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# Report on investigations into delays incurred to certain elements of the Infraco Works

in relation to the

## The Edinburgh Tram Project

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and

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On behalf of: **tie** Limited

under the instructions and directions of:

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## Section 1 Introduction

### 1.1 Formal details

1.1.1 This report has been prepared by **Robert Burt** (Director) and **John Hughes** (Consultant), both of Acutus. Assistance was also provided by **Iain McAlister**, Associate Director at Acutus.

### 1.2 Instructions and issues to be addressed

1.2.1 On 3 March 2010 Acutus provided an initial view on potential tie liability for delay to the Infraco Works (Acutus email of 3 March 2010 refers). A subsequent meeting was held on 10 March 2010 between tie and Acutus to discuss those initial conclusions. At that meeting it was agreed that a further process of investigation would be undertaken by Acutus. Those investigations were to focus on certain 'prioritised' elements of the Infraco Works which were jointly identified as being likely to be critical to overall progress and completion. A total of 27 'elements' were selected. It was further agreed that a deadline of 12 May 2010 would be set for Acutus to report back to tie.

1.2.2 Each element was given a priority level code<sup>1</sup> depending on the then perceived level of importance in respect of progress and delay to the relevant Sections and Sectional Completion Dates. Those prioritised elements are set out in the table below.

Priority level	Intermediate Section	Description of area / structure
1	1A4	Lindsay Road RW -W1
1	1A4	Road and Track
1	1A3	Victoria Dock Bridge - S16
1	1A3	Tower Place Bridge - S17
1	1A1	Road and Track
1	1B	Road and Track
1	1C2	Road and Track
1	1C3	Road and Track
2	5A	Russell RD RW - W3
1	5A	Russell RD RW - W4
1	5A	Murrayfield TS RW - W18
2	5A	Murrayfield TS
1	5A	Roseburn Viaduct - S21A

<sup>1</sup> Priority level '1' being considered to have more relevance in terms of effect on progress and delay than level '2'





Priority level	Intermediate Section	Description of area / structure
2	5A	Murrayfield Stadium Underpass - S21C
2	5A	Water of Leith Bridge - S21E
1	5A	Baird Drive Retaining Wall - W8
1	5A	Balgreen Road Bridge - S22A Incl. Balgreen Road Retaining Wall W9
1	5A	Balgreen Road Bridge - S22B
2	5B	Carrick Knowe Bridge - S23
2	5B	Road and Track
2	5C	Road and Track
1	5C	A8 Underpass - W28
1	5C	Depot Access Road Bridge - S32
1	6	Depot Building
1	6	Roads & Track – Depot
1	7a	Track - Section 7
1	7b	Gogarburn RW - W14/W15

1.2.3 The main objectives of this exercise were to identify, as far as possible within the time and from the records available:-

- a) the key matters which had caused or were causing delay to the elements under investigation, including delay to commencement, progress and projected completion;
- b) to identify areas of concurrent delay and express a view on the significance of same;
- c) to express our current opinion on the extent of tie liability in respect of delay to each element and from those elements the likely liability in respect of the Sectional Completion Dates; and
- d) to identify any areas of further investigation (including possible audits of Infraco’s files) which may be required.

1.2.4 It is anticipated that the output from this and other future exercises, undertaken by tie or others, will assist and inform decisions in respect of extensions of time and additional payment at Sectional Completion level. This process will also provide a platform from which tie can assess, and if necessary defend, claims for additional payment from Infraco and/or its sub-contractors at Section and intermediate section level. It will also inform project risk profile considerations.



1.2.5 This report and the appendices attaching hereto, summarises our findings and opinion in respect of the above.

### 1.3 Information, data and documentation provided

1.3.1 Information and data required for the investigations, was identified and generally requested via a series of email questionnaires issued in respect of each element<sup>2</sup>. That information was subsequently provided by tie either by email or during discussions with tie personnel.

1.3.2 That said, during the investigations it became apparent that in some instances certain important data was not always / readily available. As a consequence, we have made specific recommendations within the subsequent sections (where relevant) regarding, for example, the need for further audits to be carried out by tie (including the type of information and documentation required to be recovered from Infraco during that process). For ease of reference any such 'recommendations' have been indicated thus "**Recommendation: ...**".

1.3.3 As noted above, a timescale for this exercise was set whereby it was agreed that Acutus would report back to tie on 12 May 2010. That timescale afforded an average of approximately one and a half days per element for the current exercise. As a consequence, for the most part the information, data and advice upon which the current exercise and opinion is based, has been provided by tie personnel. That process is to be distinguished from separate interrogation and verification of the contemporaneous project evidence files by ourselves. While we have no reason to doubt the information and data provided, time has not permitted independent corroboration of the majority of that information.

### 1.4 Meetings held

1.4.1 A number of meetings were held with various tie project management staff over the course of the investigations. In this regard, meetings and/or telephone discussions were held with the following individuals:-

- a) Malcolm Butchert and Alisdair Dickinson (in respect of intermediate section 1A);
- b) Phil Dobbin (in respect of intermediate section 1B);

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<sup>2</sup> Questions in respect of structure related questions were issued under cover of emails dated 22 March 2010, 23 March 2010, 12 April 2010, 19 April 2010, 22 April 2010, 26 April 2010 and 29 April 2020 refer. Separate emails were issued in respect of contractual questions, design processes and INTC data.



- c) David Burns (in respect of intermediate section 1C);
- d) Tom Cotter (in respect of intermediate sections 5A & 5B);
- e) Andrew Scott (in respect of intermediate sections 5C, 6 & 7); and
- f) Colin Neil.

1.4.2 Further meetings and dialogue were held with Damian Sharp (in respect of design processes and data), Fiona Dunn (re commercial issues such as INTC's and sub-contractor procurement) and Tom Hickman (regarding planning and as-built data).

1.4.3 It is relevant to note that all tie personnel were extremely helpful and willing to assist in this process, providing whatever assistance they could (often outwith normal working hours).

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## Section 2 Preamble to analysis and conclusions

### 2.1 Generally

2.1.1 The investigations and analysis focussed on the following key headings which were highlighted as being consistently significant in terms of progress and delays. Those headings are:-

- A. The “Issue For Construction drawings” (**‘IFC’**) process – see report section 2.2 below and Section ‘A’ of each individual appendix;
- B. The “Infraco Notice of tie Change” (**‘INTC’**) process – see report section 2.3 below and Section ‘B’ of each individual appendix;
- C. The progress and completion of the **MUDFA Works or other utility works** – see report section 2.4 below and Section ‘C’ of each individual appendix;
- D. **‘Other’** matters such as sub-contractor procurement by Infraco, Work Package Plan (WPP) submissions by Infraco, the Infraco IDR/IDC process and other structure or area related issues arising during the investigations. See report section 2.5 below and Section ‘D’ of each individual appendix;
- E. Comparison of the **construction periods** included within Infraco’s Revision 1 and Revision 3 programmes – see report section 2.6 below and Section ‘E’ of each individual appendix; and
- F. **Availability of specific areas** (whether in whole or in part) – see Section ‘F’ of each individual appendix.

2.1.2 For consistency, progress and delays attaching to each element has been considered under each of the above headings.

2.1.3 Prior to outlining the specific findings in respect of each prioritised element it is prudent to make the following general comments in respect of each of the key headings.

### 2.2 IFC process

2.2.1 A key issue identified in a number of instances was the availability of design such that the works could commence or progress could be maintained. Matters such as late release of the IFC by the date identified in the Programme or a material breach by SDS in





performance of its obligations are Compensation Events under the Infraco Contract<sup>3</sup>. Those matters *may* give Infraco an entitlement to additional time and payment (albeit that entitlement to additional payment is subject to certain potential deductions as set out in Clauses 65.12.2 and 65.13). It is therefore important to establish, as far as possible, whether any such Compensation Events were “... *the **direct** cause of a delay in achievement of the issue of a Certificate of Sectional Completion ...*” (emphasis added).

2.2.2 In addition, questions surrounding Infraco’s management<sup>4</sup> (or otherwise) of SDS and the IFC process generally were also raised by tie during the current exercise. That, together with the provisions of Clause 19.19<sup>5</sup>, tie’s liability for delays in respect of tie Changes and third party approval delays, render it essential that the ‘cause’ of any delay to the IFC’s be established (as distinct from merely identifying that a delay in IFC issue has occurred).

2.2.3 As a consequence, during the current exercise we requested and were provided with, a copy of the “*SDS Approvals tracker*”<sup>6</sup>. That document provided information relating to the dates on which the ‘first’ IFC packages were planned to be issued and when/if they were actually issued. From that data we were able to establish whether any delay had in fact occurred to the (first) IFC.

2.2.4 It is apparent however that certain further information is required in order to establish, with a greater degree of certainty, the culpability for any such delay in IFC issue. That further information is not presently available, as further explained below:-

- a) ‘Cause’ of delays to Initial IFC: the “*SDS Approvals tracker*” monitors only the issue of, and delays in respect of, the first IFC for each ‘package’. It does not however specifically identify the ‘cause’ of that delay. Potential causes of delay may include one or more of the following:-
- i. late issue by SDS (in its simplest form a CE under 65(t) – which may in turn permit the application of clause 65.12.2);
  - ii. a material breach by SDS (again in its simplest form a CE under 65(u) – which may in turn permit the application of clause 65.13);

<sup>3</sup> Clause 65 and Compensation Events (t) and (u) respectively

<sup>4</sup> Clauses 11.3 & 11.4 of the Infraco Contract refer

<sup>5</sup> Clause 19.19 limits tie’s liability for Compensation Events in certain circumstances related to failures on the part of Infraco

<sup>6</sup> Copy provided to us was the MS Excel file ref. ‘SDS Approvals tracker – download at 6 April 2010.xlsm’



- iii. a failure of BSC to provide the Infraco Design to SDS in accordance with the Consents Programme and Schedule Part 14 (clause 19.19 refers);
- iv. a **tie** Change;
- v. A failure of BSC in respect of its management of SDS or another breach by BSC (e.g. failure to properly manage the CEC/NR interface); and/or
- vi. A requirement of CEC/NR for which tie will bear responsibility;

No doubt there are a number of other potential causes of delay not identified above. However, until further details are available it is not possible (in the majority of instances) to establish with any certainty the cause of and culpability for delay in the issue of the IFC's.

**Recommendation:** tie should (on a focussed basis) carry out an audit of identified IFC packages against which critical delays may have occurred.

**Recommendation:** a significant delay has been identified in respect of the design for **Roseburn Viaduct** within Intermediate Section 5A. Delay in the region of **92 weeks** has so far been incurred to the IFC (incorporating the VE design) for this structure. This structure is crucial to the works in 5A which itself is key to completion of the 'off-street' works within Sectional Completion C. As a consequence, it is recommended that a detailed audit of this process of, and delays to, the design of this structure is undertaken.

- b) **Revised IFC drawings:** the current "*SDS Approvals tracker*" monitors only the first IFC issued in respect of each 'package'. It does not track either the timing of, or reasons for, the re-issue of subsequent revised IFC's for those packages.

**Recommendation:** tie should consider implementing a wider, more comprehensive IFC tracker capable of monitoring the subsequent revised issues of each IFC. That tracker should also endeavour to identify the reasons and culpability for the revisions made. This will more readily inform any subsequent analysis of delays.

- c) **Infraco Design:** there is no data presently available (to ourselves or **tie**) that can inform us as to when Infraco provided its design to BSC. We understand that although **tie** has requested this information from Infraco, it has refused to provide this





information. This however affects, among other things, the consideration of Clause 65(t) and tie's ability to apply clause 19.19 where or if appropriate.

In this regard, we are advised that an audit is planned on selected areas of design which should retrieve this type of information (at least for the areas considered by the audit). We understand the proposed audit will also address (or attempt to address) retrieval of information on how, or how effectively, Infraco managed SDS. That information however is not yet available.

**Recommendation:** tie should press Infraco for the provision of data surrounding the provision of the Infraco Design to SDS.

- 2.2.5 As a consequence of the above, we have endeavoured where possible to identify the most likely causes underlying the delays. There is however some uncertainty surrounding the establishment of culpability for these delays. That uncertainty however could be addressed by the data obtained by implementation of the recommendations above.

## 2.3 INTC Process

- 2.3.1 A number of issues arise in respect of the INTC process. We have summarised those issues below together with notes on any interim assumptions made in respect of same.

- a) **INTC Master List: Recommendation** – tie may wish to consider maintaining a central master INTC schedule which monitors the various components<sup>7</sup> of the INTC process. That master list is likely to save time in the future locating the relevant details surrounding individual INTC's.
- b) **INTC's included in the current analysis:** we have relied on the tie project managers to highlight the key INTC's which have affected commencement, progress and delays to individual structures. A separate exercise is also underway by the tie commercial team, where the current INTC master list is being populated with the relevant data. When complete, the master list will facilitate identification of all INTC's applicable to specific individual areas or structures, thus permitting a more comprehensive analysis

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<sup>7</sup> Those components include (but are not necessarily limited to) data concerning the relevant location / structure, date Estimate required; relevant (reasonable) extended date for provision of the Estimate; whether revised Estimate required; date Estimate(s) issued; date of tie Change Order; whether subject to 80.13 instruction (and date); whether referred to DRP; date of reference to DRP; whether 80.15 instruction issued by tie; outcome of DRP and other Comments. An example of the type of master list was provided (and used) as part of this current exercise. That data could also be compiled using a database application if that format is preferred by tie.



to be undertaken. That exercise however is not yet complete – hence our reliance on the INTC's identified by the project management personnel.

**Recommendation:** that the tie commercial team continues to compile and maintain a detailed master list of all INTC's (and related data) in either Excel or database format.

- c) **Period for provision of Estimate:** Clause 80 provides that Estimates shall be provided by Infraco within an 18 Business Day period, unless an extended period is agreed by the Parties. We understand that few extensions were agreed by the Parties. There is also no data available to inform us as to tie's position on any reasonable extended period. Time has not permitted us to review the contents of each INTC in order to arrive at a view on a reasonable<sup>8</sup> period for the provision of that Estimate. We have therefore, by necessity, proceeded on the basis that the 18 Business Day period applies to each INTC. It should therefore be borne in mind that this position could be subsequently challenged by Infraco and that a period longer than 18 Business Days may be held by a third party as being applicable / more reasonable.
- d) **Period for tie to review and respond to Estimates:** in the current analysis we have not allowed a 'default' period for tie to review and respond to Estimates provided by Infraco. While it is accepted that this period will vary depending on the contents and nature of the Estimate, time has not permitted a review the contents of the various Estimates to establish for ourselves what we would consider to be a reasonable period. No other information is available in this regard for us to rely upon. As such, any time taken by tie beyond that 'default' period has been attributed to tie as a period for which it is likely to be culpable. That position is generally in line with the advice received from DLA on 24 March 2010 (email timed at 15:44), where it was noted that *"... to avoid further delay/cost consequences, it would be open to tie to refer the Estimate for determination in accordance with DRP"*.

It is also noted that, Compensation Event (x) renders tie liable for the *"delay arising between the date tie is notified of a Notified Departure and the actual date on which tie issue a tie Change Order in respect of such Notified Departure"*. As such tie is liable for any such 'reasonable' period for the provision of the Estimate and also the review and response period (where that CE is the direct cause of delay).

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<sup>8</sup> Please refer to item 4 of the DLA advice note dated 16 January 2010.





- e) **Period taken by Infraco to issue INTC:** the recent exercises have identified a number of instances where significant periods of time have elapsed between an IFC issue date and the date on which Infraco has notified **tie** of an INTC. As an example, INTC 399 was notified on 26 February 2010. We are advised however that the Geotechnical IFC for this area was available to Infraco on or around 18 December 2008. That equates to a period of 62 weeks prior to notification. On the face of it that period is unreasonable and raises questions as to Infraco's management of this process and the Works generally. Other similar examples are prevalent throughout several elements. Note: the Infraco Contract does not make specific provision for notification of INTC's within a specific period.

**Recommendation:** that discussions are held with, or advice sought from, DLA to establish whether excessive time taken to notify INTC's is a failure / breach by Infraco of its general obligations under the Contract.

- f) **Effect of 80.13 instruction:** we have been provided with a copy of **tie**'s letter dated 19 March 2010 issuing an 80.13 instruction in respect of a number of INTC's. We also understand that Infraco has disputed the validity of an instruction under that clause. For present purposes we have proceeded on the premise that the **tie** 80.13 instruction is valid. In the event that it is found not to be valid, the conclusions concerning culpability for delay associated with those INTC's may change. In this regard we have also proceeded on the premise that the issue of an 80.13 instruction by **tie** will not 'open the door' for Infraco to somehow argue that such an instruction could/should have been issued earlier. This is particularly relevant to circumstances where Infraco was in significant delay in the provision of Estimates for INTC's prior to the issue of an 80.13 instruction. Whilst it is considered unlikely that Infraco would be successful in prosecuting such an argument it may be prudent to discuss this with DLA.

