

Edinburgh Tram Project

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## Forensic Planning Exercise

undertaken for tie Limited

on the instructions of

Susan Clark (Deputy Project Director)

and

Dennis Murray (Commercial Director)

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## Progress Report No. 4

(incorporating

Initial Summary

and Recommendations)

(for work undertaken up to 26<sup>th</sup> May 2009)

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## 1 Introduction

- 1.1 This report presents a summary of the initial observations, findings, assessments, and recommendations arising from the forensic planning exercise (“the Exercise”) undertaken by Acutus between 17<sup>th</sup> April and 13<sup>th</sup> May 2009. The scope is limited to the Infraco contract between **tie** Limited (“**tie**”) and Bilfinger Berger (UK) Limited and Siemens plc (who together are “the Infraco”). This contract is inextricably linked to various other contracts and interactions with many third parties. Of particular significance to the Exercise is the System Design Service (SDS) and the Multi-Utilities Diversions Framework Agreement (MUDFA) contracts. These contracts have not been examined by the author and reference to them is made only to the extent that matters from them impact on, interact with or form part of the mechanisms within the Infraco contract. It is important to note that the author’s references to the requirements, actions or inactions relating to these contracts, are based upon what he has been told by **tie** staff and not what he has verified through examination of the documents or project records.
- 1.2 This report follows from, and builds upon, Progress Report Nos. 1, 2 & 3. Its focus has been directed by Susan Clark, Deputy Project Director for **tie**, following discussions regarding the immediate needs and priorities of the project management team.
- 1.3 Section 2 provides an overview of the Contract provisions with regard to time for completion, allocation of time related risk, obligations for timely completion, obligations to mitigate delay, and entitlements to extension of time. This is followed in Section 3 by observations on the Infraco Contract Programme.
- 1.4 Section 4 reports on an examination of the Infraco’s most recent progress report and programme update. That updated programme projects completion of the Infraco Works by 14 October 2012, some 13 months late.
- 1.5 Acutus has examined the progressed programme to consider the accuracy and correctness of this projection both in relation to the Infraco’s potential entitlement to extension of time under the Contract and to the practicalities of mitigating some or all of this delay without unnecessarily compromising the Project Vision and value to the stakeholders. This work is explained and reported upon in Section 5.



1.6 Section 6 sets out what Acutus believes to be the principal risks and challenges that **tie** faces in successfully delivering the Infraco Works. It also identifies what are perceived to be opportunities to best manage these risks, address the challenges and mitigate exposure to increased costs. This report concludes at Section 7 with recommendations that **tie** may wish to consider to protect its contractual entitlements, reduce its exposure to risk and address what it perceives as the reluctance of the Infraco to fulfil its contractual obligations towards achievement of the Project Vision. (Section 7 has yet to be drafted.)



## 2 Contract Provisions and Time Risk

2.1 Time constraints have precluded an in-depth analysis of the entire Contract. For the purpose of the Exercise, attention has been focused on the principal time related clauses and, through cross-reference and dependency, some of the related clauses that give rise to Infraco entitlement to relief. The various novated contracts and, in particular, the SDS contract have not been examined. Neither has the MUDFA contract. To the extent that an understanding of the terms and provisions of these contracts has been required to interpret and form opinion on the Infraco Contract, Acutus has relied on advice and guidance provided by **tie** staff.

2.2 The Infraco's overarching obligation in relation to time is set-out in Clause 60.1.

*"The Infraco shall progress the Infraco Works with due expedition and in a timely and efficient manner without delay, to achieve timeous delivery and completion of the Infraco Works (or any part thereof) and its other obligations under this Agreement in accordance with the Programme. Notwithstanding the generality of the foregoing, the Infraco shall complete the Infraco Works in each Section so as to enable the Certificate of Sectional Completion in respect of each Section or Certificate of Service Commencement (as appropriate) to be issued in accordance with Clauses 44 (Notification of Sectional Completion of Sections A, B, C) and 45 (Notification of Service Commencement) by the Planned Service Commencement Date or the relevant Planned Sectional Completion Date."*

2.3 The Programme set-outs the Infraco's intentions for the order and timing of delivery of the Infraco Works. It identifies the Sectional Completion and Commencement of Revenue Service dates. These are the principal key dates that are of relevance to the commercial provisions within the Contract.

