contributed to this process and who have confirmed they are comfortable that the results are properly presented were Susan Clark (tie Programme Director), Andy Conway (CEC Tram Coordinator), Damian Sharp (tie Design Project Manager i/c of the SDS design and approval process), Tom Hickman (tie Programme Manager) and Mark Hamill (tie Risk Manager).

81 individual packages were reviewed, of which 65 were assessed as medium or low risk. The remaining 16 packages in each category were :

<u>Submitted Packages</u>	<u>Critical</u>	<u>High</u>
Prior Approval	0	3
Technical Approval	1	1
<u>Outstanding Packages</u>	<u>Critical</u>	<u>High</u>
Prior Approval	1	5
Technical Approval	3	2

Appendix 1 lists these Critical and High risk packages with a brief summary of their risk profile and the mitigating factors which can be deployed to manage the risk.

Appendix 2 provides a detailed breakdown of the entire population of 81 packages.

It should be noted that there are in fact 4 Critical risk locations and 9 High risk locations as 3 packages are common to both Prior and Technical approval requirements. This will further help to concentrate efforts to manage the risk. For each location the issue is well understood and mitigation plans have been identified to ensure that the risk is being managed on an ongoing basis. Appendix 1 contains full details of these.

In overall terms, the limited number of Critical / High risk packages is no surprise given the short anticipated time to finalise the consent process relative to the overall construction programme and the extent of work done to date to meet the needs of the approval authority.

Third party approval risk

In addition to approvals by CEC a number of the Submitted and Outstanding Packages also require approval by third parties. The most frequent and significant third party approval body is Network Rail. There has been substantial informal consultation with Network Rail throughout the development of the design and Network Rail has expressed satisfaction with many of the designs in principle. Network Rail has agreed to review Submitted Packages for technical approval in parallel with the CEC consideration of those packages. This means that Network Rail will be in a position to confirm approval very soon after CEC approval is granted. This is a significant concession by Network Rail and reflects their confidence in the design following the consultation to date.

The other significant third party in this context is BAA. Within the EAL Licence, Schedule 3 allows EAL to review tram works data – primarily design & construction related method statements. There is a 30 day review period, and EAL could object to this data, but only on the basis of adverse impact on airport operations or safety. There is also a DRP set out in the licence if an agreed position on design change (both acting reasonably) cannot be resolved.

We are taking EAL through the design and the MUDFA works in a scheduled process of meetings (held 4 weekly, but also in the case of MUDFA, more regularly), there is nothing to suggest that the risk of designs not being accepted is low.

Forth Ports is another player, but the agreement scheduled to be signed with them, and the constructive working relationship on these issues, creates a good level of comfort.

No serious issues are anticipated with the other third parties, with whom the approval process is fairly commonplace. Overall, it is considered that the third party arrangements create no material risk to the construction programme.

Higher-level mitigations

In addition to the mitigation arising from control of the well-defined management and approval process and the limited number of Critical / High risk locations, there are a number of higher-level mitigations which are relevant to the overall evaluation.

SDS Liability

In relation to the Submitted and Approved Packages, one contractual feature of importance in assessing the overall risk is acceptance by SDS that they will absorb a capped exposure arising from Construction Programme delay caused by their own failings (risks A, C, D and E above). They will however accept no liability arising from CEC delay (risks B and F above). The cap they propose is likely to be c£0.5m.

BBS accept this proposition, acknowledging that they will require to pursue SDS to the extent of the cap should losses arise from risks A, C, D or E. However, BBS will accept no further liability arising from the Submitted or Outstanding Packages. A general legal protection exists whereby SDS are exposed to claims from BBS following novation for “culpable failure” which could supersede the cap.

Funding support

The uncapped exposure will carry no financial protection to tie / CEC. However, should this result in increased project cost, assuming legitimately incurred, the terms of the grant funding from Transport Scotland mean that the cost will be substantially covered by grant, to the extent that there remains headroom beneath the aggregate funding of £545m. It must be borne in mind that this factor cushions risk to tie / CEC but not to the project as a whole.

Other (less likely) leverage / options

Although it is likely that the novation terms will require full settlement of all monies due to SDS at the point of novation, it may be possible to trade this if the risks under the consent process are deemed to be uncomfortable. At present, this is not being negotiated.

Access may also be available to SDS held insurance in the event of a significant loss and tie / CEC could pursue insurance cover prior to Financial Close. This would be complex to implement and is not currently being pursued.