## 2.4 MUDFA and/or other utility works

- 2.4.1 Information regarding completion or projected completion of MUDFA or other utility works was obtained from two principle sources, being (i) information obtained from **tie** project management personnel and (ii) the marked up photographs of the various sections produced by **tie** at periodic intervals.



**Recommendation:** that tie maintain a central database of MUDFA / utility commencement / completion dates (that information has proven difficult to extract).

## 2.5 Other

2.5.1 Sub-contractor procurement: data in respect of Infraco's procurement of its sub-contractor's was obtained from two principle sources, being (i) a copy of tie's audit report dated February 2010; and (ii) section 4.1.2.1 and Appendix 10.6 of the Infraco Period Report 3-1 to 24 April 2010. Review of that documentation shows that Infraco has not operated the procurement process in accordance with the Infraco Contract. This could have significant commercial implications as events unfold. In terms of the effect of the procurement process on progress and delays however, the investigations focussed on gaining an understanding of whether the procurement of sub-contractors affected progress of the Infraco Works themselves. In this regard, we note that it is quite possible that the issue of letters of intent (LOI's), as opposed to formal sub-contracts, could lead to delays to either a start on site or progress on site. That is particularly so because the LOI's issued by Infraco all appear to have restricted 'authorised value limits'. It is therefore important to understand whether, and in what way, this process actually affected the sub-contracts in question. That information however is not available from the audit; nor is it available from the Infraco Period Reports. The audit itself identifies this as a further action (at page 4 "Further Audit Requirements", where, in the last two sentences 'scope' and 'timeline' is discussed).

**Recommendation:** that a further audit is carried out by tie (as planned) which goes towards establishing the timing and details of the various extensions to the sub-contractor's letters of intent. That audit should also aim to gain sight of (or retrieve copies of) relevant correspondence between Infraco and the sub-contractors. That information should in turn assist in identifying whether this process caused delays to commencement / progress. Please note however that our initial conclusions in respect of the prioritised elements indicate that sub-contractor procurement process was not a significant obstacle to commencement or progress. This is explained in detail within the relevant appendices.

2.5.2 Infraco IDR/IDC process: Following discussions with Damian Sharp at tie, we understand that the original intent behind the provisions of Schedule Part 14 was that SDS would have its Inter-disciplinary Design Check (IDC) in place before issue of the IFC; and that Infraco's IDR/IDC would occur after that point. That is, Infraco would 'complete' its element of the





design following receipt of the first IFC from SDS. As such, the 'IDC' shown in the flow chart at paragraph 2.2.13 in Schedule Part 14, was apparently intended to relate to the SDS IDC (not Infraco's IDC). That said, it was explained that the flow chart *could* also apply to the subsequent Infraco design process but in a separate timescale (it is this separate timescale that needs to be better understood). It was also explained that it was not anticipated that SDS would update its IFC for subsequent Infraco design input or change requests. However, it is apparent that this is now occurring such that revised IFC's are being issued by SDS following integration of Infraco Design; with Infraco submitting Compensation Event notices under CE(t). We have been unable to establish where the Infraco IDR/IDC process sits in terms of the contractual timeline.

In addition, we have not yet located where or if it is explicitly stated, or impliedly included, in the Infraco Contract that the Infraco Design has to be in place before construction starts (this may however fall out of Schedule Part 14 Part A clause 7). This should be discussed further to ensure that tie's position on this issue is protected. Other related contractual issues arising during our discussions with Damian Sharp include:-

- a) Does Compensation Event '(t)' relate only to the first IFC in respect of the 112 listed in the Design Delivery Programme (currently the projection is that 262 IFC's will be issued)?
- b) How should IFC's emanating from the development workshops feature in this process?
- c) How should the inclusion of BSC's design in a subsequently revised IFC from SDS be addressed?

**Recommendation:** further investigation (via tie audit) into the provision of the Infraco Design and the subsequent timing of the integration of that Infraco Design into the SDS design.

**Recommendation:** clarification of the contractual issues raised above.

## 2.6 Comparison of the construction periods included within Infraco's Revision 1 and Revision 3 programmes

- 2.6.1 Within the individual analysis of each of the prioritised elements, we have undertaken a review of (i) the delay to start of the relevant structure / element; and (ii) any forecast delay to the finish of same.



2.6.2 We have also undertaken a review and comparison of the different construction periods included within the following programmes:-

- a) Infraco Revision 1 Programme;
- b) Infraco Revision 3 Step 4 Issue 3 programme; and
- c) Iain McAlister's opinion on a reasonable mitigated version of Infraco's programme Revision 3 Step 4 Issue 1<sup>[9]</sup>.

2.6.3 The latter review (of forecast delays to finish dates) necessarily includes consideration of any increased activity durations included within the Infraco Programme Revision 3 Step 4 Issue 3. Those durations have therefore been compared with the Infraco Revision 1 durations. We note however that no information has been provided by Infraco which substantiates the increased duration included in the latest programme.

#### Compilation of as-built programme

2.6.4 Availability of accurate as-built data is and will be essential to the successful defence, or prosecution, of any claims and/or counterclaims. While some as-built information was made available by tie's project management personnel, the absence of detailed as-built data has hindered the current exercise. As such, it is important to reinforce the value of detailed as-built records and the contemporaneous compilation of a detailed record of as-built progress (ideally in programme format).

**Recommendation:** that tie allocates a resource (possibly a dedicated resource) to the compilation of an accurate and detailed as-built programme together with evidence files (which support / validate the entries within the as-built programme).

## 2.7 Process of review and analysis

2.7.1 The following provides a brief overview of the analysis undertaken in respect of each of the prioritised elements.

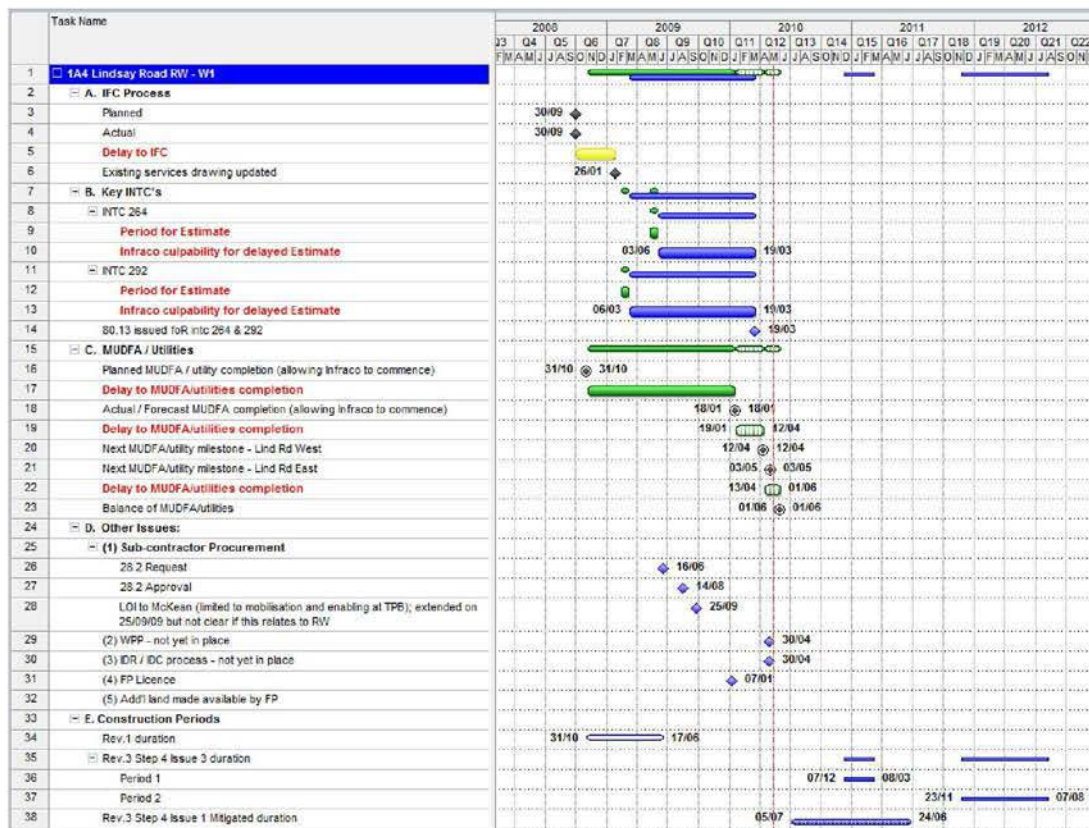
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<sup>9</sup> Note: we have used the IM view of Infraco's programme Revision 3 Step 4 Issue 1 (as distinct from Revision 3 Step 4 Issue 3) due to the fact that the Issue 3 exercise has not yet been completed. As such there may ultimately be differences between those two exercises which may require to be reconciled in the future. However for present purposes use of Revision 3 Step 4 Issue 1 provides the information necessary to consider indicative comparisons.





2.7.2 Summary programme: a simple summary programme has been prepared for each prioritised element identifying key facts in relation to ‘A. the IFC Process’; ‘B. the INTC process’; ‘C. MUDFA / Utilities’; ‘D. Other issues’; and ‘E. Construction periods’. Illustrating all of the above in a programme allowed us to view the inter-relationship of each of those issues graphically within the correct timeframe. See example below.



2.7.3 ‘A. IFC Process’: planned and actual IFC issue dates were plotted in respect of the key IFC’s for the relevant structure or element. Where a delay was incurred to the IFC, information was sought in respect of the cause of that delay. At this stage mainly anecdotal evidence is available as to the possible causes of said delay (please refer to section 2.2 above). Delays were indicated by a **yellow bar** (indicating culpability for IFC delay has to be firmed up).

2.7.4 ‘B. INTC Process’: information was obtained from tie project management personnel on the key INTC’s which were thought to have affected commencement and/or progress. Information was then sought in respect of the key stages in the INTC process including notification date, date Estimate required, date Estimate submitted (if at all) and dates of any applicable 80.13 or 80.15 instruction. Culpability for delays through that process was



- categorised on the basis as set out at section 2.3 above. **Blue bars** indicate Infraco culpability; **Green bars** indicate tie culpability.
- 2.7.5 'C. MUDFA/Utilities': dates of planned and actual MUDFA and/or other utility completions were plotted. Culpability for same was indicated. Again, **blue bars** indicate Infraco culpability; **green bars** indicate tie culpability.
- 2.7.6 'D. Other issues': where possible the sub-contractor procurement process was tracked through the various stages including (i) clause 28.2 & 28.4 requests and approvals; and (ii) issue dates of letters of intent. Milestone dates were inserted for each.
- 2.7.7 'E. Construction Periods': where possible each chart contains details of the following constructions periods: (i) Revision 1 programme; (ii) Revision 3 Step 4 Issue 3; and (iii) IM mitigated version of Revision 3 Step 4 Issue 1<sup>[10]</sup>. This again allowed us to present a graphical representation of the respective durations within the correct timeframes. An assessment of the delays to start and delays to finish was then undertaken – that process being informed by information provided by, and discussions with, tie personnel.
- 2.7.8 'F. tie position on area availability': consideration has also been given to the question of area availability. That is, when in tie's opinion Infraco could / should have commenced works in certain areas. This matter was discussed with the respective tie project management personnel in order to arrive at an opinion on same.
- 2.7.9 Thereafter, within section 'G. Conclusion', we have summarised our opinion, based on the information available, as to the (i) the significant events/issues affecting commencement and/or progress; (ii) concurrent issues/events which may have occurred; and (iii) consideration of any events which would likely be considered to be the dominant cause of the delay to that element or area.

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<sup>10</sup> See footnote 9 on page 12 above





## Section 3 'Sections A & B' – Conclusions arising from current analysis

### 3.1 Generally

3.1.1 Section 'A' is defined within Schedule Part 1 as "means completion of the Depot (including energisation) and the first Tram delivered to the Site and assembled and the completion of all tests required by the Employer's Requirements in relation to that Section".

3.1.2 Two prioritised elements relate to this Section, being (i) the 'Depot Building'; and (ii) 'Roads & Track – Depot'. We note the following in respect of each.

### 3.2 Section 6

3.2.1 **Section 6 Depot Building:** please refer to **Appendix 16** attached. The table below summarises the respective start / finish dates and activity durations within (incl. delays between) the Revision 1, Revision 3 and IM mitigated Rev.3 programmes.

6 Depot Building (taking Earthworks as start dates)					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	27/06/2008	07/04/2009	40.57 wks	07/04/2009	40.57 wks
Finish	01/06/2010	16/06/2011	54.29 wks	31/12/2010	30.43 wks
Cal. Duration	100.71 wks	114.43 wks	13.71 wks	90.57 wks	-10.14 wks

Our conclusions in respect of delay incurred to this structure can be summarised as follows:-

- (i) 'Significant' issues/events: the significant issues affecting commencement of the earthworks were (i) water main diversion; and (ii) INTC 187. The delay due to water main, causing delay to access – 01/08/08 (planned start) to 18/02/09 (when material start should have commenced). **35 week delay (tie culpability)**. INTC 187 (delay in provision of Estimate) appears to have caused a further **6 week delay to the earthworks (Infraco culpability)**. Thereafter there are questions surrounding Infraco performance in earthworks operations, commencement of foundations and steelwork – causing a **16 week delay** to foundations and steelwork. For the most part, excluding the water main, these appear to be Infraco culpability. That said, issues such as increased workscope in terms of earthworks volumes and foundation increased scope must be taken into account. **Split liability for this 16 weeks period.**



**Note:** the above is slightly different from previous information supplied to us. That is, previously we understood that tie’s position was that partial access was available on or around late 2008 (i.e. prior to the completion of the water main). The above however is the explanation we have recently received. If however the earlier tie position is correct the balance of culpability shifts more towards Infraco as a result of a failure to commence earlier. The measure of the shift in culpability is likely to be in the region of **6-10 weeks**.

- (ii) Concurrent issues: there is a question of the completion of the water main diversion (to 05/05/09) being concurrent. This however was not seen as critical to the building. No doubt Infraco will however focus on this and the time periods taken by tie for issue of TCO’s.
- (iii) Considerations of dominance: water main work will be difficult to argue as being anything other than dominant until 18/02/09 (but see note above). Thereafter, the delays to commencement of earthworks, foundations and steelwork are critical.
- (iv) As such, our current opinion on allocation of culpability can be summarised as follows:-

Description	Opinion on tie culpability	Opinion on Infraco culpability
<b>Delay to Start</b>	<i>Range of 25 to 35 weeks</i>	<i>Range of 6 to 16 weeks</i>
<b>Delay up to Steelwork erection:</b> further 16 week delay. This may have been caused by late procurement of steelwork (hence lower range of 0 weeks); but some allowance may also be due for increased earthworks and foundation work (need more detailed as-built data to conclude). There is also a further risk regarding Depot doors.	<i>Range of 0 weeks to 8 weeks</i>	<i>Range of 8 weeks to 16 weeks</i>
<b>Lower limit:</b>	<b>25 weeks</b>	<b>14 weeks</b>
<b>Upper limit:</b>	<b>43 weeks</b>	<b>32 weeks</b>

3.2.2 **Section 6 Roads & Track – Depot’:** please refer to **Appendix 17** attached.

Our conclusions in respect of delay incurred to this element can be summarised as follows:-

- (i) ‘Significant’ issues/events: There appear to be five main issues affecting this element. Those are (i) the water main delay; (ii) INTC 187; (iii) the delay to issue of





the Roads IFC; (iv) delay to drainage design; and (v) delays to the OLE foundation design. The delay due to water main, delayed access to the site – from 01/08/08 (planned start) to 18/02/09 (when material start should have commenced). **35 week delay; tie culpability.** INTC 187 (delay in provision of Estimate) appears to have caused a further **6 week delay to the earthworks; Infraco culpability.** Thereafter there are questions surrounding the production of the Roads IFC and drainage design. This was not issued by SDS until 14/08/09 (52 weeks later than planned – albeit that the 41 week delay to commencement takes up the majority of that delay). This needs to be audited and analysed.