2.4 The Infraco's principal entitlements to extension of time to the dates set-out in the Programme are to be found in the following contractual provisions:

- a) Relief Events (Clause 64)
- b) Compensation Events (Clause 65)
- c) **tie** Changes (Clause 80)



2.5 Each of these clauses covers many matters and situations where the Infraco is entitled to an extension of time. Many of these are conditional on other matters and factors referred to in these and other clauses. This has created an exceptionally complex set of inter-related provisions that require careful consideration in relation to each and every situation where extension of time entitlement is sought. The nature and scale of the Project as a whole, coupled with its extensive and involved contractual arrangements, create a very complex and inter-related contractual entitlement mechanism that is required to be operated for each and every claim. It would appear that this is the source of the Parties' disparity of opinion with regard to the Infraco's current entitlement to extension of time.

2.6 Of particular relevance to the correct assessment of entitlement to extension of time are the express provisions requiring:

- a) the Infraco to notify and mitigate delay; and
- b) **tie** to review and assess extension of time entitlements taking into account any delay caused by any act of negligence, default, breach of contract or breach of statutory duty of the Infraco or any Infraco Parties.

Such extension of time requirements are commonly found in construction contracts. In the Infraco Contract they have been given particular emphasis. Both of these requirements are clearly set-out in the wording of the contract. That said, their application to each and every situation where they may apply can present challenges in relation to agreement of the facts and their interpretation in relation to other factors and events. Issues of dominant cause, concurrency and reasonableness add further complexity to the proper and accurate application of the Contract provisions.



### 3 Contract Programme

- 3.1 The Infraco's Contract Programme has been prepared using proprietary planning software (Primavera P6). This is as prescribed in the Contract. It has been prepared on the basis of a critical path network. It contains around 2,000 linked activities.
- 3.2 The Contract requires Infraco to provide a fully resourced programme. This has *not* been done. The Contract Programme has allocated block (Gang) resources only for track laying and overhead lines.
- 3.3 From detailed examination of the programme, the network appears to contain both physical and 'preferential' links. The critical path to completion contains both types of link. It is apparent that the time for completion of the Infraco Works is, in part, being dictated by the Infraco's chosen level of resources and its sequencing preferences.
- 3.4 It is observed that the network links associated with resource preferences create long strings of inter-dependency that are not required for physical or contractual reasons. While they may have a legitimate place in the Contract Programme, (providing it complies in all ways with the requirements of the Contract, which it appears to do), it should be noted that their inclusion, without review and appropriate adjustment, in a network used to assess entitlement to extension of time, will most likely produce erroneous results.
- 3.5 It is noted that the Parties have agreed a revision to the original Contract Programme to account for a post-contract revision of the SDS Contract IFC dates. This revised Contract Programme shows a different critical path. It appears to contain, for the most part, the same physical and preferential network links. It is noted that much of the critical path to completion is driven by the preferential links associated with the original programme's resource sequencing and constraints.
- 3.6 For the purpose of this planning exercise the agreed revised Contract Programme (referred to as "Contract Programme Updated for V31 & Mitigation") has been used as the baseline from which progress reporting and programme updating has been examined.



## 4 Progress Reporting & Programme Updating

- 4.1 The Infraco has routinely used the agreed revised Contract Programme (referred to as “Contract Programme Updated for V31 & Mitigation”) as the baseline for its monthly Period Reports.
- 4.2 Actual progress has been entered into this programme. This has included progress information from the MUDFA and SDS programme updates. Where projected completion dates from these programmes indicate later than planned completion, the revised projections have also been inserted into the revised Contract Programme.
- 4.3 The Infraco has also added additional activities into this programme. Some are for additional work instructed by tie, some add further detail to existing activities, some are for activities not included in the original programme and some are for Infraco Change.
- 4.4 Associated with these additional activities and actual progress on the Works, the Infraco has made certain adjustments to the network logic links. For the most part these adjustments are to incorporate the additional activities into the overall programme.
- 4.5 It is clear there has been much delay affecting the initial activities in the revised Contract Programme. These delays affect virtually every part of the Site and, consequently, impact throughout the sub-sections of the programme. Liability for some of these delays is, at present, unclear. There are many delays that would appear to arise from qualifying Compensation Events. These require to be assessed by tie in accordance with the Contract and each *may* give rise to an entitlement to extension of time.
- 4.6 The Contract requires the Infraco to timeously notify tie of each Compensation Event and provide with such notice full details, likely duration, estimated effect upon the Programme, etc. We are advised that, to-date, the Infraco has notified of over 150 Compensation Events but has provided full details for virtually none of them. In justifying this lack of detailed particulars, it has cited the Clause 65 provisions covering the practicalities of doing so.
- 4.7 Notwithstanding, the Infraco routinely presents its updated revised Contract Programme as what it (verbally) claims to be its “entitlement programme”. It is assumed it means by this that the updated programme evidences its entitlement to an extension of time up to the currently projected date for completion.





