

**From:** Iain McAlister  
**Sent:** 04 May 2011 09:20  
**To:** Fiona Dunn  
**Cc:** Robert Burt; Dennis Murray; Susan Clark; Tom Hickman  
**Subject:** J086 - EoT risk assessment estimate - STRICTLY PRIVATE and CONFIDENTIAL and FOISA EXEMPT - In contemplation of litigation

STRICTLY PRIVATE and CONFIDENTIAL and FOISA EXEMPT - In contemplation of litigation

Dear Fiona,

Further to our telephone conversation on Monday morning, when you asked if Acutus could provide estimated information for your use in an EoT liability risk assessment, please find as follows our reply.

You asked that we consider the Employer’s potential liability for EoT awards under the Infraco Contract, providing our best estimate of upper and lower limits for both utilities delays and design delays (incorporating the matter of Change Orders). We provide below information on each of these in turn. Before going into any detail, as I am sure you will appreciate, it is important that we note that the following information and estimations are, primarily, based on our own judgement and **NOT** on a completed/fully detailed analysis. That is because we have not, to-date, been directed to carry out such detailed assessment in respect of overall liability for critical and dominant delay which comprehensively addresses all of those matters.

**Utilities Delays**

As you are aware, there have been many areas affected by later than planned completion of utilities diversions. The Infraco’s approach to seeking entitlement to EoT is to analyse these delays in isolation from all others. We do not agree that this approach is correct, nor do tie’s legal advisers. That said, because we are dealing here with a bespoke contract there remains the risk that the Infraco’s approach may find support from a third party determiner. That being so, the ‘upper limit’ of tie’s liability is likely to be based on the Contractor’s most recent claim for such matters (i.e. the Estimate for INTC 536). Our analysis of this claim did identify what we considered to be errors in the Infraco’s analysis. Assuming these have been correctly identified, it would appear reasonable to reduce the upper limit EoTs by the amount we have identified as arising from these errors (as per that set-out in our draft report on the INTC 536 Estimate.) In assessing the ‘lower limit’ of risk we refer to our identification of the fact that, with respect to the Sectional Completion B, C and D Dates, the utilities delays do not appear to be the dominant delays. That being so, it is the analysis and assessment of the dominant delays that should determine tie’s potential liability for EoT. On that basis the lower limit for EoT arising from later completion of utilities diversions could on one view be said to be “Nil”. While this line of argument may also be applied to the Sectional Completion A Date, the fact that there exists an Adjudicator’s decision on that date makes us suggest that it would be reasonable to use the Adjudicator’s decision as the lower limit.

All of the foregoing leads to the follow summary of potential EoT liability, if only late completion of utilities is to be considered.

Section	Infraco claim in INTC 536 Estimate	Lower risk assessment	Upper risk assessment	Comment
A	241 days	154 days	241 days	Lower limit is that awarded by the Adjudicator for the INTC 429 Estimate.
B	286 days	0 days	286 days	Late utilities diversions do not appear to Acutus be critical delay. Infraco assessment relies on programme linkage associated with the Section A

				Date
<b>C</b>	461 days	0 days	350 days	Upper limit reflects Acutus adjustment for apparent errors identified in the delay analysis contained in Infraco INTC 536 Estimate. (See comments below re lower limit)
<b>D</b>	461 days	0 days	350 days	Section D Date is defined as 6 months after the Section C Date, therefore the upper and lower limits are the same values as for Section C.

It is possible that a third party would hold that the utilities delays in for example Section C were concurrently critical (i.e. competing) with design delays. As such it could be held that the lower limit of liability may be more than 'Nil'. These concurrency issues have however yet to be [fully] tested in adjudication or with **tie**'s solicitors.

It is important to note that the Infraco's Estimate for INTC 536 had a base date of 31 July 2010 and that includes projections of delays to utilities diversions up to 2 February 2011. One of the errors included in the above assessment is that the latest utility diversions date that should have been used in the INTC 536 Estimate is late November 2010. All of that said, we are aware that some of those projected dates for completion of utilities diversions have since slipped further, albeit we do not know by how much. That being so, the Section C and D Dates delays should be increased by the amount of that further slippage. (This is for utilities diversions on Intermediate Sections 1A, 1B and 1C and we currently estimate that further slippage to be at least 6 months (182 days), i.e December 2010 to May 2011.