- (ii) Concurrent issues: there is a question of the final completion of the water main diversion to 05/05/09, being concurrent with other issues above. No doubt Infraco will focus on this and the time periods taken by tie for issue of TCO's. Infraco culpability in respect of the OLE foundations design may yet prove to cause further delay to progress (those delays however have yet to unfold). This should be monitored closely via as-built programme collation and other tie audits.
- (iii) Considerations of dominance: water main work will be difficult to argue as being anything other than dominant until 18/02/09 (as it restricted access to the whole site until mid February 2009). Thereafter, the delay to issue of the Roads IFC is likely to feature significantly in any delay analysis. Culpability for this delay may well rest with SDS (excusable under CE(t) or (u); but may also relate to Infraco failure to manage SDS). Risks remain that CEC was complicit in delay. Overall delay to this element and Section 'A' in particular however linked closely to completion of Depot Building (which at present is the longer more dominant string of activities).

### 3.3 Conclusions in respect of Sections A & B

3.3.1 In light of the above, we summarise our current opinion in respect of Sectional Completion Date 'A' as follows:-

- (i) Sectional Completion Date 'A' 'time' implications: Potential tie liability:-
- Lower Limit: **25 weeks.**
  - Upper Limit: **43 weeks.**



Note: in terms of Sectional Completion Date 'B' please refer to IM email of 04/03/10. That confirms the following *"The programme logic models the requirement to have the track sections 5C and 7A complete to achieve the Section B date. On that basis the late completion of the A8 Underpass and the groundworks at the Gogarburn Landfill Site project the Section B date to 15 February 2012. However, we have previously been advised, in discussions with tie's E&M and operations staff, that the actual requirements of the test track is approximately 1km of live track running from the Depot. Having discussed this with tie's PMs it would appear that a suitable length of track can be constructed by January 2011. The track section 5C running through the A8 underpass and to the south is not required for the test track. Providing the contractor makes a concerted effort to carry out the landfill site works in the Spring, Summer and Autumn of 2010, while at the same time progresses track construction in the adjacent sections of the route, there should be no impediment to having the test track ready within 28 days of the completion of the Depot."* This however is dependent on Infraco resolving the landfill site within the timescale required to suit the above.

(ii) Sectional 'financial' implications: in terms of site prelims it is noted that the majority of the 'time' implications above relates to delayed access to the area. As such, sub-contractor 'Sectional' time related costs should not have been incurred by Infraco to any great extent, if at all. Infraco 'sectional' costs<sup>11</sup> are likely to be related to Section A dedicated management resources. On that basis, we note the following:

- a. Lower Limit: Infraco costs **25 weeks**; sub-contractor costs **6-10 weeks**.
- b. Upper Limit: Infraco costs **43 weeks**; sub-contractor costs **14-18 weeks**.

3.3.2 In terms of the current projected delays to completion of this Section, we note that within the Revision 3 programme Infraco has increased the projected duration of the Depot Building works by approximately 14 weeks. No substantiation has been provided by Infraco in respect of same. In our opinion no further time should be awarded to Infraco for increased durations until such time as the relevant substantiation is provided. This is particularly relevant in light of the current views on potential mitigation and/or

<sup>11</sup> Overall 'Project' related prolongation costs are reconciled



acceleration measures<sup>12</sup>. That said, tie should consider when it needs to have the Depot and Test Track complete. If, for example, Section 'C' is significantly delayed, there may be little benefit in expediting the Depot completion at additional acceleration cost.

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<sup>12</sup> Iain McAlister's previous opinion on the Infraco Revision 3 Step 4 Issue 1 programme was that time (in the region of 10 weeks for the Depot Building and 23 weeks for the associated Roads & Track) could be saved. Please note, that where any of those measures are deemed to be 'acceleration' there may be costs implications for tie attaching to same.





## Section 4 'Sections C & D' – Conclusions arising from current analysis

### 4.1 Section 1

4.1.1 **Appendices 1 to 8** attached contain the current analysis and conclusions in respect of the following Section 1 prioritised elements:-

Appendix	Section	Description of area / structure
<b>Priority Level 1 Elements</b>		
1	1A4	Lindsay Road RW -W1
2	1A4	Road and Track
3	1A3	Victoria Dock Bridge - S16
4	1A3	Tower Place Bridge - S17
5	1A1	Road and Track
6	1B	Road and Track
7	1C2	Road and Track
8	1C3	Road and Track

4.1.2 From the attached, it is evident that the dominant delays to commencement (and completion) on intermediate sections 1A, 1B & 1C remain with the utility completions in each of those areas. The extent of those delays renders this Section the dominant sequence of activities which continue to drive Sectional Completion Date 'C'. That position remains true whether observing the Infraco Revision 3 programme or Ian McAlister's Revision 3 Issue 1 mitigation exercise.

4.1.3 In terms of delay and consequent (mitigated) completion, the latest intermediates sections are 1B and 1C2 Road & track. The projected mitigated dates are June and August 2012 respectively. Please refer to report section 4.6 for our conclusions in respect of the effect of the above on Sectional Completion Date 'C'.

### 4.2 Section 5

4.2.1 **Appendices 9 to 15** attached contain the current analysis and conclusions in respect of the Section 5 priority '1' elements; Priority '2' elements are contained within **Appendices 20 to 26**, as follows:-

Appendix	Section	Description of area / structure
<b>Priority Level 1 Elements</b>		
9	5A	Russell RD RW - W4



Appendix	Section	Description of area / structure
10	5A	Murrayfield TS RW - W18
11	5A	Roseburn Viaduct - S21A
12	5A	Baird Drive Retaining Wall - W8
13	5A	Balgreen Road Bridge - S22A Incl. Balgreen Road Retaining Wall W9; including Balgreen Road Bridge - S22B
14	5C	A8 Underpass - W28
15	5C	Depot Access Road Bridge - S32
<b>Priority Level 2 Elements</b>		
20	5A	Russell RD RW - W3
21	5A	Murrayfield TS
22	5A	Murrayfield Stadium Underpass - S21C
23	5A	Water of Leith Bridge - S21E
24	5B	Carrick Knowe Bridge - S23
25	5B	Road and Track
26	5C	Road and Track

4.2.2 The analysis of the above confirms that at Project level the delays incurred in this Section of the works (although significant) are subsumed by the more extensive delays incurred within Section 1.

4.2.3 That said, the analysis of those Section 5 elements, clearly identify considerable periods of concurrent delay at an intermediate section level. Infraco culpability throughout this Section is significant. tie culpability is also present.

4.2.4 This analysis has also raised significant questions in respect of the timing and/or management of the design process.

4.2.5 As noted at paragraph 1.2.4, maintaining this form of record and analysis will enable tie to properly assess, and where necessary defend, claims for additional payment from Infraco and/or its sub-contractors at Section and intermediate section level. It may also assist tie in informing strategy in relation to its relationship and dealings with SDS.

### 4.3 Section 7

4.3.1 **Appendices 18 and 19** attached contain the current analysis and conclusions in respect of the following Section 7 priority '1' elements:-

Appendix	Section	Description of area / structure
<b>Priority Level 1 Elements</b>		
18	7a	Track - Section 7





Appendix	Section	Description of area / structure
19	7b	Gogarburn RW - W14/W15

4.3.2 Similar comments apply here in relation to Section 7 as are made at paragraphs 4.2.2 to 4.2.5 above (re Section 5).

**4.4 Consideration of position adopted in the 'MUDFA Rev.8' adjudication**

4.4.1 During the 'MUDFA Rev.8' adjudication process, a report was produced by Acutus<sup>13</sup> which concluded that "... it would appear to be possible to mitigate all of the MUDFA Revision 8 projected delays to the extent that there would be no requirement to extend any of the four Sectional Completion Dates"<sup>14</sup>.

4.4.2 It is acknowledged that, on the face of it, the comments made above in the MUDFA Rev.8 adjudication report may not appear to be consistent with our opinion on the delays to Section 1 and the culpability for same (even after mitigation). It is therefore necessary to explain how the two positions need to be reconciled.

4.4.3 The 'MUDFA Rev.8' adjudication focussed on projected delays to the completion of MUDFA works as at 28 March 2009. When compared to the Infraco Revision 1 Programme 'assumptions', the following delays to the MUDFA works were forecast to occur:-

	1	2	3	4
Int. Section	Revision 1 Prog. Dates	MUDFA Rev.8 Dates	Delay (wks)	
1A	31/10/2008	17/12/2009	58.86	
1B	01/08/2008	24/09/2009	59.86	
1C	31/10/2008	18/12/2009	59.00	
1D	19/12/2008	25/09/2009	40.00	

4.4.4 It was against the background of those delays (circa 59 weeks) that Iain McAlister's 'MUDFA Rev.8' report was drafted. Since that date however, the completion of the MUDFA works, within Section 1 in particular, have been further delayed, to the extent that the following delays (shown in columns 7 & 8 below) were forecast as at April 2010:-

<sup>13</sup> Report Ref. J086-209 dated 5 May 2010 entitled "Expert Report regarding Estimate in Respect of INTC No. 429 MUDFA programme Revision 8 Delay and Disruption Resulting from Incomplete Utility Works"

<sup>14</sup> Paragraph 6.3.1





1	2	3	4	5	6	7	8	9
Int. Section	Revision 1 Prog. Dates	MUDFA Rev.8 Dates	Delay (wks)	Rev3Step4Issue3 Range from	to	Delay in weeks [Rev.1 to Rev3S4I3]		Increase in delay (wks)
1A	31/10/2008	17/12/2009	58.86	02/03/2010	13/12/2010	69.57	110.43	51.57
1B	01/08/2008	24/09/2009	59.86	01/07/2010		99.86		40.00
1C	31/10/2008	18/12/2009	59.00	07/05/2010	04/11/2010	79.00	104.86	45.86
1D	19/12/2008	25/09/2009	40.00	30/01/2010	08/02/2010	58.14	59.43	19.43

4.4.5 That is, the overall projected delays to MUDFA works in Section 1 increased to circa **110 weeks**. That is, an increase of up to **52 weeks** beyond those forecast in the 'MUDFA Rev.8' programme are expected (see columns 8 & 9 in the table directly above). It is this Section that drives Sectional Completion Date C (see comments in report section 4.1 above).

4.4.6 Iain McAlister's mitigation exercise on the Revision 3 (Step 4 Issue 1) programme<sup>15</sup> indicated that mitigation / acceleration *could* bring the projected completion date forward to circa July / August 2012<sup>16</sup>. That equates to an overall delay in the region of **73 to 77 weeks** for Sectional Completion Date C. As noted, that delay is driven by the dominant delays in Section 1 (intermediate sections 1A, 1B & 1C in particular). The difference between the increased MUDFA delays (of up to 52 weeks) and the mitigated delay to Sectional Completion Date C (of 73 to 77 weeks) appears to have been brought about by the introduction of different Traffic Management phasing within Section 1 (together with a degree of increased workscope as a result of INTC's). This has increased the effect of the critical MUDFA / utility delays in Section 1 by circa **21 to 25 weeks**. We are aware that this is presently being reviewed by tie, Blair Anderson and Iain McAlister but the indications at present are that a summer 2012 completion still appears achievable<sup>17</sup>. On that basis, the risk for this overall period appears to remain with tie<sup>18</sup> (albeit that the current exercises being undertaken by tie in respect of TM phasing may well inform a further reduction in the current projection of forecast delays).

<sup>15</sup> Including the joint 'mitigation' review with Blair Anderson. That review appears to have taken intermediate section 1A off the critical list; but maintains the criticality of intermediate sections 1B & 1C. That exercise still indicates as a forecast completion of summer 2012.

<sup>16</sup> Email from Acutus (IM) of 4 March 2010 timed at 19:17hrs refers

<sup>17</sup> That clearly will require Infraco's cooperation / engagement in adopting the relevant mitigation

<sup>18</sup> Unless it can be proven that BSC's phasing and durations shown in the Rev.0 and Rev.1 programmes were always unachievable and that this is therefore an Infraco error. That however may be a difficult argument to prove.



## 4.5 Consideration of tie position re lack of early progress on 'off-street' works by Infraco

- 4.5.1 At a meeting held on 5 May 2010 tie reiterated its concern that the focus on dominant delays to MUDFA / utility works in the 'on-street' Section 1, would mask the effect that Infraco's lack of early progress on the 'off-street' Sections has on the programme for the 'on-street' sections when they become available. In particular, tie noted that had Infraco progressed the 'off-street' sections earlier, resources which now remain engaged on those delayed 'off-street' works, could/would have been applied to the 'on-street works' as those workfaces became available. Had that occurred, tie would have expected the 'on-street' sections to be completed earlier than currently planned.
- 4.5.2 This has been discussed with Iain McAlister in order to understand what effect the above has/had on the collective discussions on potential mitigation which has been developed by Iain, Blair Anderson and tie over recent weeks. In particular, we discussed the assumptions and constraints considered and applied when carrying out the mitigation exercise(s) on the Infraco Rev.3 programme(s).
- 4.5.3 Initial indications are that any resource constraints previously applied by Infraco on the 'on-street' sections were removed during the mitigation exercise, to the extent that resources are no longer driving the mitigated programme(s). As such, the degree to which this particular tie concern affects the overall Sectional Completion Date C is thought to be minimal.
- 4.5.4 That said, this matter can be further considered during the completion of the current mitigation review of the Infraco Revision 3 Step 4 Issue 3 programme.

## 4.6 Conclusions in respect of Section C & D

### Questions of 'criticality', 'dominance' and 'significance'

- 4.6.1 One of the key issues which we have had to consider when arriving at our opinion on respective culpability for delay to Sectional Completion Date 'C' is what effect the delays to the constituent elements have had on this sectional date. In particular, we considered how a third party tribunal would analyse same. In so doing, matters such as criticality, dominance, significance and the like are of paramount relevance.





- 4.6.2 In the present circumstances, we consider that the magnitude of the early and ongoing delays to the MUDFA and utility works renders arguments about concurrent (critical) delay more difficult to prosecute. This is particularly relevant to the respective delays evident in and between Section 1 and Sections 5 & 7. Whilst there is clearly Infraco culpable delay within Sections 5 & 7, the project critical path remains firmly fixed within Section 1 (intermediate sections 1A, 1B & 1C in particular).
- 4.6.3 Previous discussions have focussed on recent case law<sup>19</sup> which lends support in certain circumstances to a process of apportionment when considering culpability for delay and extension of time. The difficulty which in our opinion will be faced in tie presenting a case on the basis of 'apportionment' however is that the particular judgement in question focuses firstly on a test of dominance<sup>20</sup>. When considering the application of apportionment (if appropriate), the court went on to note that "*length of delay*" and the causative "*significance of the events for the Works as a whole*"<sup>21</sup> were factors which must be considered. Each of these three factors<sup>22</sup> pose significant hurdles for tie to overcome.
- 4.6.4 As a consequence, at Sectional Completion level it remains our opinion that Infraco will be excused for delays incurred up to circa **73-77** weeks (for Sectional Completion Date C) – please refer to paragraph 4.4.6 above. The measure of that delay however is dependent upon Infraco implementation of mitigation and/or other acceleration measures which could be adopted to limit the delays actually incurred.
- 4.6.5 Those delays could also give rise to project level prolongation costs. The measure of prolongation costs to which Infraco may be entitled however, is not necessarily inextricably linked to the period of extension of time to which it is entitled. Matters such as concurrency and causation of the particular loss claimed will feature in any analysis of entitlement to additional payment.
- 4.6.6 In this regard, at Section and intermediate section level in particular, there is considerable evidence of Infraco culpability for delay in Sections 2, 5 & 7. Whilst this may not translate into a disallowable period of extension of time, it does / should preclude both Infraco and its sub-contractors' from an entitlement to recovery of the prolongation costs incurred

<sup>19</sup> City Inn Ltd v Shepherd Construction Ltd [2007] ScotCS CSOH\_190 (30 November 2007)

<sup>20</sup> Paragraphs 21 and 157 of the 'City Inns' judgement refer

<sup>21</sup> Paragraph 158 of the 'City Inns' judgement refer

<sup>22</sup> i.e. dominance, length of delay and causative significance





during those periods of culpable delay. Much will depend on the nature and type of costs claimed or yet to be claimed.

- 4.6.7 In relation to Sectional Completion Date 'D' we have assumed for present purposes that this will be 6 months after the Sectional Completion Date 'C' (acknowledging that tie may wish to take a view on whether this 6 month period can be reduced<sup>23</sup>).