4.8 Detailed examination of the updated programme identifies several reasons why such a claim is unfounded. There follows three examples.

a) Of greatest significance is the Infraco's failure to review and adjust as appropriate, the preferential logic links that have been carried forward from the original Contract Programme. Much of the critical path continues to be driven by them and, on close inspection, there is no practical, commercial or contractual reason why they should not be revised. For example, the critical path currently identified in that "entitlement programme" runs sequentially through track laying at:

- i) the Gogar Depot
- ii) Edinburgh Park Station
- iii) Ingleston Park & Ride
- iv) Edinburgh Airport Tram Stop
- v) Roseburn Junction
- vi) York Place
- vii) West Maitland
- viii) Princes Street
- ix) Newhaven Road
- x) Roseburn Junction
- xi) Ocean Terminal

before progressing to commissioning of the tram system. This string of activities is dictated by preferential logic and *not* by physical dependency and/or contractual constraints. In our opinion, the Infraco's strict adherence to superseded programming logic cannot be justified in the assessment of entitlement to extension of time.



- b) An activity for additional earthworks at the Gogar Depot has been added to the programme. It is understood that this is accepted as a **tie** Change. This work is currently substantially complete yet the Infraco programme projects that it will not be so for another 3 months. This activity is currently shown as driving the critical path. If it was allocated an appropriate remaining duration it would not be critical and the projected completion date would be earlier.
  - c) Many of the structures (retaining walls, bridges, platforms etc.) in the vicinity of Murrayfield Stadium have been linked together, on a finish to start basis, for no explicable reason. It appears these are preferential links. Strict adherence to this logic reduces the amount of float available in this part of the programme. If some of the unjustified constraints referred to in a) and b) above are released, these works become critical. Removal of unnecessary preferential links would take these works off the critical path and further reduce the delay to completion.
- 4.9 For the foregoing reasons, and many more similar, it is evident that the updated revised “Contract Programme” does not, in our opinion, provide a reasonable basis from which the Infraco’s entitlement to extension of time can be correctly and accurately assessed.



## 5 Delay Mitigation and Projected Completion

- 5.1 Various provisions within the Contract require the Infraco to use reasonable measures to mitigate delay. These provisions include delay arising from Relief Events, Compensation Events and tie Changes. Such “reasonable measures” include re-ordering and re-sequencing activities. The Contract also requires the Infraco to demonstrate, to the reasonable satisfaction of tie, that in its claims for extension of time:
- a) the delay could not reasonably have been avoided,
  - b) that it arises as a direct result of a qualifying event, and
  - c) that the Infraco is using its reasonable endeavours to perform its contractual obligations.
- 5.2 Detailed examination of the most recent updated Contract Programme, as presented by the Infraco, has found little or no evidence of effort to avoid or mitigate delay.
- 5.3 In our opinion the updated programme projects an exaggerated delay to completion by retaining superseded physical and preferential logic, coupled with overly pessimistic production rates. The result is a programme that, in the current circumstances, shows completion much later than what appears to be readily achievable.
- 5.4 Within the time constraints set for this report it has not been possible to conduct a detailed analysis of the programme. However, in order to test, and where appropriate evidence, the Infraco’s exaggerated projection of delay the following adjustments have been made to the updated programme.
- a) A number of the preferential links that appear to only serve superseded resource driven sequencing have been removed. The consequential effect on resource demand has been checked and found to be within what is considered to be reasonable limits,
  - b) Durations for the Gogar Depot bulk earthworks and Murrayfield reinforced earth retaining walls have been reduced to reflect what is considered to be realistic and reasonable productivity rates.