#### **Design Delivery Delays and associated tie Change Orders**

As part of our examination of the INTC 536 Estimate (MUDFA 2) and through the delay attribution work we undertook on certain parts of the Infraco Works (up to June 2010), we identified that matters other than late completion of utilities appeared to be, or appeared most likely to become, the dominant cause of delay. In particular we identified the following elements:-

1. Trackform design and associated tram and roadworks;
2. Parts of the Intermediate Section 1A roadworks and tram works;
3. Parts of the Intermediate Section 1B accommodation works, works by CEC, roadworks and tram works;
4. Picardy Place area roadworks and tram works;
5. Structures on Intermediate Sections 5A and 5B;
6. Section 6 (Depot) building, roads and track works;
7. Section 7A earthworks (in particular specialised geotechnical work); and,
8. Section 7A Airport tram stop and associated works.

There may also be other areas subject to critical design delays that are outwith our knowledge.

To provide our best estimate of the EoT liability risks arising from these we have considered each Sectional Completion Date in turn, as explained below.

#### Section A (Depot)

We are aware that construction of the Depot has been prolonged as a result of, amongst other things:-

1. Later delivery of approved design;
2. Late procurement of materials and sub-contractors;
3. **tie** Change Orders; and,
4. Remedial and re-working of incorrect work.

These are to a certain degree concurrent with the late completion of utilities diversions noted above.

We have not, to-date, undertaken any form of detailed investigations into, and/or analysis of, these four listed matters. Our assessment of potential **tie** liability for EoT has therefore had to be based upon our general awareness of what has taken place at the Depot to-date and the advice provided to us by **tie** members of staff in relation to it.

As a starting point for our assessment we make reference to the Contractor's Sectional Completion A Date claim for extension of time, as submitted to **tie** on 4 March 2011. That document cites 56 No. INTCs that the Infraco claims are associated with achievement of the Sectional Completion A Date and require analysis in an assessment of EoT entitlement. For the avoidance of doubt, to-date, we have not been directed to conduct a detailed examination of this claim and therefore our reference to it is solely on the basis of our reading parts of its conclusions. It claims an EoT to the Sectional Completion A Date of 526 days. If the Infraco's claim is validated, this could be its entitlement to EoT. It should be noted that the claim has been prepared on the basis of all required tCOs being issued by 1 January 2011. It is our understanding that this has not occurred, partly because, as we understand it, **tie** does not believe that all tCOs requested are justified and partly because the Estimate preparation and agreement processes have yet to be concluded.

The Adjudicator's decision on the INTC 429 (MUDFA Rev. 8) Estimate granted 154 days EoT for utilities delays. While it remains the case that the utilities delays may not be dominant, it appears to us that some of the earliest tCOs may secure for the Infraco a similar or equivalent EoT.

From our various discussions with **tie** members of staff, it appears to us that **tie** is likely to be liable for at least some delay arising from matters associated with the INTC's cited by the Infraco. Without analysing all of them in some detail we cannot provide informed comment on what **tie**'s EoT liability for this might be. However, based on our experience of other Infraco claims and its method of presenting them, and taking into account **tie** staff's acknowledgement that there may be at least a number of INTC issues for which it may be held liable, we suggest that the lower limit of **tie**'s potential liability for EoT might be estimated as the 154 days (as awarded by the Adjudicator), plus 50% of the balance claimed by the Infraco in its recent claim submission (i.e. 50% of 526 – 154 = 186). That gives an estimated lower limit of EoT liability of **340 days** (154 + 186).

It would appear to us to be prudent that, in the absence of a detailed assessment of the Infraco's recent claim, the full amount claimed should be used as the upper limit of **tie**'s liability for EoT. (i.e. 526 days) plus any delay for which **tie** may be liable that has arisen since that claim was submitted and/or that is beyond the time limits stated in that claim. We estimate that to be an additional 120 days (1 January 2011 to 1 May 2011). This gives an overall total of **646 days** (526 + 120). We have not added the "additional" delay to the lower limit as it may prove to be the case that **tie** is not liable for this delay.

## Section B

We have not, to-date, examined or analysed the design related delays on this part of the Infraco Works. However, we have accumulated some knowledge of them as part of our previous work on utilities diversions and delay attribution. We identify here what we presently consider as matters most likely to become the dominant delay to the achievement of the Sectional Completion B Date:-

1. Resolution of the Section 7 earthwork design and delivery of the associated works (in particular the works in the area of the existing landfill site); and,
2. Resolution of the civil engineering and building designs for the Airport tram stop and the track works directly linked to it.