Robert Burt

John Hughes

Dated: 12 May 2010

Draft for  
discussion

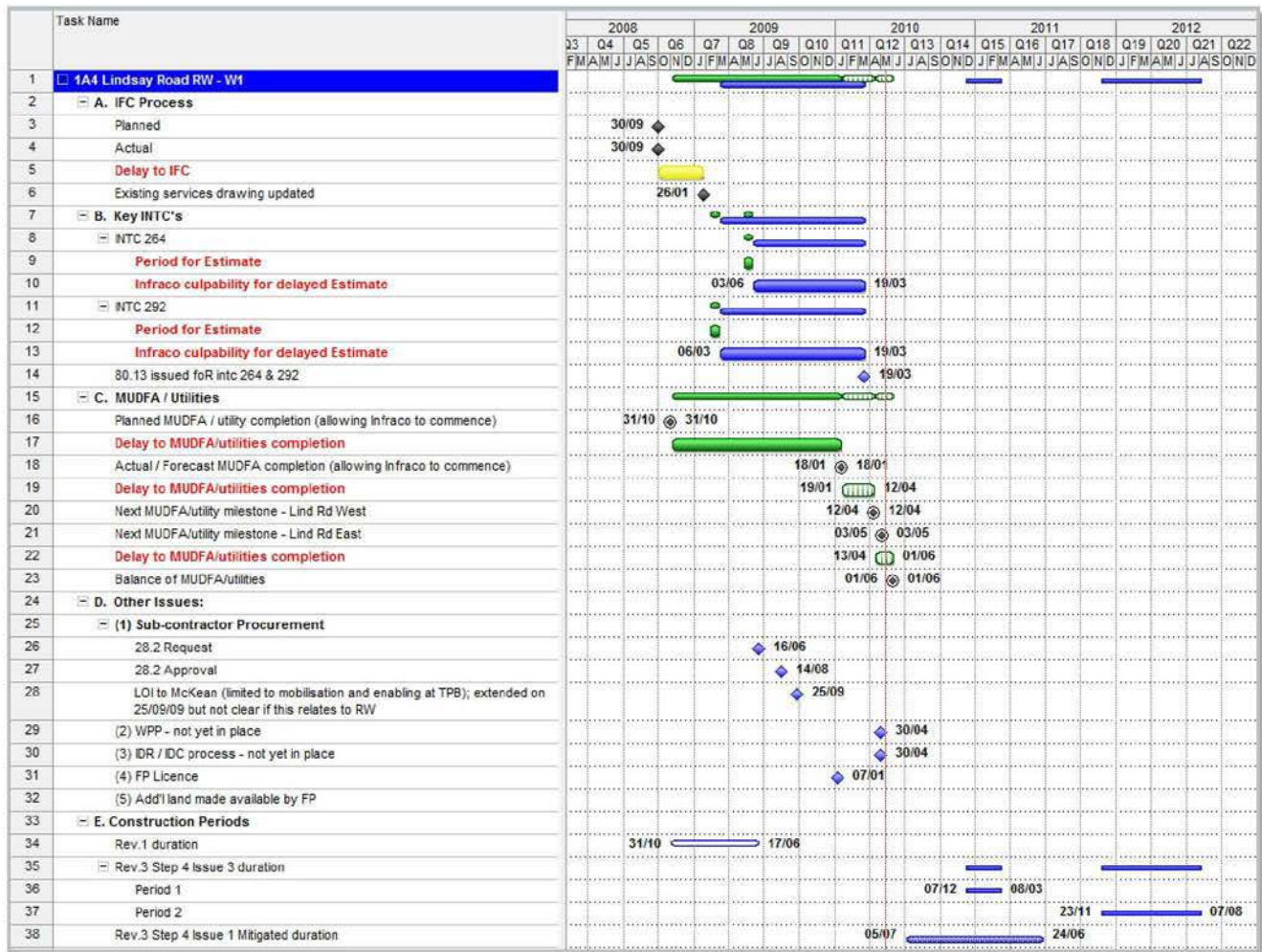
<sup>23</sup> Particularly if the off-street section can be completed significantly earlier to allow driver training and system testing to begin earlier



## LIST OF APPENDICES

Appendix	Section	Description of area / structure
<b>Priority Level 1 Elements</b>		
1	1A4	Lindsay Road RW -W1
2	1A4	Road and Track
3	1A3	Victoria Dock Bridge - S16
4	1A3	Tower Place Bridge - S17
5	1A1	Road and Track
6	1B	Road and Track
7	1C2	Road and Track
8	1C3	Road and Track
9	5A	Russell RD RW - W4
10	5A	Murrayfield TS RW - W18
11	5A	Roseburn Viaduct - S21A
12	5A	Baird Drive Retaining Wall - W8
13	5A	Balgreen Road Bridge - S22A Incl. Balgreen Road Retaining Wall W9; including Balgreen Road Bridge - S22B
14	5C	A8 Underpass - W28
15	5C	Depot Access Road Bridge - S32
16	6	Depot Building
17	6	Roads & Track – Depot
18	7a	Track - Section 7
19	7b	Gogarburn RW - W14/W15
<b>Priority Level 2 Elements</b>		
20	5A	Russell RD RW - W3
21	5A	Murrayfield TS
22	5A	Murrayfield Stadium Underpass - S21C
23	5A	Water of Leith Bridge - S21E
24	5B	Carrick Knowe Bridge - S23
25	5B	Road and Track
26	5C	Road and Track

1A4 Lindsay Road RW – W1



- A. IFC Process:** Initial IFC issued on time (planned 30/09/08; actual 30/09/08). Subsequent IFC's issued as follows:-
- (i) 'Existing services drawing' updated 26/01/09. This does not appear in the Approvals Tracker provided; not clear if this is a formal IFC. There is no information presently available to inform culpability for delay (see Preamble). Potential reasons include:-
    - a. Late issue by SDS (CE(t));
    - b. A material breach by SDS (CE (u));
    - c. A tie Change;
    - d. A failure of Infracore in respect of its management of SDS or another breach by Infracore;
    - e. A requirement of FP for which tie will bear responsibility;**Potential delay by SDS/tie; Infracore** [This may have influenced delay to commencement; much depends on the contemporaneous knowledge about MUDFA/utility works in this area]
- B. Key INTC's:** From the information provided it appears that Infracore issued 4 no. INTC's against this structure. INTC's 129, 292, 085 & 264 refer **[Complete data on INTC's awaited]**. Of the aforementioned it appears likely that **INTC 292** (Additional Ramp / Steps at Lindsay Road RTW) & **INTC 264** (Section 1A4 – groundworks) materially affected Infracore's ability to commence works in accordance with the Rev 01 programme. Both were the subject of an **80.13 instruction on 19/03/10**. Details as follows:-
- (i) **INTC 264:** issued 07/05/09; Estimate due 02/06/09; No Estimate provided by Infracore. **Delay by Infracore.**
  - (ii) **INTC 292:** issued 09/02/09; Estimate due 5/3/09; No Estimate provided by Infracore. **Delay by Infracore.**
- C. MUDFA / Utilities:** Planned completion 31/10/08; MUDFA / utilities works in association with Lindsay Road RTW's were partially completed to allow commencement at chainage 0-230 as at 18/01/10. MUDFA / utilities work beyond that date are forecast to complete as follows:-
- a. Lindsay Road West (12/04/10) – access to chainage 0-500 on westbound lane works;
  - b. Lindsay Road East (03/05/10);
  - c. Balance of MUDFA / Utilities works (01/06/10 – MB believes this may be 01/07/10).
- We understand that an actual start on RW1A and RW1c was achieved on or around 17/03/10. This start was not dependent on any of the foregoing utility diversions. We are advised that a start of those structures could have been made on or around 07/01/10 (upon execution of the FP agreement). It appears therefore that the delay from circa 01/02/10 (allowing a reasonable period for mobilisation) to the actual start of 17/03/10 would be to Infracore's account. **Delay by Infracore.**
- Delay by tie; tie culpability** Note: tie restricting Infracore access to this area pending resolution of the Infracore IDC certification process (see below).
- D. Other Issues:**



- (i) **Sub-Contractor Procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. LOI to McKean of 04/08/08 does not appear to cover 1A4 Lindsay Road RW; extended LOI issued 25/9/09 but scope not clear [subject to future tie audit]. **Delay by Infraco. Infraco culpability.**
- (ii) **WPP Process:** Not yet submitted (as advised by MB). This could be an obstacle to commencement. **Delay by Infraco. Infraco culpability.**
- (iii) **IDR/IDC process:** IDC not yet in place. Infraco programme of 18/12/09 does not contain details for this structure. Infraco delay. We understand that tie was restricting Infraco access to this area pending resolution of the Infraco IDC certification process. **Contractual position not yet resolved – see Preamble.**
- (iv) **FPA Licence:** Not in place until 07/01/10. This would have been an obstacle to commencement. Advised that delay arose from failure of SDS (or a failure of Infraco to manage SDS?) to provide 'Category 2' design calculations for ramp at TPB. SDS subsequently revised design to remove ramps as it could not satisfy FP as to suitability of design. This would have been an obstacle to commencement. It is understood that execution of this agreement on 07/01/10 allowed Infraco access to commence RW 1A & RW 1C. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**

**E. Construction Periods:**

1A4 Lindsay Road RW - W1					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	31/10/2008	07/12/2010	109.57 wks	05/07/2010	87.43 wks
Finish	17/06/2009	07/08/2012	163.86 wks	24/06/2011	105.29 wks
Cal. Duration	32.86 wks	87.14 wks	54.29 wks	50.71 wks	17.86 wks

**Note:** MB suggested mitigation exercise shows overall commencement and completion in Intermediate Section 1A4 as 01/03/10 to 05/07/11 respectively. That equates to a period of **70 weeks**. No specific identification of RW.

- (i) **Delay to Start:** The table above refers to various programme dates. Forecast start dates differ between Issue 3, IM Issue 3, MB mitigated programme and MUDFA / Utility dates listed above. **Delay to start** is therefore forecast to be a **range between 87 weeks (05/07/10) and 109 weeks (07/12/10)**. Note however that the RW may have commenced on **17/03/10** (a delay to start of **72 weeks**). Primary causes of delay to start as follows:-
- A. **IFC process:** The initial IFC was **on time**; planned date was **30/09/08**; the actual was **30/09/08**. Subsequent IFC dated 26/01/09 was **17 weeks late**. It is unclear as to whether this would have been material. There is no information presently available to inform culpability for delay to this subsequent IFC. Unless there is proof of Infraco breach, **it may be a CE under either 65(t) or (u)** (but uncertain).
- B. **INTC's:** Delays by Infraco in the submission of Estimates. Delay up to 19/03/10 when tie issued clause 80.13 instruction (note tie responsible for standard 18 day Estimate period – see CE(x)).
- C. **MUDFA / Utilities:** Planned completion **31/10/08**. Partial completion at Lindsay Road RTW's as at **18/01/10**; further release of areas as at **12/04/10, 03/05/10 and 01/06/10**. **Delay by tie; tie culpability.**
- D. **Other:**
- **Sub-Contractor procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. **Delay by Infraco. Infraco culpability.** Effect of this is not clear – it could be a hindrance to progress – but details not available to establish scope of work under McKean LOI;
  - **WPP process:** Not yet submitted (as advised by MB). This could be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Unlikely to have significant impact;
  - **IDR/IDC process:** IDC not yet in place. **tie** restricting Infraco access to this area pending resolution of the Infraco IDC certification process.
  - **FPA Licence:** Not in place until 07/01/10. Delay arose from failure of SDS (Infraco?) to provide 'Category 2' design calculations. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**
- (ii) **Delay to Finish:** Issue 3 programme shows an **increase of circa 54 weeks** over the timescale in Rev.1 programme (majority of increase understood to be as a result of full-depth construction issue). IM mitigated view of Issue 3 also shows an increased duration of **18 weeks** to the Rev.1 programme (albeit **36 weeks** shorter than Infraco's proposed Issue 3 programme). That increase appears to relate to additional TM phasing. MB mitigation proposal also has shorter overall duration for 1A than Issue 3 (but RW not separately identified).

**F. tie position on area availability:**

- (i) We are advised that access for commencement of RW 1A & 1C was available as at 07/01/10 (following execution of FP agreement). That allowed Infraco access (unhindered by utilities) for those elements. Allowing for mobilisation it is reasonable to consider that Infraco could have commenced on or around 01/02/10. Also refer to section (C) above re MUDFA dates (available from January 2010 although in terms of RW construction this does not appear to have been the obstacle to commencement).

**G. Conclusion:**

- (i) **'Significant' issues/events:** In our opinion there were four main contributory factors, being (a) the IFC process; (b) the INTC process in respect of INTC 264 & 292; (c) late completion of MUDFA/utilities; and (d) the late execution of the FP licence. Taking those events in chronological order:-

The initial IFC was issued on time on **30/09/08**; but a revision appears to have been issued on **26/01/09** (**17 weeks later than planned**). **MUDFA/utilities diversions** were supposed to be completed on **31/10/08** (to facilitate a start on 1A4 Lindsay Road RW 31/10/08). Those diversions however were not actually completed suffice to allow commencement until circa **18/01/10**, with **subsequent phased completions forecast to complete up to 01/06/10** (current forecast 01/07/10). This is **tie's culpability**. Running concurrently with this was the **late provision by Infraco of the Estimates** for INTC 264 & 292. Those Estimates have yet to be provided. This is a matter for which Infraco is responsible. **Delay measured to 19/03/10** (when clause 80.13 instruction issued; but may not have been an obstacle to actual commencement). Each of those events could have delayed commencement in this area. In addition, the execution of the **FP licence** is

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understood to have been delayed by SDS such that it was not in place until **07/01/10**. This is either an SDS breach (which would excuse Infraco of the time) or if caused by a failure on the part of Infraco to manage SDS, it is a matter for which Infraco bears responsibility.

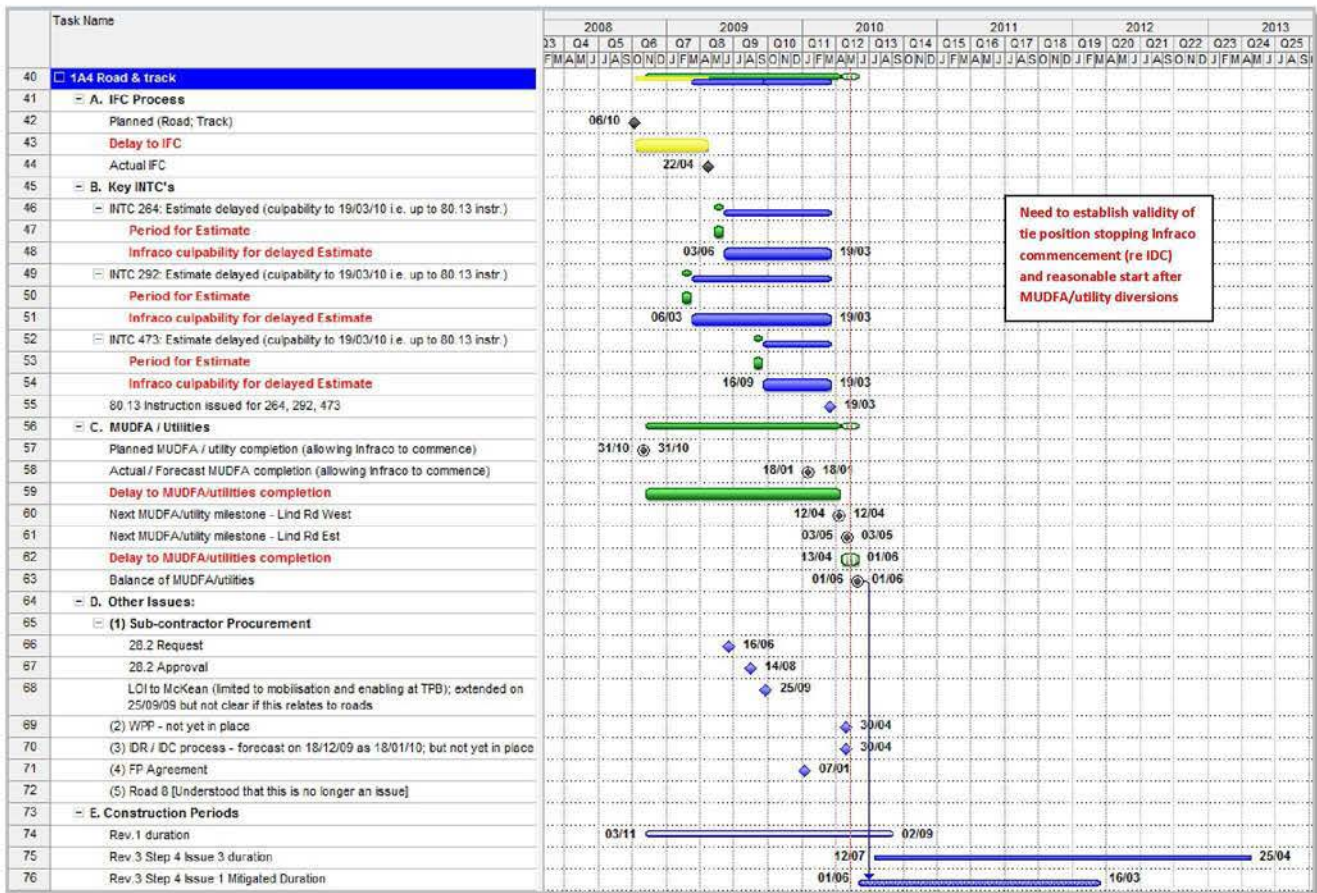
- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing and the WPP process) have less of a bearing on the late commencement of this area. Whilst in isolation these issues may have been critical to commencement their significance is considerably diminished by the occurrence of the events in G(i) above.
  