- c) An additional track laying gang has been introduced (increased from three gangs to four) for part of the track laying period to increase productivity.
- 5.4.2 By implementing these relatively simple and straight forward mitigation measures over 9 months of the projected 13 month delay is removed. As such it is reasonable to conclude that the Infraco's conclusions regarding its alleged entitlement are unjustified.
- 5.4.3 It is considered that further examination of the finish to start logic associated with the structures in the Murrayfield area could realise further time savings. It is also believed that more detailed examination of productivity rates will realise further time savings. Together, these should bring projected completion into 2011 and thereby significantly reduce the projected delay to the Project.
- 5.4.4 It should be noted that this Exercise has been undertaken without questioning liability for the delays experienced to-date. We are advised that tie is of the opinion that the Infraco has past and ongoing liability for delay in several areas. If this can be evidenced and proven to be critical to completion, it should be taken into account in tie's assessment of the Infraco's claims for extension of time.



## 6 Risks and Opportunities

- 6.1 It is apparent that the Infraco Works have been delayed by many matters and events a number of which *may* entitle the Infraco to an extension of time. These include:-
- a) Late completion of the MUDFA Contract,
  - b) Late delivery of elements of the SDS Contract,
  - c) Unforeseen physical conditions, and
  - d) **tie** Changes.
- 6.2 While some of these, unquestionably, require **tie** to assess whether they give rise to extension of time entitlement, liability for delay arising from others may not be so clear. **tie** staff hold strong opinion that some of these, in part or whole, arise for the actions or inactions of the Infraco. They also believe some arise from matters for which Infraco carries liability. We are aware that **tie** effort is currently being directed to evidence Infraco's liability, particularly in relation to timeous delivery of design for construction. At this point in time it is not possible to provide an opinion of whether this may identify that the Infraco carries liability for some of the critical delay experienced to-date.
- 6.3 **tie** staff hold strong opinion that the Infraco is experiencing difficulties and delay in its procurement programme. We are advised that in response to such allegations the Infraco has stated it is delaying procurement to mitigate delay cost. If **tie** staff are correct, evidence needs to be gathered in support of this allegation and this then needs to be incorporated in a structured delay analysis. If sufficient persuasive evidence cannot be secured **tie** will find it difficult to hold the Infraco liable for any such delay.
- 6.4 The Infraco appears to be in breach of several of its contractual obligations in relation to notifying and evidencing delay. It appears to be in clear breach of its obligations to mitigate delay and, we are advised, has failed to comply with **tie** instructions to implement mitigation measures. There appear to be strong grounds on which to challenge the Infraco's actions and inactions. We are advised that **tie** has been continually frustrated in its efforts to get the Infraco to re-programme the Infraco Works with a view to mitigating delay. It is suggested that this matter should be considered for application of the dispute resolution measures contained within the Contract. The



longer this matter remains unresolved the greater the potential risk that tie may find it difficult to evidence Infraco liability for delay.



## 7 Recommendations

### 7.1 Overview

7.1.1 It is apparent that progress of the Infraco Works has been frustrated by many delays. We understand that, to-date, the Infraco has accepted no liability for critical delay and is currently projecting a programme over-run of some 13 months. In a recent submission entitled “EoT Entitlement Programme” it projects a critical path delay of over 16 months. As noted in the previous sections of this report, this projected over-run appears to be significantly overstated and the Infraco appears to be ignoring its contractual obligations to mitigate delay. **tie** also believes that the Infraco may carry some liability for delays incurred to-date.

7.1.2 The Infraco’s approach appears to be to maximise the delaying impact of every event that it believes entitles it to an extension of time. By ignoring its obligation to take reasonable measures to mitigate delay and failing to act on **tie**’s specific instructions in this respect, it seeks to secure an extension of time much greater than that to which it may properly be entitled. It also appears to be deliberately prolonging the contractual processes for dealing with **tie** Changes and Compensation Events by taking an unreasonably long time to provide full details and supporting information. Its motivation for such actions can only be surmised. There follows some possible reasons that may be behind this.

