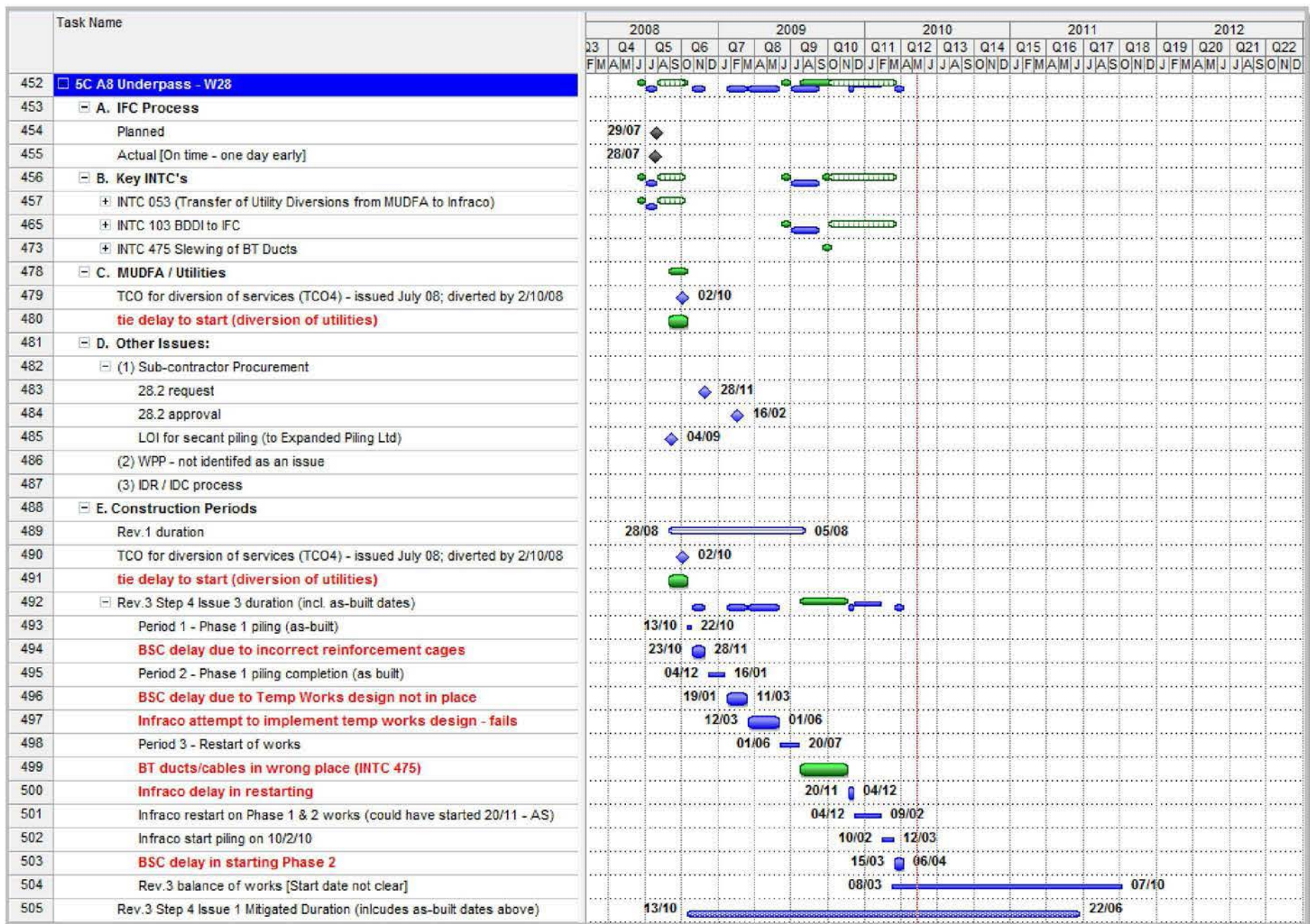