- (iii) **Considerations of dominance:** availability of design and work areas are both equally important in terms of ability to commence. That said, if contemporaneously Infraco and SDS knew that the utilities diversions were significantly delayed, such that they did not have to progress the design in accordance with the original programme, then the works area availability will have more causative significance. In relative terms however Infraco will certainly argue that the late completion of MUDFA / utilities, and hence the late availability of the working area, will be more dominant (i.e. have more 'causative potency') than a delay in either the design issue or the INTC Estimate process which would / could have been overcome in accordance with the original programme had it been necessary.  
Bearing in mind however that commencement of RW 1A & 1C were not dependent on completion of utility diversions, those works could have commenced on or around execution of the FP licence. That is, it appears they could have commenced on or around 01/02/10 (allowing for mobilisation). Delays up to that point relate to the late execution of the FP licence (a matter for which SDS is responsible; possibly Infraco if breach of its obligation to manage SDS can be established).

As such, from the information available it appears that the key issue to commencement of the RW was the execution of the FP licence. It would be wrong however at this stage to entirely dismiss the potential (earlier) impact of MUDFA/utility diversions on commencement of these structures. This point may require further investigation.

Draft for  
discussion



1A4 Road & Track



A. **IFC Process:** The initial IFC was 198 days (or 28 weeks) late; planned date was 06/10/08; the actual was 22/04/09. There is no information presently available to inform culpability for delay (see Preamble). Potential reasons include:-

- Late issue by SDS (at its simplest a CE under 65(t));
- A material breach by SDS (again at its simplest form a CE under 65(u));
- A failure of Infraco to provide the Infraco Design to SDS (clause 19.19 refers);
- A tie Change;
- A failure of Infraco in respect of its management of SDS or another breach by Infraco (e.g. failure to properly manage the CEC/NR interface);
- A requirement of CEC for which tie will bear responsibility.

**Note:** DS advised that "late submission of TAA package followed by length of time needed to incorporate CEC comments because so many needed to be made on design". Potentially a **delay by SDS, SDS /tie or Infraco?**

See also INTC 129 re CEC request for extension of time to Prior Approvals process.

**Note:** Further revision to IFC likely. DS advised "Full reasons not available but will have included incorporation of comments that weren't included in the first IFC - as discussed last week original IFC might have been a sensible mitigation but might have been deficient". MB advises that decisions re Ocean Terminal finishes and location also of concern in that redesign likely due to lack of funding for tie/CEC preferences at this location.

B. **Key INTC's:** From information provided it appears that Infraco issued 12 no. INTC's against this area. INTC's 093, 129, 166, 165, 257, 276, 287, 289, 292, 469, 473 & 264 refer. Of the aforementioned it appears likely that **INTC 264** (Lindsay Road Groundworks), **INTC 292** (Additional Ramp / Steps at Lindsay Road RTW) & **INTC 473** (Construction of 3no. sewer protection slabs & new chamber – Lindsay Road Schedule Part 2: - undefined prov. sum item 8) materially affected Infraco's ability to commence works in accordance with the Rev 01 programme. All of the foregoing were the subject of an **80.13 instruction on 19/03/10**. Details as follows:-

- INTC 264:** issued 07/05/09; Estimate due 02/06/09; No Estimate provided by Infraco. **Delay by Infraco.**
- INTC 292:** issued 09/02/09; Estimate due 05/3/09; No Estimate provided by Infraco. **Delay by Infraco.**
- INTC 473:** issued 20/08/09; Estimate due 15/09/09; No Estimate provided by Infraco. **Delay by Infraco.**

tie issued an 80.13 instruction on 19/03/10 covering all of the above.

See also INTC 129 re CEC request for extension of time to Prior Approvals process. Also note that more recent INTC re Ocean Terminal tramstop and finish may become an obstacle to progress.

C. **MUDFA / Utilities:** Planned completion 31/10/08. MUDFA / utilities works in association with Lindsay Road RTW's were partially completed to allow commencement at chainage 0-230 as at **07 or 18/01/10**. MUDFA / Utilities completions beyond that date are forecast to complete as follows:-

- Lindsay Road West (**12/04/10**) – access to chainage 0-500 on westbound lane works;
- Lindsay Road East (**03/05/10**);
- Balance of MUDFA / Utilities works (**01/06/10** – MB believes this may be **01/07/10**).

**Delay by tie; tie culpability** Note: tie restricting Infraco access to this area pending resolution of the Infraco IDC certification process (see below).

Also, MB believes chainage 0-230 roadworks are unnecessary. **Is this being formally pursued with Infraco?**

D. **Other Issues:**



- (i) **Sub-Contractor Procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. LOI to McKean of 04/08/08 does not appear to cover 1A4 Road & track; extended LOI issued 25/09/09 but scope not clear [subject to future tie audit]. **Delay by Infraco. Infraco culpability.**
- (ii) **WPP Process:** Not yet submitted (as advised by MB). This could be an obstacle to commencement. **Delay by Infraco. Infraco culpability.**
- (iii) **IDR/IDC process:** IDC not yet in place. Infraco programme of 18/12/09 shows this as being forecast to be in place by 18/01/10. But not yet in place. Infraco delay, **tie** restricting Infraco access to this area pending resolution of the Infraco IDC certification process. See Preamble.
- (iv) **FPA Licence:** Not in place until 07/01/10. This would have been an obstacle to commencement. Advised that delay arose from failure of SDS (or failure of Infraco to manage SDS?) to provide 'Category 2' design calculations for ramp at TPB. SDS subsequently revised design to remove ramps as it could not satisfy FP as to suitability of design. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**

**E. Construction Periods:**

1A4 Road & Track					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	03/11/2008	12/07/2010	88.00 wks	01/06/2010	82.14 wks
Finish	02/09/2010	25/04/2013	138.00 wks	16/03/2012	80.14 wks
Cal. Duration	95.57 wks	145.57 wks	50.00 wks	93.57 wks	-2.00 wks

**Note:** MB suggested mitigation exercise shows overall commencement and completion in Intermediate Section 1A4 as 01/03/10 to 05/07/11 respectively. That equates to a period of **70 weeks**.

- (i) **Delay to Start:** The table above refers to various programme dates. Forecast start dates differ between Issue 3, IM Issue 3, MB mitigated programme and MUDFA / Utility dates listed above.

**Delay to start** is therefore forecast to be a **range between 82 weeks (01/06/10) and 88 weeks (12/07/10)**. MB mitigation exercise shows **immediate commencement** [albeit that exercise is now outdated in terms of commencement dates].

Primary causes of delay to start as follows:-

- A. **IFC process:** The initial IFC was **198 days (or 28 weeks) late**; planned date was **06/10/08**; the actual was **22/04/09**. There is no information presently available to inform culpability for delay. Unless there is proof of Infraco breach, **it may be a CE under either 65(t) or (u)** (but uncertain).
- B. **INTC's:** Delays by Infraco in the submission of Estimates. Delay up to 19/03/10 when tie issued clause 80.13 instruction.
- C. **MUDFA / Utilities:** Planned completion **31/10/08**. Partial completion at Lindsay Road RTW's as at **07 or 18/01/10**; further release of areas as at 12/04/10, 03/05/10 and 01/06/10. **Delay by tie; tie culpability.**
- D. **Other:**

- **Sub-Contractor procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. **Delay by Infraco. Infraco culpability.** Effect of this is not clear – it could be a hindrance to progress – but details not available to establish scope of work under McKean LOI;
- **WPP process:** Not yet submitted (as advised by MB). This could be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Unlikely to have significant impact;
- **IDR/IDC process:** IDC not yet in place. **tie** restricting Infraco access to this area pending resolution of the Infraco IDC certification process.
- **FPA Licence:** Not in place until 07/01/10. Delay arose from failure of SDS (Infraco?) to provide 'Category 2' design calculations. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**

- (ii) **Delay to Finish:** Issue 3 programme shows an **increase of circa 50 weeks** over timescale in Rev.1 programme (majority of increase understood to be as a result of full-depth construction issue). IM mitigated view of Issue 1 however has slightly shorter duration than Rev.1 programme. MB mitigation proposal also has shorter duration than Issue 3 (70 weeks duration i.e. 10 weeks less than Issue 3). Presently, increase in duration not justified.

**F. tie position on area availability:**

- (i) Refer to section (C) above re MUDFA dates (available from January 2010 – but in limited area ch.0-230). Thereafter **12/04/10** is next availability date (for Lindsay Road West). See however IDR/IDC comments at D above. **tie** presently of the opinion that Infraco are not able to commence due to incomplete IDC process.

**G. Conclusion:**

- (i) **'Significant' issues/events:** In our opinion there were four main contributory factors, being (a) the IFC process; (b) the INTC process in respect of INTC's 264, 292 & 473; (c) late completion of MUDFA/utilities; and (d) the late execution of the FP licence. Taking those events in chronological order:-

The IFC was planned to be issued on **06/10/08**; it was actually issued on **22/04/09 (198 days late)**. **MUDFA/utilities diversions** were programmed to be completed on **31/10/08** (to facilitate a start on 1A4 Road & track 03/11/08). Those diversions however were not actually completed in phases during the period from **18/01/10 to 01/07/10** (current forecast). This is tie's culpability. Running concurrently with this was the **late provision by Infraco of the Estimates** for INTC's 264, 292 & 473. Those Estimates have yet to be provided. This is a matter for which Infraco is responsible. **Delay measured to 19/03/10** (when clause 80.13 instruction issued). Each of those events would have delayed commencement in this area. In addition, the execution of the **FP licence** is understood to have been delayed by SDS such that it was not in place until **07/01/10**. This is either an SDS breach (which would excuse Infraco of the time) or if caused by a failure on the part of Infraco to manage SDS, it is a matter for which Infraco bears responsibility.

The IDR/IDC process may also be a contributing factor affecting commencement from either **18/01/10 or 12/04/10** (but tie's ability to stop work from commencing on this basis is not clear).

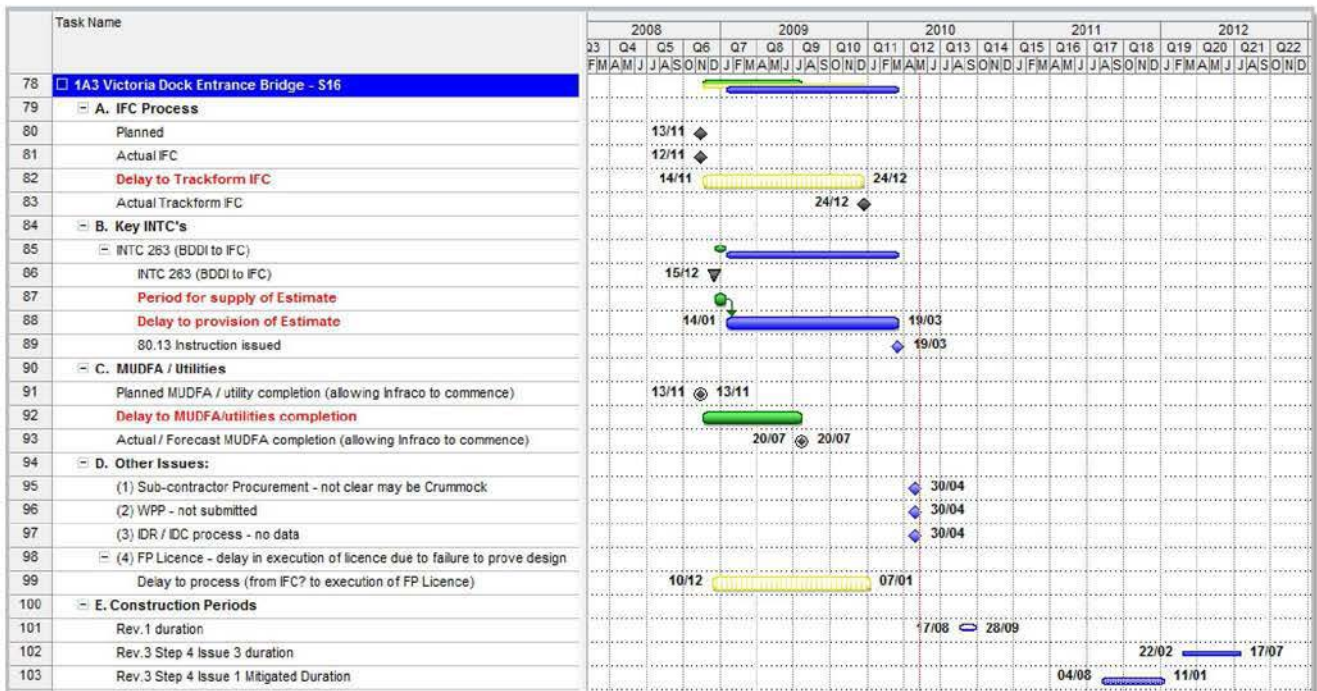
- 
- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing and the WPP process) have less of a bearing on the late commencement of this area. Whilst in isolation these issues may have been critical to commencement their significance is considerably diminished by the occurrence of the events in G(i) above. They will however increase in significance as matters progress if they do pose an obstacle to work on the ground. **Discuss position being taken by tie.**
  
  - (iii) **Considerations of dominance:** availability of design and work areas are both equally important in terms of ability to commence. That said, if contemporaneously Infracore and SDS knew that the utilities diversions were significantly delayed, such that they did not have to progress the design in accordance with the original programme, then the works area availability will have more causative significance. See previous comments re potential Infracore argument that the late completion MUDFA / utilities, and hence the late availability of the working area, will be more dominant (i.e. have more 'causative potency') than its delays which would / could have been overcome in accordance with the original programme had it been necessary.

As such, from the information available it appears that the two key issues to commencement of the road & trackworks in 1A4 are (i) the completion of the MUDFA / utility works; and (ii) the execution of the FP licence. There would appear to be equal causative potency of both issues up to January 2010; thereafter, the late completion of the utility diversions becomes the dominant issue.

Draft for  
discussion



1A3 Victoria Dock Entrance Bridge



- A. IFC Process: Initial IFC issued on time (planned 13/11/08; actual 12/11/08). Subsequent IFC's issued as follows:-
- (i) Trackform 24/12/09. There is no information presently available to inform culpability for delay (see Preamble). It is notable however, that the IFC issue date is still in advance of the works to this area. It of itself is unlikely to have been the direct cause of the delay in this area (or to the achievement of a Certificate of Sectional Completion for this Section). It should also be noted that this particular Trackform IFC would not have been an obstacle to Infraco's commencement or early progress of bridge works (this has been confirmed by MB). **Potential delay by SDS/tie; Infraco – but only to the area (not the Section)** [However, this should not have influenced delay to commencement of bridge or trackworks in this area]
- B. Key INTC's: From information provided it appears that the Infraco issued 1 no. INTC in relation to this structure; INTC 263. We are further advised that INTC 263 (IFC Drawing Changes – Victoria Dock Entrance Bridge – Section 1A) appears to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-
- (i) INTC 263; issued by Infraco on 15/12/08 (33 days after IFC issue). Estimate should have been submitted on or around 13/01/09. Estimate has not yet been submitted by Infraco. As at 30/04/10 this is **472 days** later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 230.**  
However, an **80.13 Instruction was issued by tie on 19/03/10** instructing Infraco to proceed with the works covered by that INTC. **Delay by Infraco; Infraco culpability for the protracted time taken to produce an Estimate** (which in effect precipitated the need for tie to issue the 80.13 in an attempt to maintain progress – see Preamble).
- C. MUDFA / Utilities: Planned completion 13/11/08; actual 18/07/09, 247 days late. **Delay by tie; tie culpability.** Note: We are advised that service diversions are not yet fully complete. Nevertheless we understand that works are sufficiently complete to enable commencement. These issues are however subsumed with delays on and construction periods required for TPB.
- D. Other Issues:
- (i) Sub-Contractor Procurement: No formal sub-contract has been put in place for this structure. It is also not clear whether any informal (LOI) is in place for road works in this section. **Delay by Infraco. Infraco culpability** (but due to start date for this structure it will not be critical at present) [Note: no details as to sub-contractor in place. Understood that Crummock may be appointed by Infraco for 1A3 – see Infraco Period Report No.3-1 report to 24/04/10].
  - (ii) WPP Process: Not yet submitted (as advised by MB) as no sub-contractor appointed. This could be an obstacle to commencement (but unlikely at present). **Delay by Infraco. Infraco culpability.**
  - (iii) IDR/IDC process: IDC not yet in place. Infraco programme of 18/12/09 does not contain details of the IDR / IDC process for this structure. **Infraco delay** (at present not affecting commencement because this is dependent on TPB). **tie** may restrict Infraco access to this area pending resolution of the Infraco IDC certification process.
  - (iv) FPA Licence: Not in place until 07/01/10. We are advised that this delay arose from a failure of SDS (possibly Infraco to manage SDS?) to provide 'Category 2' design calculations for ramp at TPB. SDS subsequently revised design to remove ramps as it could not satisfy FP as to the suitability of its original design. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.** Critical nature of this issue is seen in Tower Place Bridge.