Existing risk contingency

The project cost contains risk contingency amounting to £3m linked to the consent risks described in this paper. The QRA will be refreshed in the run-up to Financial Close. It is at tie / CEC's option that the risk contingency can be retained or traded for a cash sum and full risk transfer to BBS. At present the tactic is to hold the contingency and seek to manage the risk.

Conclusion

The overlap of continuing design and approval processes with the construction programme has created a risk. Experience in the early years of managing the design and approval process was not happy, but recent initiatives have successfully developed a well-defined and effective management process, led and directed by tie / CEC. This management process will continue following Financial Close with minimum risk of interference.

A thorough risk-focussed review of the consents which will not be complete by Financial Close has been performed by competent people from tie and CEC. This has concluded that the residual risk is contained in a small number of design packages. These have been the subject of prioritisation to mitigate their risk profile.

The combination of controlling the management process and focus on the key elements of the residual risk, constitute an effective risk mitigation framework. There are other higher-level mitigations which provide further help, notably the funding arrangements and the existence of a risk contingency in the project budget.

It is the view of the tie and CEC project team that these factors can be relied upon to manage the exposure successfully.

Prior & Technical Approvals

APPENDIX 1

Critical Risks >21	Description	Risk	Issue	Mitigations
Prior Outstanding	Murrayfield Stadium Tram Stop Murrayfield Stop retaining wall	25	Soft ground in this area	SDS/BBS agreed solution 21/02 – given to CEC for approval
Technical Submitted	Murrayfield Stop Retaining Wall	25	Soft ground in this area	In hand – 2 weeks to resolve
Technical Outstanding	Depot internal walls i.e. A8 wall on S side of depot	25	CEC need to see final design	Final design will be 1 in 2.5 slope or pins/plates. SDS need another 3 weeks to finalise then CEC to agree
Technical Outstanding	A8 underpass	25	Underpass – sewer conflict	Technical solution due to be submitted by BBS. SDS options report was issued in Jan 08
Technical Outstanding	Building Regulations approval	25	At 4 locations full planning approval is required	SDS to submit drawings for planning approval
High Risks 11 - 20		Risk	Issue	Mitigations
Prior Outstanding	Accommodation works – Murrayfield Murrayfield stadium retaining wall Roseburn St Bridge Murrayfield turnstiles	20	VE solution changes design	Feasibility study ongoing and due to be complete by 14/03 – on target to complete
Prior Outstanding	Jenners depository Tram stop Balgreen Road Baird Drive retaining wall Balgreen Road retaining wall Balgreen Road Bridge	15	NR issue with height of Balgreen Rd bridge	Letter required from NR. AG has emailed Brian Sydney this afternoon asking for NR's agreement in writing to the principles of NR ownership and 4.8m road clearance for Balgreen Rd bridge
Prior Outstanding	Victoria Dock Bridge	12	Clarification over design of bridge decking	SDS have in hand. Needs barge-borne boring survey.
Prior Outstanding	Depot mast A8 retaining wall Gogar depot sub station Depot internal retaining walls Depot	15	Requires SDS design programme	SDS' Ian Brown has discussed depot design with CEC Building Inspectors and agreed a practical way forward. BAA meeting due on 25 th Feb. which will proscribe landscaping features to minimise risk of aircraft bird strike. For A8 retaining wall see note above. SDS believe overall resolution will be possible in approx 4 wks..
Prior Submitted	A8 underpass	15	Underpass – sewer conflict	Technical solution due to be submitted by BBS. SDS options report was issued in Jan 08
Prior Submitted	Tram Stop Picardy Place	15	Gyratory/T Junction	Awaiting CEC's Andrew Holmes decision
Prior Submitted	Tram Stop Haymarket Haymarket Viaduct Substation Haymarket Relocation of war Memorial Line of route	20	Road Safety audit thrown up issues requiring rework	The issues are understood and rework is estimated to be complete within 2 weeks of 22/02

Prior Outstanding	Water of Leith Bridge Murrayfield Underpass Murrayfield pitches retaining wall	12	Linked to the issue at Muurayfield Tramstop	SDS/BBS agreed solution 21/02 – given to CEC for approval
Technical Outstanding	Tower Place Bridge	15	Clarification over bridge decking	SDS have in hand. Needs barge-borne boring survey.
Technical Outstanding	Lindsay Road Retaining Wall	15	Design rework	Basis of design solution only very recently agreed with SDS - need design to be completed to enable associated legal agreement with Forth Ports to be signed
Technical submitted	Roseburn St Viaduct	15	VE solution changes design	Feasibility study ongoing and due to be complete by 14/03 – on target to complete