7.1.3 Clearly, the Infraco is seeking to secure the greatest possible extension of time to:

- i) minimise its exposure to the risk of incurring liquidated damages;
- ii) bring pressure on **tie** and its Stakeholders to consider instructing delay mitigation and acceleration measures for which it can claim additional revenue;
- iii) maximise its opportunities to claim for delay and associated prolongation costs, thereby maximising its potential income; and
- iv) mask delays for which it carries liability.

7.1.4 The Infraco’s actions and inactions referred to at 7.1.2 above appear to be contrary to its contractual obligations. In its correspondence relating to notification and



substantiation of Compensation Events it appears to be deliberately prolonging and/or frustrating the proper and correct operation of the Contract. This brings great uncertainty for **tie** in relation to time for completion and out-turn cost.

7.1.5 It appears to us there is a pressing need for **tie** to act to:

- a) secure contractual entitlement and protect the commercial position of **tie** and its Stakeholders;
- b) mitigate delay and timeously progress the Infraco Works;
- c) secure reliable information on which **tie** can consider its options in relation to:
  - i) time risk reduction;
  - ii) instructions to mitigate;
  - iii) measures to accelerate; and
  - iv) securing best value for the Stakeholders.

7.1.6 The following recommendations seek to provide **tie** with advice, guidance and options on strategy and actions that we consider would make a meaningful contribution toward securing completion within the optimum timescale possible and protecting **tie**'s contractual and commercial position.

## 7.2 Challenging the Infraco's approach to the Project

7.2.1 It is recommended that one of the first actions **tie** should undertake is to write a carefully worded and detailed letter to the Infraco expressing its concerns regarding the delays to the Infraco Works. In particular, **tie** should highlight the Infraco's failure to:

- i) produce a compliant programme;
- ii) produce a fully resourced programme;
- iii) take reasonable measures to mitigate delay;
- iv) timeously provide full details and supporting information in relation to claims; and





- v) procure resources to undertake available work.

7.2.2 The letter should also raise concerns regarding:

- i) the Infraco's apparent poor management of the SDS sub-contractor and the consequential delays to the design process;
- ii) the design delays arising from co-ordination of the E&M design with that undertaken by the SDS sub-contractor; and
- iii) the time implications of the Infraco's decisions to revise designs for co-ordination and value engineering purposes.

7.2.3 The letter should also raise concerns regarding Infraco's apparent insistence on exclusive access to the entire extent of each section of the Site before it is willing to start work in any part of it.

7.2.4 The Infraco's decisions to temporarily suspend works on parts of the Site for, what appear to be, unjustifiable reasons should be challenged and its potential liability for consequential delay should also be noted.

7.2.5 If it can be evidenced that the Infraco has been experiencing difficulties and delays in relation to its procurement of in-house resources, suppliers and sub-contractors, the letter should also raise these concerns.

7.2.6 Reference should also be made of any other matters of delay, or potential delay, for which **tie** believes the Infraco carries liability.

7.2.7 Consideration should be given to concluding the letter with the allegation that the Infraco's approach to claims for extension of time are global in nature and make no attempt to link individual cause with effect.

7.2.8 It is strongly recommended that **tie** seek technical, commercial and legal review of this letter before it is finalised and sent. The benefit of taking this particular stance now is that **tie** will be able to refer to same at later dates when, as seems inevitable, the Infraco presses what it contends are its entitlements to further time and money. This will also serve to demonstrate to the Infraco that its present stance and inaction in key areas will not go unchallenged.