E. Construction Periods:

1A3 Victoria Dock Bridge - S16					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	17/08/2010	22/02/2012	79.14 wks	04/08/2011	50.29 wks
Finish	28/09/2010	17/07/2012	94.00 wks	11/01/2012	67.14 wks
Cal. Duration	6.14 wks	21.00 wks	14.85 wks	23.00 wks	16.86 wks

Note: MB suggested mitigation exercise shows overall commencement and completion in Intermediate Section 1A4 as 01/03/10 to 05/07/11 respectively. That equates to a period of **70 weeks**.

- (i) Delay to Start: The table above refers to various programme dates. Forecast start dates differ between Issue 3, IM Issue 3, MB mitigated programme and MUDFA / Utility dates listed above.

**Delay to start** is therefore forecast to be a range between **50 weeks (to 04/08/11)** and **79 weeks (to 22/02/12)**.

Primary causes of delay to start as follows:-

- A. IFC process: no material impact;
- B. INTC's: Delay by Infraco in the submission of Estimate - (delay of **430 days** up to 19/03/10 when tie issued clause 80.13 instruction). **Delay by Infraco; Infraco culpability**. No material impact on commencement;
- C. MUDFA / Utilities: Planned completion **13/11/08**; actual completion **18/07/09**, **247 days late**. **Delay by tie; tie culpability**. no material impact – dependent on TPB;
- D. Other:
- **Sub-Contractor procurement**: No formal sub-contract in place. Not clear whether any informal (LOI) is in place for works in this section. **Delay by Infraco. Infraco culpability** (but due to start date for this structure it will not be critical at present)
  - **WPP process**: Not yet submitted (as advised by MB). Could be an obstacle to commencement in future. **Delay by Infraco. Infraco culpability**. Unlikely to have significant impact;
  - **IDR/IDC process**: IDC not yet in place. This was clearly not an obstacle to commencement on Tower Place Bridge. **If not resolved prior to programmed commencement of VDEB, this may well prove an obstacle given current tie policy of restricting Infraco access area pending resolution of the Infraco IDC certification process site wide.**
  - **FPA Licence**: Not in place until 07/01/10. Delay arose from failure of SDS (Infraco?) to provide 'Category 2' design calculations. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability**. No evidence available as to SDS/Infraco performance or management of process (subject to future audit).

- (ii) Delay to Finish: Issue 3 programme shows an increase of circa **15 weeks** over the timescale in Rev.1 programme. Current Infraco Rev.3 programme period (working period) considered reasonable by IM. The original Rev.1 programme duration was inserted in respect of a 'dummy' activity'.

F. tie position on area availability:

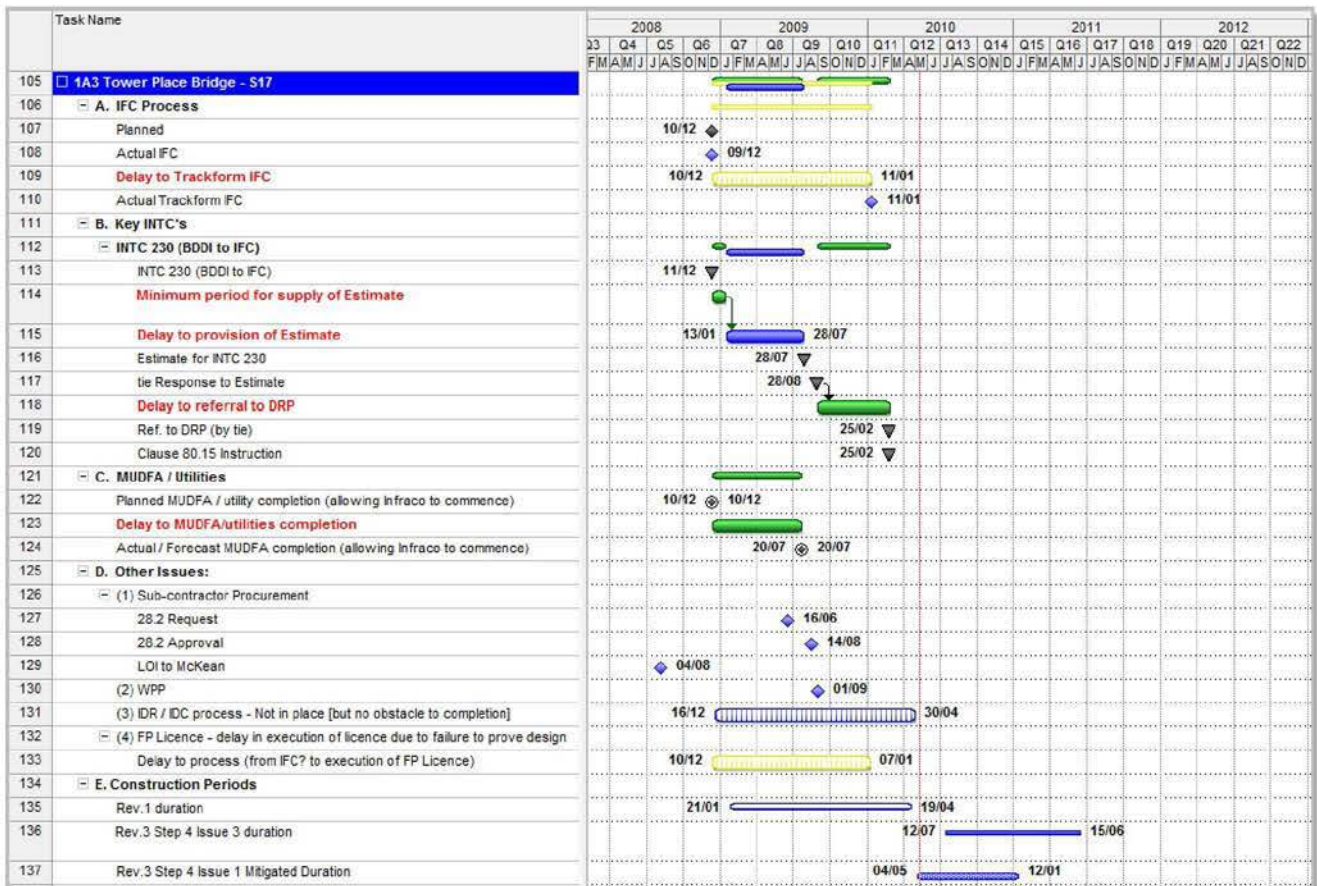
- (i) We are advised that the temporary diversion works required for VDEB were substantively complete on 18/07/09. It is notable however, that this work (although substantively complete) remains incomplete as at 30/04/10. (These incomplete works will not be critical until such times as the works to Tower Place Bridge are complete).

G. Conclusion:

- (i) **'Significant' issues/events**: This structure is dependent on the commencement and completion of TPB. Delay to actual start is forecast to be between 50 and 79 weeks (see table above). In our opinion the main factor was and is the delays to TPB. Running concurrent with TPB delays are (a) the INTC process in respect of INTC 263; (b) late completion of MUDFA/utilities; and (c) the late execution of the FP licence. However due to the delay on TPB, those matters are not critical to commencement of this structure. Increase in duration of 15 weeks appears to be considered reasonable by both IM & MB mitigation exercises.
- (ii) **Other concurrent issues**: In our opinion the other events detailed above (i.e. the sub-contractor procurement timing; the WPP process & the IDR/IDC process) have less of a bearing on the late commencement of this structure. Whilst in isolation these issues may have been critical to commencement their significance is considerably diminished by the occurrence of the events in G(i) above.
- (iii) **Considerations of dominance**: It is the effect of the delays to TPB which materially affects the commencement of this structure. The other issues whilst running concurrently occur (at present) sufficiently in advance of the delayed start date such that they do not (presently) pose an obstacle to commencement.
- (iv) **Criticality**: Notwithstanding the above noted commentary on "Considerations of dominance", it does appear however, that issues attaching to VDEB are not of themselves critical to Section 1 completion. Clearly, the commencement of VDEB is dependent on the completion of works to Tower Place Bridge.



1A3 Tower Place Bridge – S17



A. IFC Process: Initial IFC issued on time (planned 10/12/08; actual 09/12/08). Subsequent IFC's issued as follows:-

- (i) **Trackform 11/01/10.** There is no information presently available to inform culpability for delay (see Preamble). It is notable however, that as Trackform requires the further integration of Infraco design there is a responsibility on Infraco to provide information to SDS for incorporation on time. Notwithstanding, it is likely that the late issue of this IFC flows from one or more of the following reasons:-
  - a. Late issue by SDS (CE under 65(t));
  - b. A material breach by SDS (a CE under 65(u));
  - c. A failure of Infraco to timeously provide the Infraco Design to SDS (clause 19.19);
  - d. A failure of Infraco in respect of its management of SDS or another breach by Infraco.

It should be noted however, that this particular Trackform IFC would not have been an obstacle to Infraco's commencement or early progress of bridge works (this has been confirmed by MB). An issue date of 11/01/10 although late would not appear to have affected the trackwork activities in this area, which were due to commence in the Rev.1 programme during June 2010 (this proceeds on the assumption that the Trackform IFC does not require amendments to the TPB IFC).

Potential delay by SDS/tie; Infraco – but only to the area (not the Section) [However, this should not have influenced delay to commencement of bridge or trackworks in this area]

B. **Key INTC's:** From information provided it appears that the Infraco issued 3 no. INTC's in relation to this structure; INTC's 139, 230 & 405. We are advised that only INTC 230 (Tower Bridge Structure IFC Drawings) appears to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-

- (i) **INTC 230:** issued by Infraco on 11/12/08 (2 days after IFC issue). Estimate should have been submitted on or around 12/01/09. Estimate actually submitted by Infraco on 28/07/09 i.e. 197 days later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 230.**  
**80.15 Instruction issued by tie on 25/02/10. 184 days following receipt of Estimate (less 28 days for review & discussion of same). Delay by tie; tie culpability for time taken to issue 80.15 instruction following receipt of Estimate dated 28/07/09.**

C. **MUDFA / Utilities:** Planned completion 10/12/08; actual completion 18/07/09, 220 days late. **Delay by tie; tie culpability.**

D. **Other Issues:**

- (i) **Sub-Contractor Procurement: 28.2 approval process:** request submitted 16/06/09; approval granted 14/08/09. Note that this is much later than Rev.1 commencement date (21/1/09). However, first LOI (for mobilisation and enabling works) issued by Infraco on 04/08/08 (i.e. well in advance of Rev.1 commencement). **Delay by Infraco. Infraco culpability.** At best likely to be administrative delay by Infraco in terms of Rev.1 dates; however, it would be known post 04/08/08 that delay incurred to Bridge due to MUDFA works. Unlikely to have critical / dominant effect.
- (ii) **WPP Process:** Submitted September 2009 in place for December 2009. This could have been an obstacle to commencement. **Delay by Infraco. Infraco culpability.**



- (iii) IDR/IDC process: IDC not yet in place. This was clearly not an obstacle to commencement as commencement took place on 22/03/10 in advance of IDC. See Preamble.
- (iv) FPA Licence: Not in place until 07/01/10. Advised that delay arose from failure of SDS (Infraco?) to provide 'Category 2' design calculations for ramp at TPB. SDS subsequently revised design to remove ramps as it could not satisfy FP as to suitability of design. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**

**E. Construction Periods:**

1A3 Tower Place Bridge - S17					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	21/01/2009	12/07/2010	76.71 wks	04/05/2010	66.86 wks
Finish	19/04/2010	15/06/2011	60.29 wks	12/01/2011	38.29 wks
Cal. Duration	64.86 wks	48.43 wks	-16.43 wks	36.29 wks	-28.57 wks

- (i) Delay to [Actual] Start: The table above refers to various programme dates. Actual start however was 22/03/09. This is **16 weeks** earlier than Infraco's Issue 3 programme; and **6 weeks** earlier than IM mitigated Issue 3 programme.

**Delay to actual start is therefore 61 weeks (21/01/09 to 22/03/10).**

Primary causes of delay to start as follows:-

- A. IFC process: no material impact;
- B. INTC 230: INTC issued on time; significant Infraco delay to provision of Estimate (197 days late); **tie delay (184 days) in dealing with Estimate through to 80.15 instruction on 25/2/10**. This is the last issue affecting commencement.  
Note: as discussed there may be a hypothetical argument concerning the effect of 'removing' the delay in the provision of the Estimate (such that an earlier 80.15 instruction and hence start could have been achieved). However, this does not sit well with the actions of tie in relation to the actual date of issue of the 80.15 instruction. **To discuss further.**
- C. MUDFA / Utilities: Planned completion 10/12/08; actual completion 18/07/09, **220 days late. Delay by tie; tie culpability.**
- D. Other:
  - Sub-Contractor procurement: First LOI issued in advance of IFC and planned start (although 28.2 process later). Appears to have limited impact;
  - WPP process: Submitted September 2009 in place for December 2009. This could have been an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Appears to have limited impact;
  - IDR/IDC process: IDC not yet in place. This was clearly not an obstacle to commencement as commencement took place on 22/03/10 in advance of IDC.
  - FPA Licence: Not in place until 07/01/10. Delay arose from failure of SDS (Infraco?) to provide 'Category 2' design calculations. This would have been an obstacle to commencement. **Delay by SDS (possible material breach – excusable under 65(u)); but possibly Infraco in failing to manage SDS (no evidence). SDS or Infraco culpability.**

- (ii) Delay to Finish: No further delay; in fact delay to finish is less than delay to start. That is, duration has been reduced which in turn reduces delay to completion of structure. Understood to be contributed to by a reduction in workscope.  
**Note**: IM mitigated version of Rev.3 Issue 1 programme shows shorter duration than Infraco Issue 3 programme.  
If earlier actual start of 22/03/09 is factored in, the delay to this structure and this area will be mitigated. The extent of that mitigation however will depend on the measures actually adopted by Infraco. The overall delay to Sectional Completion Date 'C' however remains as previously forecast (as delays to 1B & 1C maintain the critical delay to summer 2010 minimum).

**F. tie position on area availability:**

- (i) We are advised that the temporary diversion works required for Tower Place Bridge were completed on 18/07/09. This was followed by the removal of fibre optic cables which we understand took a further 6 weeks (approx). This should have facilitated an early September 2009 commencement date for Infraco works.

**G. Conclusion:**

- (i) **'Significant' issues/events**: Delay to actual start was 61 weeks. In our opinion there were three main contributory factors, being (a) the INTC process in respect of INTC 230; (b) late completion of MUDFA/utilities; and (c) the late execution of the FP licence. Taking those events in chronological order

MUDFA/utilities diversions were supposed to be completed on 10/12/08 (to facilitate a start on TPB by 21/01/09). Those diversions however were not actually completed until circa 18/07/09. This is tie's culpability. Running concurrently with this was the late provision by Infraco of the Estimate for INTC 230. That should have been provided by 12/01/09 (earliest) but was actually provided on 28/07/09. This is a matter for which Infraco is responsible. Both events would have delayed commencement of the structure. Beyond 28/07/09 however, tie's review and inaction on the Estimate for INTC 230 ran until 25/02/10 (when the 80.15 instruction was issued). In light of the advice from DLA dated 24 March 2010, this is a period for which tie bears the responsibility. In addition, the execution of the FP licence is understood to have been delayed by SDS such that it was not in place until 07/01/10. This is either an SDS breach (which would excuse Infraco of the time) or if caused by a failure on the part of Infraco to manage SDS, it is a matter for which Infraco bears responsibility.