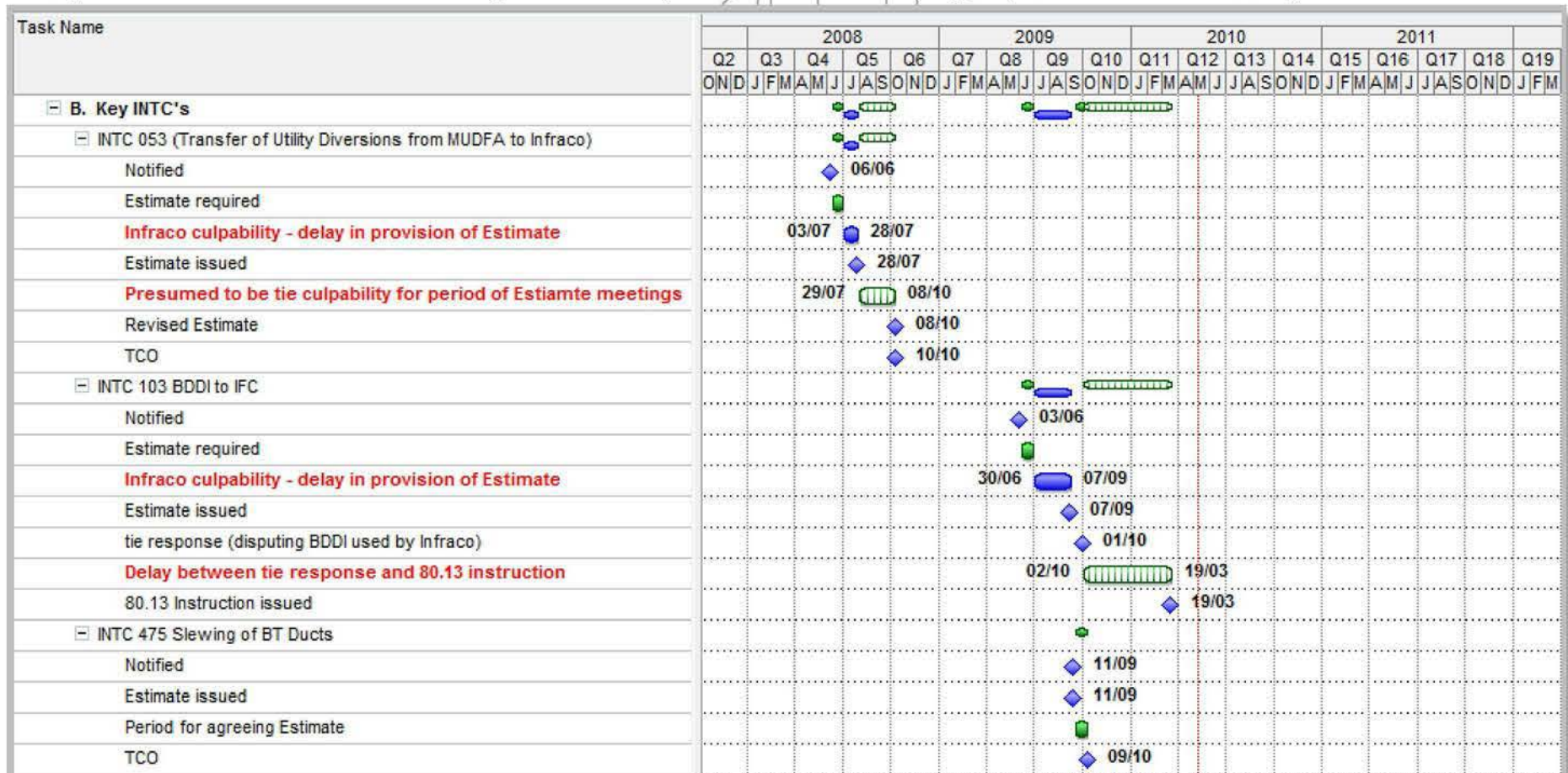