### 7.3 Assessing Extension of Time Entitlement

- 7.3.1 As evidenced by the notices it has served and the programmes it is presenting, the Infraco is preparing to present a claim for a significant extension of time. We understand that **tie** has yet to assess most of the specific claims as it is awaiting full details from the Infraco. The Infraco has stated that most of its notified claims are too complex and ongoing and therefore full details are not yet available.
- 7.3.2 We believe, however, that the ongoing uncertainty over the parties' respective liability for time and consequential costs is undermining **tie's** contractual position. We are advised that **tie** believes that the Infraco is not entitled to the length of additional time it is currently stating as its entitlement. Our initial review of the updated programmes would tend to support **tie's** position. We believe there is a pressing need for **tie** to undertake an assessment of each claim and to put on record its stated position. Failure to do so now runs the risk of reducing the credibility of reasoning **tie** may wish to present at some time in the future. This reduced credibility could be particularly significant in dispute resolution fora. The importance of contemporaneously recording facts, reasoning, calculations and conclusions, particularly while they are fresh in the minds of the **tie** officers, cannot be over-stated.
- 7.3.3 As a consequence, we are of the opinion that it would be prudent for **tie** to begin to prepare its defence and assessment of these claims, building up a set of evidence files for each and every claim. These files will clearly develop over time as more data and evidence is made available. Experience has proven such files are invaluable in defending against over-stated global claims and will help secure **tie's** proper contractual entitlements.
- i) In the absence of full details from the Infraco, **tie** should start to produce its initial assessment of any claims received for entitlement to extension of time. In assessing each event it is suggested that this be done by reference only to the appropriate sub-section of the currently agreed contract programme. All preferential logic links should be removed and missing physical logic links added. The detail of this process should be recorded however to enable **tie** to demonstrate at a later date what changes were made to the programme. This will allow a much simpler and clearer



assessment of delay to be undertaken. It will show the “true” physical interdependency of the activities in a particular sub-section and how they have been affected by the claimed event(s). After impacting the event(s), the sub-section programme should be reviewed for its reasonableness relative to the balance of the Infraco Works. The resource demands relative to the project as a whole should also be considered and, if deemed fair and reasonable, further adjustment made. This exercise should form the basis of tie’s initial assessment of entitlement to extension of time and the Infraco can be advised accordingly (if tie decide this subsequent step to be appropriate. We have found nothing in the Contract that precludes such an approach). However, whether or not tie notify the Infraco of its (interim) assessment, tie’s contemporaneous position on these events will be available for use whenever/if required in the future.

- ii) In notifying tie’s assessment to the Infraco, emphasis should be placed on the need to mitigate delay and reduce time risk within the programme. Where other sources of delay are known, or are thought to be likely, they should be brought to the Infraco’s attention within the notification of the initial assessment. Supporting evidence for such delays needs to be compiled, even if the Infraco’s original claim is considered unfounded.
- iii) The letter may contain wording along the lines of:-

*“We have assessed the likely impact of event “X” and, based on the information currently available, we consider that it does not cause delay to Section “Z” Completion (if reasonable mitigation measures are applied). We note that over 90% of this section of the Site has been available to you since XX/YY/ZZ but you have yet to undertake any work in this area. We are concerned that this consumption of programme float may have a detrimental effect on your ability to mitigate delay in the future and would encourage you to proceed with the available work to reduce your risk of becoming liable for delay to completion. We also note that you have decided to re-design the XXXXXXX and that this may delay commencement of this structure. Please note our concern that this is consuming further*



*activity float, and may reduce the scope for delay mitigation measures in the future.”*

The above wording assumes the **tie** assessment concludes there is no extension of time entitlement. Clearly, the approach and wording of any letter would require different strategic and tactical considerations if some entitlement was considered due. The initial approach in those circumstances may in fact entail reverting to the Infraco requesting specific details of the events prior to deciding on time.

## 7.4 Advancing the Infraco Works

- 7.4.1 We are advised that many areas of the Site are readily available for Infraco Works to commence yet the Infraco refuses to enter onto that section of the Site until it has unrestricted access and exclusive use of each defined sub-section. Many of these are several kilometres long and if one small area remains occupied by, for example, the MUDFA contractor, the Infraco claims it is in delay for all works in that sub-section. We are not aware of any such condition in the Contract allowing the Infraco to take this strict position. As a consequence, such action would appear to be a breach of contract by the Infraco. It is recommended that **tie** write to the Infraco in relation to each and every location where this is considered to be the case, urging it to commence work. The letter should also note that **tie** considers the Infraco’s actions to be contrary to its contractual obligations; that they are unnecessarily delaying the works; and that the consequences of such actions will be taken into account, as appropriate, in **tie**’s requirements to assess entitlements to extension of time.
- 7.4.2 With specific regard to **tie** Changes, the Infraco appears to be deliberately prolonging the contractual processes for production of estimates. This is delaying the implementation of many **tie** Changes and thereby delaying substantial sections of the Infraco Works. This situation needs to be addressed, wherever possible, as it is creating delay for which the Infraco cannot, at present, be held accountable. It is recommended that **tie** should consider issuing direction for the Infraco to proceed with particular **tie** Changes prior to receipt of an Estimate. This action is provided for / envisaged by Clause 80.13. Such action should, however, be considered on a case-by-case basis and taken only where it is thought that the absence of instruction will result in delay or reduce



flexibility in the programme. Where appropriate, such direction should include **tie's** initial assessment of whether the change is likely to give rise to entitlement of extension of time.