- (ii) **Concurrent issues**: In our opinion the other events detailed above (i.e. the sub-contractor procurement timing; the WPP process & the IDR/IDC process) have less of a bearing on the late commencement of this structure. Whilst in isolation these issues may have been critical to commencement their significance is considerably diminished by the occurrence of the events in G(i) above.
- (iii) **Considerations of dominance**: Of the three significant events highlighted above, in our opinion neither can be said to be 'the' truly dominant delay affecting commencement for the entirety of the period. In relative terms however Infraco will certainly argue that the late completion

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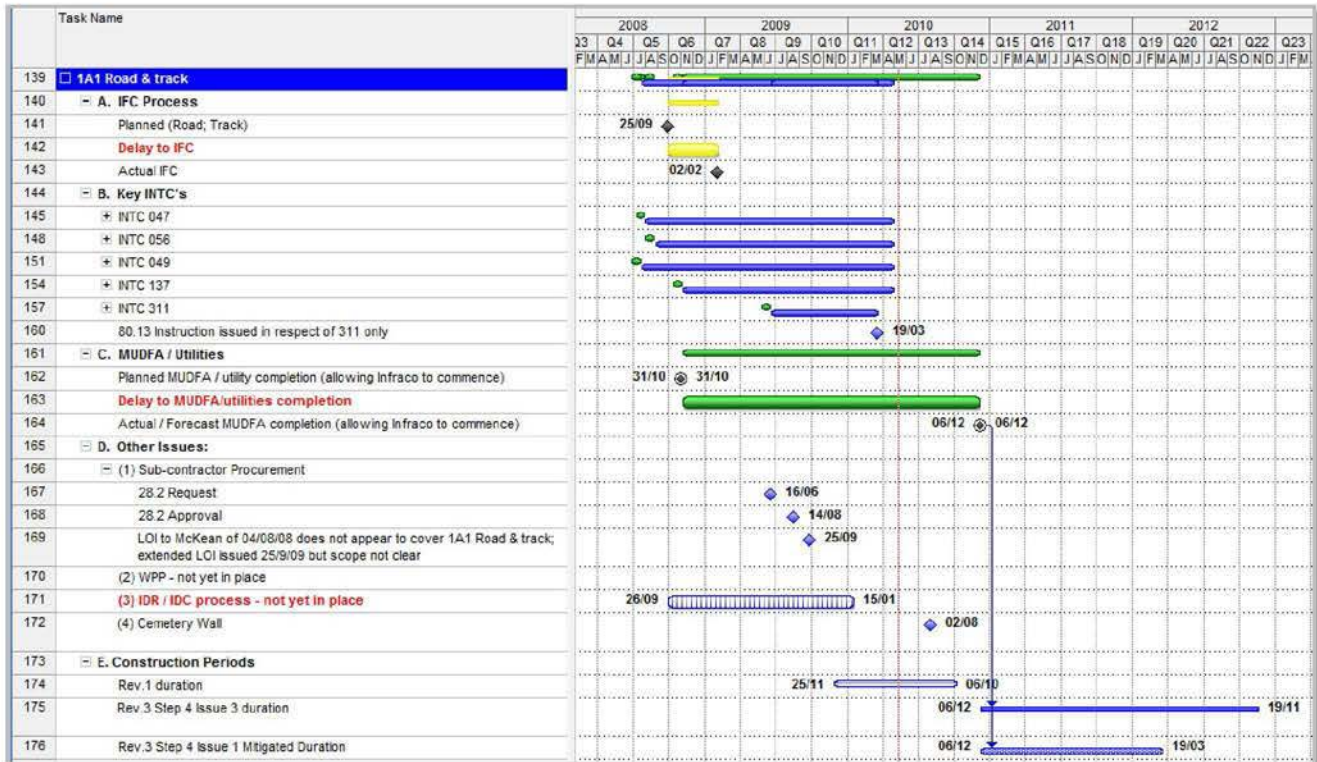
MUDFA / utilities, and hence the late availability of the working area, will be more dominant (i.e. have more 'causative potency') than its delay in the INTC Estimate process. They will also point to the tie delay in respect of INTC 230 – which runs beyond MUDFA / utilities completion. tie however may be able to reply by stating that 'but-for' the late submission of the Estimate, the 80.15 instruction could have been issued prior to the late completion of MUDFA (even allowing for their delay beyond receipt of the Estimate). That position would render more 'importance' to the late provision of the Estimate. That however is rather subjective as one cannot be certain that tie would have issued the 80.15 at an earlier date had Infracore issued its Estimate on time (or earlier than it did).

The FP licence event is considered to be concurrent up to January 2010. It does however subsequently become 'overtaken' by the period of the INTC 230 process (and in particular the late issue of the 80.15 instruction).

Draft for  
discussion



1A1 Road & Track



- A. **IFC Process:** The initial IFC was **130 days (or 19 weeks) late**; planned date was **25/09/08**; the actual was **02/02/09**. There is no information presently available to inform culpability for delay (see Preamble). Potential reasons include:-
- Late issue by SDS (at its simplest a CE under 65(t));
  - A material breach by SDS (again at its simplest form a CE under 65(u));
  - A failure of Infraco to provide the Infraco Design to SDS (clause 19.19 refers);
  - A tie Change;
  - A failure of Infraco in respect of its management of SDS or another breach by Infraco (e.g. failure to properly manage the CEC/NR interface);
  - A requirement of CEC/NR for which tie will bear responsibility.
- Note:* DS advises "late submission of TAA package followed by length of time needed to incorporate CEC comments due to poor / incomplete design".
- Delay by SDS, SDS /tie or Infraco?**
- B. **Key INTC's:** From the information provided it appears that Infraco issued 6 No. INTC's against this area. INTC's 047, 056, 049, 086, 137 & 311 refer **[Complete data on INTC's awaited]**. Details as follows:-
- (i) **INTC 047:** issued 04/07/08; Estimate due 30/07/08; No Estimate provided by Infraco. **Delay by Infraco.**
  - (ii) **INTC 056:** issued 29/07/08; Estimate due 22/08/08; No Estimate provided by Infraco. **Delay by Infraco.**
  - (iii) **INTC 049:** issued 24/06/08; Estimate due 18/07/08; An Estimate was provided by Infraco on 30/07/09 (**377 days late**). **Delay by Infraco.**
  - (iv) **INTC 137:** issued 08/10/08; Estimate due 03/11/08; No Estimate provided by Infraco. **Delay by Infraco.**
  - (v) **INTC 311:** issued 22/05/09; Estimate due 17/06/09; No Estimate provided by Infraco. **Delay by Infraco.**
- An 80.13 instruction was issued by tie on 19/03/10 in respect of INTC 311 only (as this appears to be a key INTC in terms of facilitating commencement).
- C. **MUDFA / Utilities:** Planned completion **31/10/08**; Earliest forecast completion is **31/05/10** on Constitution Street ch 2600 – 2700. We are advised by tie PM staff that this is not sufficient however, to facilitate meaningful commencement on this section of the works. Meaningful commencement is dependent on MUDFA / Utilities completion to Victoria Bridge East Side to Baltic Street ch 1700 – 2300; that is forecast to complete on **06/12/10**.
- Delay by tie; tie culpability.**
- D. **Other Issues:**
- (i) **Sub-Contractor Procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. LOI to McKean of 04/08/08 does not appear to cover 1A1 Road & track; extended LOI issued 25/9/09 but scope not clear [subject to future tie audit]. **Delay by Infraco. Infraco culpability.**
  - (ii) **WPP Process:** Not yet submitted (as advised by MB). This *could* be an obstacle to commencement. **Delay by Infraco. Infraco culpability.**
  - (iii) **IDR/IDC process:** IDC not yet in place. Infraco programme of 18/12/09 shows this as being forecast to be in place by 15/01/10; but not yet in place. **Delay by Infraco. Infraco culpability.**
  - (iv) **Cemetery Wall:** Cemetery used to extend across Constitution Street. As a consequence, there are Archaeological and Historic Scotland issues governing the requirement to move skeletons displaced by the tram works. Given the intricacies attaching to these works the potential for further delays exist. We are advised that any works extending beyond August / September 2010 are likely to have a critical impact on works to 1B.



E. Construction Periods:

1A1 Road and Track					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated	Delay
				Rev.3	
Start	25/11/2009	06/12/2010	53.71 wks	06/12/2010	53.71 wks
Finish	06/10/2010	19/11/2012	110.71 wks	19/03/2012	75.71 wks
Cal. Duration	45.14 wks	102.14 wks	57.00 wks	67.14 wks	22.00 wks

Note: MB suggested mitigation exercise shows overall commencement and completion in Intermediate Section 1A as 01/03/10 to 05/03/12 respectively. That equates to an overall period of **105 weeks** (but is not comparable with the above 1A1 split).

- (i) **Delay to Start:** The table above refers to various programme dates. Forecast start dates differ between Issue 3, IM Issue 1, MB mitigated programme and MUDFA / Utility dates listed above. **Delay to start** is therefore forecast to be **54 weeks (06/12/10)** in terms of both the Rev.3 and IM Rev.3 mitigation programmes. **MB mitigation exercise shows immediate commencement** [albeit now outdated].

Primary causes of delay to start as follows:-

- A. **IFC process:** The initial IFC was **198 days (or 28 weeks) late**; planned date was **25/09/08**; the actual was **02/02/09**. There is no information presently available to inform culpability for delay. **Unless there is proof of Infraco breach, it will be a CE under either 65(t) or (u).**
- B. **INTC's:** Lengthy delays by Infraco in the submission of Estimates. Delay at least up to 19/03/10 when tie issued clause 80.13 instruction.
- C. **MUDFA / Utilities:** Planned completion **31/10/08**. Partial completion at Constitution Street ch 2600 – 2700 as at **31/05/10**; further release of areas as at **06/12/10**. We understand this is the area required to make meaningful progress. **Delay by tie; tie culpability.**
- D. **Other:**
- **Sub-Contractor procurement:** No formal sub-contract has been put in place for this section. It is also not clear whether any informal (LOI) is in place for road works in this section. **Delay by Infraco. Infraco culpability.** Effect of this is not clear – it could be a hindrance to progress – but details not available to establish scope of work under McKean LOI. Without evidence to the contrary Infraco may be able to argue 'just-in time' procurement / authorisation.
  - **WPP process:** Not yet submitted (as advised by MB). This *could* be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Unlikely to have significant impact;
  - **IDR/IDC process:** IDC not yet in place. (tie's ability to stop work from commencing on this basis is not clear – see Preamble).
  - **Cemetery Wall:** Works yet to commence. This could be an obstacle to commencement on 1B Road & Track if incomplete as at September 2010. If incomplete as at the forecasted completion of MUDFA / Utilities works i.e. 06/12/10, this will impact on the meaningful commencement of works to 1A1 Road & Track. **Potential future delay by tie; tie culpability.**

- (ii) **Delay to Finish:** The Issue 3 programme shows an increase of circa **57 weeks** over timescale in Rev.1 programme (majority of increase understood to be as a result of full-depth construction issue). IM mitigated view of Issue 3 also shows an increased duration of 22 weeks over the Rev.1 programme period (albeit 35 weeks shorter than Infraco's proposed Issue 3 programme). MB mitigation proposal also has shorter duration than Issue 3. **Discuss how this is to be pursued with / instructed to Infraco.**

F. tie position on area availability:

- (i) Refer to response (C) above re MUDFA dates (available from **06/12/10**).

G. Conclusion:

- (i) **'Significant' issues/events:** In our opinion there were three main contributory factors, being (a) the IFC process; (b) the INTC process in respect of INTC's 264, 292 & 473; and (c) late completion of MUDFA/utilities. Taking those events in chronological order:-

The IFC should have been issued on **25/09/08**; it was actually issued on **02/02/09 (130 days late)**. MUDFA/utilities diversions were planned to be completed on **31/10/08** (to facilitate a start on 1A1 Road & track on 25/11/09). Those diversions however are not forecast to complete until 06/12/10. This is tie's culpability. Running concurrently with this was the **late provision by Infraco of the Estimates** for INTC's 047, 056, 049, 137 & 311. Those Estimates have yet to be provided. This is a matter for which Infraco is responsible. **Delay measured to 19/03/10** for INTC 311 (when clause 80.13 instruction issued). Each of those events (i.e. IFC, MUDFA, INTC's) could have delayed commencement in this area.

The IDC process could also be a contributing factor if Infraco has failed / fails to adhere to a contractual process (but tie's ability to stop work from commencing on this basis is not clear – see Preamble).

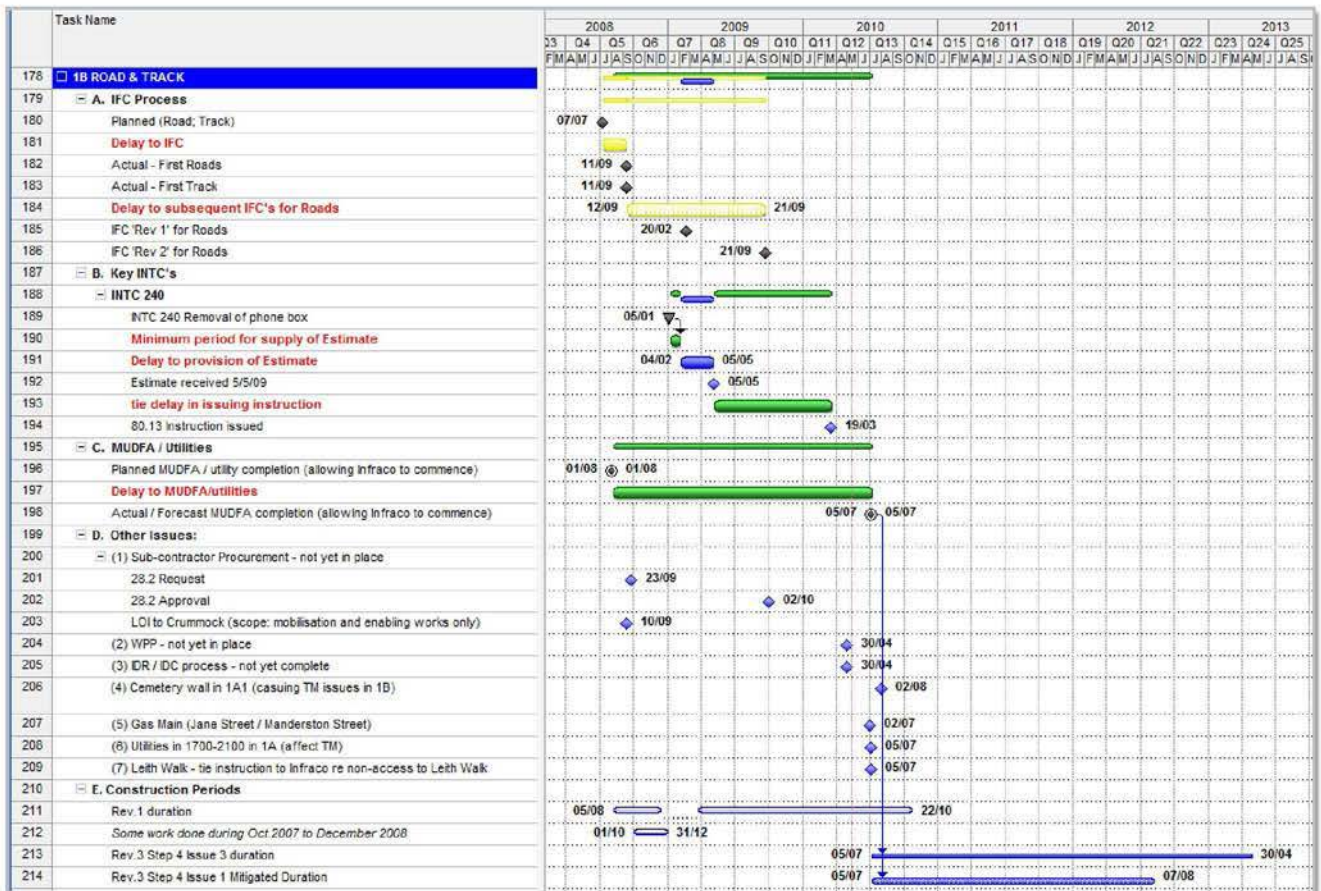
- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing and the WPP process) have less of a bearing on the late commencement of this area. Whilst in isolation these issues may have been critical to commencement their significance is considerably diminished by the occurrence of the events in G(i) above.