We note that the Infraco's Sectional Completion A EoT claim, submitted on 4 March 2011, states that there is a consequential delaying effect on the Sectional Completion B Date of 588 days (i.e. from 1 July 2010 to 9 February 2012). Although we have not, to-date, been directed to examine that claim in detail it is our understanding (and expectation) that the manner in which this consequential delay has been projected can be challenged (By that we mean that the Infraco is likely to be relying on programming logic that can be challenged for its validity and/or failure to apply reasonable and practicable mitigation measures.) If such a challenge is unsuccessful and the Infraco's claim is upheld, then **tie**'s liability for EoT may prove to be the 588 days claimed. That would most likely include the additional time added for the CAF delivery programme being inconsistent with the equivalent time provisions set out in the Infraco Contract Programme. It would appear prudent to us that **tie** should use this figure as a reasonable estimate of its maximum liability for EoT, subject to any further delays that may not have been

included within the Infraco' claim, as similarly noted above for Section A i.e. a possible maximum liability of **708 days** (being 588 days plus 120 days).

The 'lower limit' for the Sectional Completion B Date is considerably more difficult to estimate. We say that because to achieve that date, primarily, requires the delivery of the tram test track. The Infraco Contract lacks precision on what constitutes the tram test track. It states that it is assumed to be the track from the Depot to the Airport. We have been advised by some **tie** staff that it may be possible to achieve delivery of the test track without having this entire section complete. That being so the tram commissioning required to achieve Sectional Completion B Date might not be affected by potential design delays in and around the Airport tram stop. However, there remains the risk that this entire section of the route may be required and/or that a third party determiner might consider it needs to be taken into account in the proper operation of the EoT mechanisms contained in the Infraco Contract. On the assumption that only the tram route from the Depot to Ingliston Park is required for the test track, we estimate that the lower limit for **tie's** potential liability for delay to the Sectional Completion B Date to be the same as for Sectional Completion A, as it will be the part of the test track at the Depot that will most likely determine **tie's** liability for delay (the geotechnical issues associated with the landfill site being considered, on the basis of advice from **tie** members of staff, to have lesser **tie** culpability). That equates to **340 days**.

### Section C

The delays that impact upon the achievement of the Sectional Completion C Date are many and varied. Some are clearly Employer liability, e.g. later than planned diversion of utilities (although it should be noted that with respect to Intermediate Section 1A, there may be a degree of Infraco culpability as the diversions cannot be designed until the Infraco Works design has been completed by the Infraco and formally approved). Others are clearly Infraco liability, e.g. later than planned procurement and achievement of many pre-requisites to commencement of construction. However, for a considerable proportion of the Infraco Works the factual matrix behind the delays is a complex, inter-related and intertwined set of factors which, taken together, make it very difficult to apportion liability and culpability without fully detailed research and analysis. This is further complicated by the fact that many of these complex and inter-related delays remain, at this point in time, live issues. This brings added uncertainty as to the actual extent of each delay and, most significantly, which will ultimately prove to be dominant and critical delays within the matrix of the Infraco Contract Programme. To explain this by example we cite three significant areas affected by delays, each of which has, in our opinion, the potential to be the dominant and critical delay to the achievement of the Sectional Completion C Date.

1. Road and track design in and around Picardy Place. As we understand it, the Employer (or **tie**) has yet to provide the Infraco with certain design parameters to allow it to complete the design for the works in this area. This would appear to be a cause of delay for which the Employer carries full liability. Until it is known when the works in this area will be designed and constructed it is impossible to determine if this will be the dominant and critical delay affecting the Sectional Completion C Date.
2. The utilities diversions within parts of Intermediate Sections 1A, 1B and 1C are not yet complete and it is unclear when they will be so. We understand that some of these might be transferred to the Infraco, if the works are to proceed, but that has not yet been done. For those that may be transferred there is likely to be further delay while the **tie** Change contractual mechanism is operated. Until it is known when these diversion works will be complete it is impossible to determine if they will become the dominant and critical delay affecting the Sectional Completion C Date. What appears to us to be clear is that the Employer currently carries liability for these delays.
3. The string of civil engineering structures running through Intermediate Sections 5A and 5B have always been close to the critical path to the Sectional Completion C Date. For many of them work on-site has yet to commence. We understand this is because their design and third party approvals are not yet in place. It remains unclear why this is so (although there are INTC issues for which **tie** will likely be held, at least partially, responsible). Our work on delay attribution has identified extremely long periods of delay associated with the Infraco preparing and submitting designs for approval. There also appear to be unexplained period of inactivity on what appear to be potentially critical activities. That said, there would also appear to be periods of time, within the overall delay associated with individual structures, where **tie** or the Employer has taken relatively long periods of time to approve or instruct the Infraco and thereby allow it to progress with the design and approval process. Based on the evidence and explanations provided to us by **tie** members of staff, it appears to us that for many of the structures in these Intermediate Sections the Infraco has been dilatory and therefore should be held liable for a considerable proportion of the delay.