## 7.5 **Compilation of Contemporaneous Project Records**

7.5.1 It is apparent that there is a high risk of many substantial contractual disputes arising from the Infraco Contract. Crucial to **tie's** ability to secure its fair and proper contractual entitlement will be the quality, orderliness and completeness of its project records. Following discussions with **tie's** officers regarding the records that are currently being compiled we make the following recommendations.

- i) **tie** should require the Infraco to routinely provide resource returns as provided for by Clause 72 of the contract. An example template for the provision of this information has previously been provided to **tie** in electronic format.
- ii) The template for **tie** Project Managers' weekly reports should be refined to include prompts for recording where works could be progressing but are not; the reasons for same; and where works are actually being delayed. (A proposed amendment to the existing template is included in Acutus Progress Report No. 2.) The **tie** Project Managers should also, routinely, take sets of photographs to record the condition and status along the entire length of each sub-section of the Site showing where work is and is not being progressed. Consideration should be given to the orderly labelling, indexing and storage of all of this data to facilitate future research and retrieval.
- iii) Ongoing **tie** activity to compile detailed schedules of delay (design and construction) should continue and be supplemented by information from the **tie** Project and Design Managers' reports. This data should be cross-referenced to the INTC and CE reference numbering systems.
- iv) All available evidence should be gathered to substantiate shortcomings in the SDS's performance. Historic records of resource levels could prove



useful as they may evidence the Infraco's apparent lack of management of the SDS sub-contractor.

## 7.6 Instructing Mitigation Measures and/or Acceleration

7.6.1 The Infraco Contract includes provisions that entitle **tie** to instruct the Infraco to employ mitigation and/or acceleration measures. Issuing instructions to accelerate will expose **tie** to claims by the Infraco for additional monies. It is recommended that **tie** should consider issuing such instructions as a matter of last resort.

7.6.2 One of the fundamental objectives of the recommendations in this report is to bring clarity to **tie's** actual current exposure to time over-run. Until that matter becomes clearer, we consider it would be premature to made decisions and issue instructions to mitigate delay and/or accelerate that may commit **tie** to unnecessary additional expenditure.

## 7.7 Identify opportunities to mitigate delay and reduce time-risk

7.7.1 It is recommended that **tie's** officers actively seek to identify opportunities to mitigate delay and de-risk the programme. This may include options to relax constraints (e.g. revise embargos, increase road closures, etc.) and increase float in the programme (e.g. identify means and measures to break sub-section interdependencies and/or increase productivity) to reduce the risk of delay to each and every group of activities within the programme. If ways can be found to reduce the length of the critical path and increase the amount of flexibility within the programme as a whole, this will present real opportunities for time-risk reduction.

7.7.2 Each identified opportunity should be formally presented to the Infraco for its consideration and assessment. It should be encouraged to explore the potential benefits and identify any additional costs with **tie's** officers so that effectiveness and worth can be gauged. **tie** will then be in a position to make informed decisions on whether it wishes to suggest or instruct implementation.

## 7.8 Strategy Development and Implementation

7.8.1 This report presents many recommendations. We are aware that **tie** has already implemented many of those mentioned in our previous progress report.



7.8.2 This Contract and those associated with it are complex and involved. Our effort to-date has been intense but the sheer scale of the project and the volume of documentation involved, means that our recommendations have had to be made from a high level assessment of the current position. Such is the importance of the strategy that **tie** employs from this stage forward, we would recommend that a top level management review should be undertaken to test our observations, findings and proposals. It is recommended that such review should involve **tie's** senior technical, commercial and legal managers and their respective professional advisors. We have found that a half-day or full day workshop can prove to be most productive in carrying out such a review and would commend it for your consideration.

IMcA 27 May09