- (iii) **Considerations of dominance:** availability of design and work areas are both equally important in terms of ability to commence. That said, if contemporaneously Infraco and SDS knew that the utilities diversions were significantly delayed, such that they did not have to progress the design in accordance with the original programme, then the works area availability (due to MUDFA / utility delays) will have more causative significance. See previous comments re potential Infraco argument that the late completion MUDFA / utilities, and hence the late availability of the working area, will be more dominant (i.e. have more 'causative potency') than its delays which would / could have been overcome in accordance with the original programme had it been necessary.

As such, in our opinion the delay to the MUDFA/utility works in 1A1 Road & Track is the dominant / critical factor affecting commencement and hence completion in this intermediate section.



## 1B Road & Track



- A. **IFC Process:** Initial IFC was **9.5 weeks late** (planned **07/07/08**; actual **11/09/08**). This IFC was not issued as 1 no. IFC, it was divided into 2no. separate IFC's, addressing Roads and Track separately. Subsequent IFC's issued as follows:-
- 'Rev 1' Roads (20/02/09) & Rev '2' Roads (21/09/09).** There is no information presently available to inform culpability for delay to the foregoing (see Preamble). It is notable however, that as Trackform and Roads requires the further integration of Infraco design there is a responsibility on Infraco to provide information to SDS for incorporation on time. Potential reasons for the late issue of IFC's to this area include:-
    - Late issue by SDS (CE under 65(t));
    - A material breach by SDS (a CE under 65(u));
    - A failure of Infraco to timeously provide the Infraco Design to SDS (clause 19.19);
    - A failure of Infraco in respect of its management of SDS or another breach by Infraco.
 Infraco commenced some works on or around October 2008. This would indicate that this commencement was influenced by the late 'First Road & First Track' IFC's issues – but works appear to have been stopped because of the effect of the incomplete MUDFA / utility works. The later 'Rev 1 & Rev 2' Road's IFC's were clearly not an obstacle to Infraco's commencement or early progress on 1B Road & Track.
 

**Potential delay by SDS/tie; Infraco**
- B. **Key INTC's:** From the information provided it appears that Infraco issued around **48 no. INTC's** against this area [Complete data on INTC's awaited]. There is insufficient information available at present to establish which INTC's are significant. The only INTC which was identified as having the potential to cause delay to commencement or progress was INTC 240. It is noted however that all of the foregoing were the subject of an **80.13 instruction issued to Infraco on 19/03/10**. As such, notwithstanding Infraco delay in provision of Estimates, on the assumption that Infraco complies with that instruction, these INTC's should not provide an obstacle to commencement or progress.
- C. **MUDFA / Utilities:** Planned completion **01/08/08**. MUDFA / utilities works are partially complete on Leith Walk: Southbound Carriageway (ch 900 – 150). However current advice is that commencement / subsequent progress on this section of the works is dependent on forecast MUDFA / utilities completions as follows:-
- Leith walk : Foot of the Walk to Jane Street (**30/04/10**)
  - Leith Walk: Jane Street to McDonald Road on or around (**05/07/10**)
- Notwithstanding the above, tie PM advice is that meaningful material commencement cannot be made until **5 July 2010**. **Delay by tie; tie culpability.**
- D. **Other Issues:**
- Sub-Contractor Procurement:** Understood that Crummock may be appointed by Infraco for 1B – see tie audit and Infraco Period Report No.3-1 report to 24/04/10. No sub-contract yet in place. Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco. Infraco culpability.** The significance of this issue will increase as the 5 July 2010 nears.
  - WPP Process:** Not yet submitted. This *could* be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Again, the significance of this issue will increase as the 5 July 2010 nears.



- (iii) IDR/IDC process: Not yet in place. Infraco letter/programme of 18/12/09 identifies the requirement for 11 separate IDR/IDC's. Only 6 are shown in that programme. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. This may merit further discussion. **Delay by Infraco. Infraco culpability.**
- (iv) Cemetery Wall: The original cemetery extended into Constitution Street. As a consequence there are Archaeological and Historic Scotland issues governing the requirement to move skeletons displaced by the tram works. Given the intricacies attaching to these works, the potential for further delays exist. Although this workscope is outwith intermediate section 1B, the impact of this work extending beyond August / September 2010 is likely to have a consequential impact on TM requirements on 1B Road & Track works. **No current delay (but potential to cause delay).**
- (v) Gas Main (Jane Street / Manderston Street): We have been advised that this is an issue which has not yet been discussed with Infraco. The current position is that if SDS design proposals do not meet SGN's requirements/aspirations, the potential exists for further substantive delays. At best this issue will rely on reasonable mitigation on the part of Infraco. This could therefore be an obstacle to future progress. **No current delay (but potential to cause delay)**
- (vi) Utilities in 1700–2100 Constitution Street: Similar to item (iv) above, work in this area is outwith the parameters of 1B Road & Track. The effects of same however have the potential to impact on TM requirements on 1B Road & Track. **No current delay (but potential to cause delay)**

E. **Construction Periods:**

1B Road and Track					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	05/08/2008	05/07/2010	99.86 wks	05/07/2010	99.86 wks
Finish	22/10/2010	30/04/2013	131.57 wks	07/08/2012	93.57 wks
Cal. Duration	115.57 wks	147.29 wks	31.71 wks	109.29 wks	-6.29 wks

- (i) Delay to Start: The table above refers to various programme dates. Both the Issue 3 and IM mitigated programme use the same projected start date of 05/07/10. This is the same date that the PM's consider meaningful progress can be made. That is to say, the delays to MUDFA / utility works are dictating the commencement date. The **delay to start** is therefore forecast to be circa **100 weeks**. Primary causes of delay to start as follows:-
  - A. IFC process: The initial IFC was **9.5 weeks late**; planned date was **07/07/08**; the actual was **11/09/08**. Subsequent revisions to the 'Roads' IFC were issued on 20/02/09 & 21/09/09. It is unclear as to whether these revisions would have been material to commencement (certainly (re)commencement was actually delayed by utility works beyond those later IFC dates). There is no information presently available to inform culpability for delay to these subsequent IFC's. Unless there is proof of Infraco breach, **this could be a CE under either 65(t) or (u).**
  - B. INTC's: see comments above. **[Complete data on INTC's awaited]**. Notwithstanding Infraco delay in provision of Estimates, on the assumption that Infraco complies with that instruction, these INTC's should not provide an obstacle to commencement or progress.
  - C. MUDFA / Utilities: Planned completion **01/08/08**. Partial availability on Leith Walk: Southbound Carriageway (ch 900 – 150); further release of areas as at **30/04/10 & 05/07/10**. tie PM advice is that meaningful commencement cannot be made until **5 July 2010**. **Delay by tie; tie culpability.**
  - D. Other:
    - Sub-Contractor procurement: Understood that Crummock may be appointed by Infraco for 1B – see tie audit and Infraco Period Report No.3-1 report to 24/04/10. No sub-contract yet in place. Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco. Infraco culpability.** The significance of this issue will increase as the 05/07/10 nears.
    - WPP process: Not yet in place. This could be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Unlikely to have significant impact if in place on time for commencement;
    - IDR/IDC process: yet in place. Infraco letter of 18/12/09 identifies the requirement for 11 separate IDR/IDC's. Only 6 are shown in that programme. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place (tie's ability to stop work from commencing on this basis is not clear –see Preamble) **Delay by Infraco; Infraco culpability.**
    - Other potential obstacles to commencement / progress: Cemetery wall; Gas main at Manderston Street & Jane Street; utility works to ch.1700 to 2100 (Section 1A1 Constitution Street) affecting TM.
- (ii) Delay to Finish: Issue 3 programme shows an **increase of circa 32 weeks** over the timescale in Rev.1 programme (majority of increase understood to be as a result of full-depth construction issue). IM mitigated view of Issue 3 shows a slight reduction in duration of **6 weeks** to the Rev.1 programme. There is presently no justification for the increased Rev.3 duration.

F. **tie position on area availability:**

- (i) Despite current availability on Leith Walk: Southbound Carriageway (ch 900 – 150), and imminent availability on Leith walk : Foot of the Walk to Jane Street we are currently advised that Infraco will not be able to make meaningful commencement on 1B Road & Track until all MUDFA / Utilities issues are completed. These works conclude on Leith Walk: Jane Street to McDonald Road on or around 05/07/10. **Delay by tie; tie culpability.**

G. **Conclusion:**

- (i) 'Significant' issues/events: In our opinion there were three main contributory factors, being (a) the IFC process; (b) the INTC process; and (c) late completion of MUDFA/utilities. Taking those events in chronological order:-

The IFC was programmed to be issued on **07/07/08**; the first IFC was actually issued on **11/09/08 (9.5 weeks late)**. This appears to have facilitated commencement in this area. This is either a CE under 65(t) (or possibly a failure by Infraco to manage SDS). Subsequent revisions were issued on 20/02/09 & 21/09/09 – those revisions however were issued after Infraco had stopped work in this area (and did not of themselves facilitate a restart). **MUDFA/utilities diversions** were supposed to be completed on **01/08/08** (to facilitate a start on 1B on 05/08/08). Those diversions however are forecast to be sufficiently complete suffice to allow re-commencement on **05/07/10**. This is tie's culpability.



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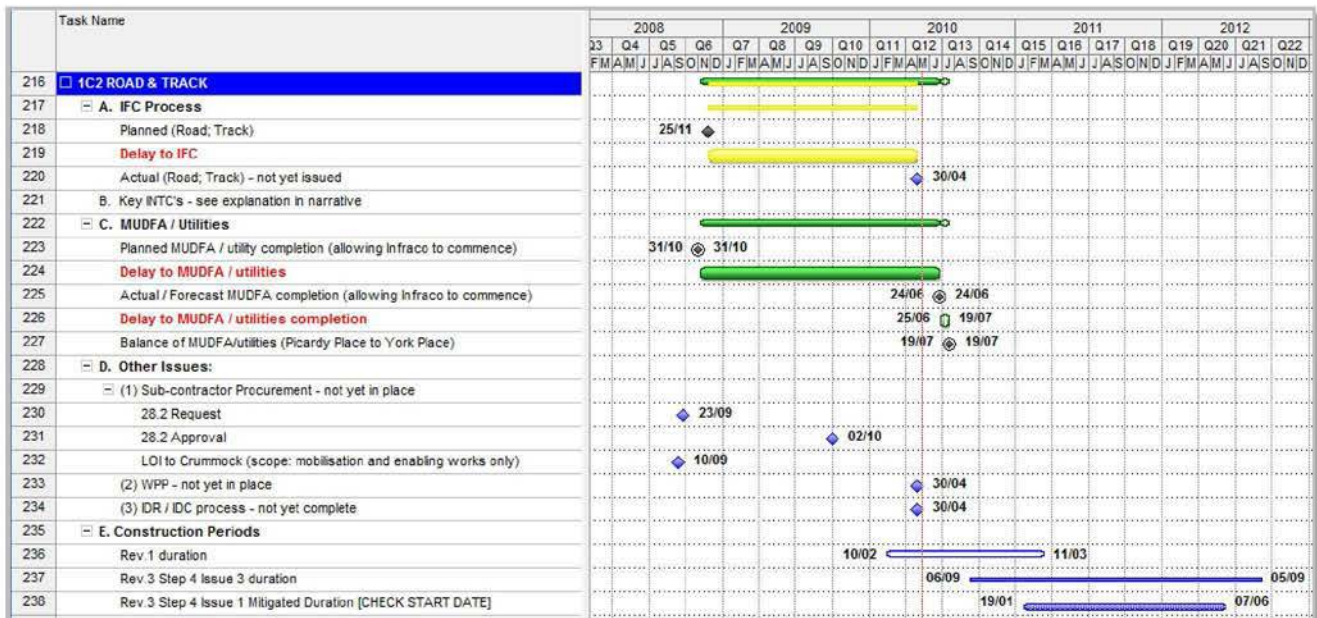
The IDR/IDC process may also be a contributing factor affecting commencement (but tie's ability to stop work from commencing on this basis is not clear).

- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing and the WPP process) have less of a bearing on the late commencement of this area. This is evident from the actual (partial) commencement in October 2008. Whilst in isolation these issues may have been critical to commencement, their significance is considerably diminished by the occurrence of the events in G(i) above. They may however become more significant in the lead up to the area availability in July 2010.
- (iii) **Considerations of dominance:** availability of design and work areas are both equally important in terms of ability to commence. The late issue of the first IFC in this area does appear to have affected commencement. That said, if contemporaneously Infracore and SDS knew that the utilities diversions were significantly delayed, such that they did not have to progress the design in accordance with the original programme, then the works area availability will have more causative significance. We understand that an instruction was issued by tie (post Christmas 2008 embargo; INTC 250) such that Infracore was instructed not to work in 1B until further instructed by tie. As a minimum that would appear to restrict access up to partial availability on Leith Walk: Southbound Carriageway (ch 900 – 150). See also previous comments re potential Infracore argument that the late completion MUDFA / utilities, and hence the late availability of the working area, will be more dominant (i.e. have more 'causative potency') than its delays which would / could have been overcome in accordance with the original programme had it been necessary.

As such, in our opinion the delay to the MUDFA/utility works in 1B Road & Track is the dominant / critical factor affecting commencement and hence completion in this intermediate section.

Draft for  
discussion

1C2 Road & Track



A. **IFC Process:** Initial IFC is currently **74 weeks late** (planned 25/11/08; as at 30/04/10 the actual IFC is **yet to be issued**). DS advises that "... design not yet approved and still subject to change". DS also advised that the "... current design parameters were instructed by CEC and revised design parameters now being instructed – mainly to allow Picardy Place to function in traffic flow terms but also to take account of potential Henderson Global (St James Quarter)". From the above we understand that there are two concurrent issues. The first is that the SDS design is incomplete or not satisfactory to CEC. However the second issue (Henderson Global / St James Quarter) is outwith Infraco control. From discussion with DS, this appears to be the main issue delaying completion of the design in this area. It is therefore likely that the late issue of this IFC flows from one or more of the following possibilities:-

- > Late issue by SDS (in its simplest form a CE under 65(t) – which may in turn permit the application of clause 65.12.2);
- > A material breach by SDS (again in its simplest form a CE under 65(u) – which may in turn permit the application of clause 65.13);
- > A failure of Infraco to provide the Infraco Design to SDS in accordance with the Consents Programme and Schedule. Part 14 (clause 19.19 refers);
- > A tie Change;
- > A failure of Infraco in respect of its management of SDS or another breach by Infraco (e.g. failure to properly manage the CEC interface);
- > A requirement of CEC for which tie will bear responsibility;

**Delay by SDS, SDS /tie or Infraco?** As a minimum however, it is expected that Infraco will be excused the time for this delay due to CEC indecision concerning Henderson Global (St James Quarter) design requirements.

B. **Key INTC's:** From the information provided it appears that Infraco issued around **13 no. INTC's** against this area [Complete data on INTC's awaited]. Of those INTC's 2No. are known to have TCO issued against them (INTC's 91 & 169). Beyond that however, there is insufficient information available at present to establish which INTC's are significant. That said, it is noted that 7 No. of the foregoing were the subject of an **80.13 instruction issued to Infraco on 19/03/10**. As such, notwithstanding Infraco delay in provision of Estimates, on the assumption that Infraco complies with that instruction, these INTC's should not provide an obstacle to commencement or progress. In respect of the remainder, the obligation remains with Infraco to provide Estimates (which are overdue in terms of Clause 80 timescales).

C. **MUDFA / Utilities:** Planned completion was **31/10/08**. MUDFA / Utilities are forecast to complete at Broughton Street Junction on **24/06/10**. Meaningful commencement is dependent on MUDFA / Utilities completion on York Place / Elder Street to North St Andrews Square and Picardy Place to York Place on **18/07/10**. **[Note: IM's mitigated Rev.3 shows commencement on 19/01/11 – to be checked] Delay by tie; tie culpability**

D. **Other Issues:**

- (i) **Sub-Contractor Procurement:** Understood that Crummock are currently pricing this area – see tie audit and Infraco Period Report No.3-1 report to 24/04/10. No sub-contract yet in place. Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco. Infraco culpability.** The significance of this issue will increase as the 06/09/10 nears (this is the earliest date of commencement in this area between Issue 3 and IM mitigated programme).
- (ii) **WPP Process:** Not yet submitted. This *could* be an obstacle to commencement. **Delay by Infraco. Infraco culpability.** Again, the significance of this issue will increase as the 06/09/10 nears.
- (iii) **IDR/IDC process:** Not yet in place. Infraco letter / programme of 18/12/09 identifies the requirement for 12 separate IDR/IDC's. Only 6 are shown in that programme. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. **Delay by Infraco. Infraco culpability.**