5C - A8 Underpass – W28



A. **IFC Process:** planned date of **29/07/08**; actual issue on **28/07/08**; **No delay**. We are also advised that 4 drawings were re-issued on **03/12/09** (no details available re reason for, or effect of, same). This may explain the re-start date of works on 4/12/09 (but has not been identified as an obstacle to recommencement).

B. **Key INTC's:** we are advised that the following INTC's were key to commencement and progress (see chart and details below):-



(i) **INTC 053 (Transfer of Utility Diversions from MUDFA to Infraco):** we understand that this was a critical delay to commencement of the A8 Underpass. Delay from planned commencement of 28/8/08 to 13/10/08 (i.e. allowing Infraco mobilisation period). **Minimum 5 weeks delay; tie culpability. Likely be delay of 7 weeks to 13/10/08** (when piling actually started; allowing for mobilisation)

- (ii) INTC 103 (BDDI to IFC): notified 03/06/09; Estimate required 29/06/09; Estimate issued 07/09/09 (**10 weeks late**). **tie** response issued 01/10/09 disputing BDDI design information used by Infraco in preparation of Estimate; requesting Infraco to review Estimate detail. No reply from Infraco to date. **[Not clear who is correct in this – affects culpability]**. **80.13 Instruction issued 19/03/10**.
It is not clear what this affects – as does not appear to have affected progress to date (but could increase duration required for additional work).
- (iii) INTC 475 (Slewing of BT Ducts): INTC issued 11/09/09; Estimate issued 11/09/09; TCO issued 9/10/09. See notes below (under 'C') re period of work and effect on progress. **tie accepts culpability for effect.**

C. **MUDFA / Utilities**: utility diversions transferred to Infraco under **INTC 053** appear to be the critical delay to start of Phase 1. Utility diversion was complete by 02/10/08. Phase 1 piling started on **13/10/08**. **Delay of 5 to 7 weeks; tie culpability**. This issue is not disputed by **tie**. Similarly, **INTC 475** is not disputed. Issue identified July 2009; causing work to stop while investigations and solution found. Work took from 02/11/09 to 04/12/09. **tie** (AS) however believes that work could have recommenced on 20/11/09. Delay from 21/07/09 to 19/11/09 = **17 weeks; tie culpability**. Note: further utility diversions (SP & SGN) appear to be identified within the tie PM Report 'Period Two; Year 10/11'. Those diversions may yet affect progress.

D. **Other Issues:**

- (i) Sub-Contractor Procurement: LOI issued to Expanded Piling on 04/09/08 for piling works. Although this is later than planned commencement of 28/08/08, the delay due to utility diversion was known about at that time. Appears LOI issued 'just in time' and therefore not affecting commencement.
- (ii) WPP Process: not identified as an obstacle to commencement or progress generally. However, see details below re temporary works design during January to March 2009.
- (iii) IDR/IDC process: understood not to have delayed commencement or progress.

E. **Construction Periods:**

5C A8 Underpass - W28					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	28/08/2008	13/10/2008	6.57 wks	13/10/2008	6.57 wks
Finish	05/08/2009	07/10/2011	113.29 wks	22/06/2011	98.00 wks
Cal. Duration	49.00 wks	155.71 wks	106.71 wks	140.43 wks	91.43 wks

- (i) Delay to Start: Actual commencement was achieved on 13/10/08 (**6.57 weeks late**). Primary causes of delay to start as follows:-
 - A. IFC process: no delay identified.
 - B. INTC's: **INTC 053** (utility transfer) caused delay to commencement of **5 to 7 weeks**. **INTC 475** caused **17 week** delay to progress. **Both tie culpability**.
 - C. MUDFA / Utilities: see above re delays caused by **INTC's 053 & 475**.
 - D. Other: please see comments at 'D' above. These matters are not understood to have been an obstacle to commencement.

(ii) Delay to Finish: delay to actual progress (and commencement) can be summarised as follows (also see chart above):-