However, there would also appear to be significant Employer/**tie** culpability within the overall duration actually taken. We have been advised that it remains unclear when these design will be delivered and construction can commence. It is also unclear if the Infraco is prepared to re-sequence the works in these areas to mitigate delay. Consequently, these works may yet prove to be the dominant and critical delay to the achievement of the Sectional Completion C Date. If that proves to be the case, liability for that delay should, in our opinion, be apportioned between the Employer/**tie** and the Infraco.

To assist **tie** with its EoT risk assessment we suggest the following.

The upper limit for Section C should be the greatest of that claimed by the Infraco in the EoT claims submitted to to-date. These are the INTC 536 Estimate (utilities diversion delays, as noted above) and the Sectional Completion A claim which includes consequential projections on the dates for Sections B, C and D. On that basis, it is the Section A claim that gives the greatest (and presumably the dominant) projection of delay. It is claimed as 566 days. However, if the further delay to the issuance of the tCOs sought by the Infraco is taken to the present date a further 4 months (120 days) requires to be added. That is the period from 1 January 2011 to 30 April 2011. This gives an estimated upper limit of **686 days** (566 + 120).

To try to provide some indication for the lower limit, we refer to our draft report on the INTC 536 Estimate. In that report we note that if the actual progress on design delivery (as reported by the Infraco in July 2010) is inserted into the Programme the projection of delay to the Sectional Completion C Date is 607 days. This delay is driven by the delays to the structures on Intermediate Section 5A. It is our understanding that since that report, progress on design has slipped by approximately 8 more months (approx 243 days) giving an updated total of 850 days (607 + 243). We can only estimate a proportional split of liability for this delay based on our previous investigation work and the explanations provided by **tie** members of staff. Absent that detailed analysis the 'guesstimate' we suggest is a 60%/40% split between the Infraco and the Employer/**tie**. However, we would stress that there is no detailed analysis informing this 'guesstimate' nor any specific legal advice to support such an approach. For these reasons we must emphasise that any use **tie** may wish to make of this guesstimate should be considered within the context we have set out above. On that heavily qualified basis, we suggest the lower limit of **tie** culpability for delay to the Sectional Completion C Date may be considered to be **340 days** (850 days x 40%).

#### Section D

The Infraco Contract defines the Sectional Completion D Date to be 6 months after the Sectional Completion C Date. On that basis we would suggest that the upper and lower risk assessments set out for the Sectional Completion C Date be equally applicable to the Sectional Completion D Date.

The table below summarises these assessments. In summary may we point out that the upper limits have been derived from the Infraco's most recent claim for EoT. As noted above, that claim assumed that certain tCO's being issued by 1 January 2011. It is our understanding that this has not occurred.

Section	Infraco claim for Sectional Completion A	Lower risk assessment	Upper risk assessment	Comment
A	526 days	340 days	646 days	The upper risk assessment is that sought in the Infraco's Sectional Completion A claim plus 120 days, as explained above.
B	588 days	340 days	708 days	The upper risk assessment is that sought in the Infraco's Sectional Completion A claim plus 120 days, as explained above. Upper risk assessment includes additional time from the CAF delivery programme.
C	566 days	340 days	686 days	The upper risk assessment is that sought in the Infraco's Sectional Completion A claim plus 120 days, as explained in more detail above.

D	615 days	340 days	686 days	Section D Date is defined as 6 months after the Section C Date therefore the upper and lower limits are the same values as for Section C.
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It should be noted that the lower risk assessment for Sections A and B has been determined by an entirely difference method of assessment for Sections C and D. The fact that the value of that assessment is the same for both pairs of sections is entirely coincidental.

I hope and trust that this information is what you were looking for and that the explanations provided will allow you and your colleagues to understand the thinking behind it. May I suggest that you may wish to test all of this with those in **tie** who may have more information and job knowledge of the issues we have considered so that they may have the opportunity to provide their opinion on the reasonableness of our assessments and estimates.

Kind regards

Iain

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