Description of activities	From	To	Duration		Culpability
			Days	Weeks	
Delay to Start	28/08/08	13/10/08	47	6.71	tie
Period 1 - Phase 1 piling (as-built)	13/10/08	22/10/08	10	1.43	
BSC delay due to incorrect reinforcement cages	23/10/08	28/11/08	37	5.29	Infraco
Period 2 - Phase 1 piling completion (as built)	01/12/08	16/01/09	47	6.71	
BSC delay due to Temp Works design not in place	19/01/09	11/03/09	52	7.43	Infraco
Infraco attempt to implement temp works design - fails	12/03/09	01/06/09	82	11.71	Infraco
Period 3 - Restart of works	01/06/09	20/07/09	50	7.14	
BT ducts/cables in wrong place (INTC 475)	21/07/09	20/11/09	123	17.57	tie
Infraco delay in restarting	20/11/09	04/12/09	15	2.14	Infraco
Infraco restart on Phase 1 & 2 works (could have started 20/11 - AS)	04/12/09	09/02/10	68	9.71	
Infraco start piling on 10/2/10	10/02/10	12/03/10	31	4.43	
BSC delay in starting Phase 2	15/03/10	06/04/10	23	3.29	Infraco

Summary of delays		
Days	Weeks	Culpability
209	29.86	Infraco
170	24.29	tie

Increased durations

The table at 'E' above shows that the Issue 3 programme includes an **increase of circa 107 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 shows an increase in duration of **92 weeks** to the Rev.1 programme. There is presently no justification for the Infraco increased Rev.3 duration. Increased durations are reconciled as follows:-

Phase	Rev.1 (wks)	Infraco Rev.3 (wks)	Increase (wks)
Phase 1	9		
Phase 2	18		
Phase1&2		95	68
Phase 3	12	22	10
Phase 4	10	28	18
Subway	Incl.	7	7
Sub-total	49	152	103
Add'l Holidays	0	4	4
Total	49	156	107

The increased durations however, include the periods of earlier as-built delays (totalling circa **54 weeks**) as summarised above. These delays are reconciled below (showing a net increased duration in the Issue 3 programme of **52.57 weeks**; and **37 weeks** in IM's mitigated Rev.3 programme). Note: it is understood that Infraco are looking at running Phase 4 concurrently with Phases 1 & 2, which could considerably reduce projected timescale.

Description	Durations (weeks)		
	Rev.1	Rev.3 Issue 3	IM Mitigated Rev.3
Original Duration	49.00	49.00	49.00
Delay: tie		24.29	24.29
Delay: Infraco		29.86	29.86
Increased duration		52.57	37.29
Total	49.00	155.71	140.43

Note: further utility diversions (SP & SGN) appear to be identified within the tie PM Report 'Period Two; Year 10/11'. Those diversions may yet affect progress.

Key issues which do or may entitle Infraco to further time are as follows;-

- (i) Delay to start (INTC 053): **6.5 weeks**
- (ii) BT diversion (INTC 475): **17.5 weeks**
- (iii) Additional scope / utility diversion or handling not included in the INTC's above (may be included in INTC Master list being complied).

The remainder of the time would appear to matters for which Infraco is responsible (as-built delays of **30 weeks**) or increased durations (**53 weeks**) which have yet to be substantiated or shown to be tie responsibility. It is noted that Infraco are considering running Phase 4 concurrently with Phases 1 & 2, which would / should reduce the projected timescales.

F. **tie position on area availability:** There was a delay of circa 7 weeks in availability of this area as a result of utility diversions (INTC 053 refers). Those utility diversions were complete by 02/10/08 with piling commencing on 13/10/08. **Delay by tie; tie culpability.**

G. **Conclusion:**

- (i) **'Significant' issues/events:** In terms of as-built progress, a delay was incurred to commencement. Thereafter, various issues arose affecting actual progress. These issues can be summarised as follows:
 - Utility delays (INTC 053 & 475) appear to have caused a total of **24 weeks delays; tie culpability.**
 - Delays to progress which appear to be **Infraco culpability; 30 weeks.** Those matters relate in the most part to slow progress and Temporary Works design not being in place.

In addition, Infraco's Revision 3 programme also indicates increased durations of a further **52 weeks** (or **37 weeks** IM Estimate). Of those increased durations it is possible that **tie** may be culpable for a period of this. No information however is available to inform an estimate at this stage.
- (ii) **Concurrent issues:** no material concurrent issues were identified. Although there is a period of delay in tie's response to INTC 103, this does not appear to have affected progress. It is also noted however that Infraco itself delayed the provision of that Estimate.
- (iii) **Considerations of dominance:** please refer to comments above under 'Significant issues / events for matters which appear to have caused delay to actual start, actual progress and projected completion.

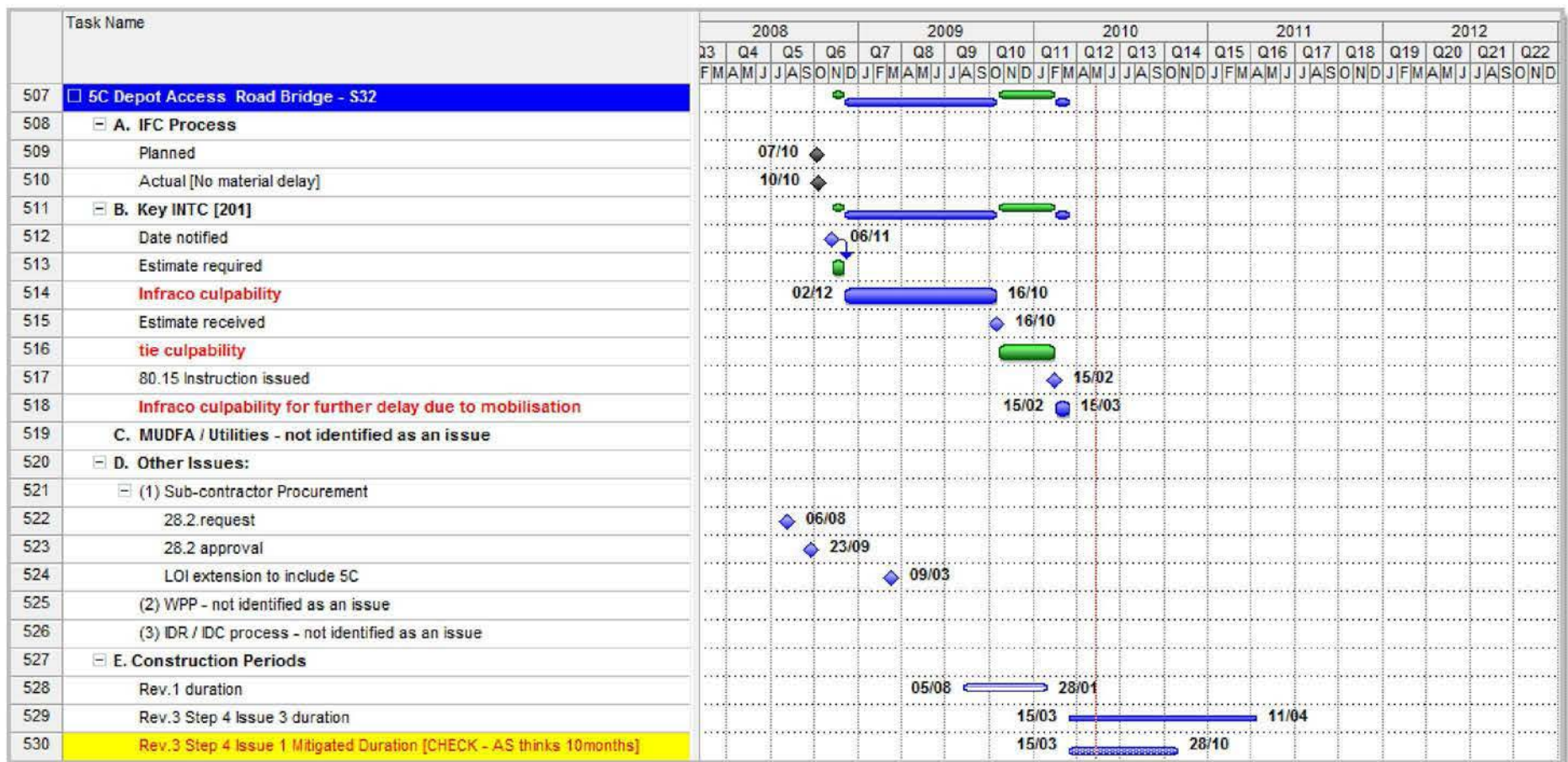
H. **Current assessment of culpability**

(see over page)

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
Completion of Utilities beyond Rev 1 start date	28/08/08	13/10/08	46	6.57	No Infraco culpability in delay to start			0	-	No delay to IFC	29/07/08	29/07/08	0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				6.57					-					0
2. UPPER LIMIT														
Completion of Utilities beyond Rev 1 start date	28/08/08	13/10/08	46	6.57				0	-				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				6.57					-					0
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = +91 wks		IM Mitigated Period		Infraco Rev.3 Period				IM mitigated period +91wks: this is likely to be MUDFA / Utilities completions and issues attaching to INTC's. Myriad delays to progress compromise progress thereafter. These range from incorrect usage of reinf. cages and delays in the implementation of TW design by Infraco. tie culpability attaching to MUDFA / Utilities and INTC's. Infraco culpability attaching to delays to the progress of the works. (Refer ongoing progress chart). Infraco Rev.3 period +107 wks: On the basis that Infraco can mitigate to 91 wks as per IM's analysis then Infraco lower limit restricted to anything in excess of 30 wks. tie liability remains at lower limit of 24 wks if Infraco responsible for all increased durations. (Lower limit periods derived from delays observed to actual progress - see opposite).						
Infraco Rev.3 Period = +107 wks		tie Infraco		tie Infraco		Infraco								
Lower Limit		24.00 30.00		24.00		46.00								
Upper Limit		91.00 91.00		91.00		107.00								
Observations on Actual Progress		tie Infraco												
Analysis of ongoing progress, considered in 'Delay to Finish' periods detailed above.		-24.00 -30.00												
<i>*Refer to chart (contained in summary narrative for this structure).capturing actual progress for breakdown of the above figures.</i>														

Draft for discussion

5C – Depot Access Bridge – S32



- A. **IFC Process:** planned IFC date was **07/10/08**; actual was **10/10/08** i.e. 3 days late; no material delay. We are advised that one drawing was reissued on **13/11/09**. That however was not identified as a material factor delaying commencement; nor was it identified as being critical to construction.
- B. **Key INTC's:**
 - (i) INTC 201 (BDDI to IFC): INTC issued **6/11/08**; Estimate required **02/12/08**; Estimate submitted **16/10/09** (**45 weeks late; Infraco culpability**). **tie** response issued **12/01/10**; reference to DRP on **15/02/10** including issue of 80.15 instruction (**17 weeks; tie culpability**).
- C. **MUDFA / Utilities:** not identified as an issue.
- D. **Other Issues:**
 - (i) Sub-Contractor Procurement: understood that Farrans Construction has been appointed for this area. Although appointment is via LOI, the procurement itself does not appear to have affected commencement.
 - (ii) WPP Process: not identified as an issue.
 - (iii) IDR/IDC process: not identified as an issue.

E. **Construction Periods:**

5C Depot Access Road Bridge - S32					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	05/08/2009	15/03/2010	31.71 wks	15/03/2010	31.71 wks
Finish	28/01/2010	11/04/2011	62.57 wks	28/10/2010	39.00 wks
Cal. Duration	25.29 wks	56.14 wks	30.86 wks	32.57 wks	7.29 wks

- (i) Delay to Start: both the Issue 3 programme and IM's mitigated programme show a delay to start of **32 weeks**. The primary causes of delay to start as follows:-
 - A. IFC process: No material effect.
 - B. INTC's: INTC 201 caused the delayed start. **Infraco delay** in provision of Estimate causes a minimum of **14 weeks** delay (between 05/08/09 16/10/09; plus 4 weeks mobilisation). **tie culpability** will most likely be **17 weeks** (from 17/10/09 to 15/02/10). It may be that tie could try to argue that 'but-for' Infraco's 45 week delay in provision of the Estimate, that no delay would have occurred as a result of tie's period of review and reference to DRP. That however should be discussed further.
 - C. MUDFA / Utilities: not identified as an issue.
 - D. Other:
 - **Sub-Contractor procurement:** not identified as an issue.
 - **WPP process:** not identified as an issue.
 - **IDR/IDC process:** not identified as an issue.
 - (ii) Delay to Finish: Issue 3 programme shows an **increase of circa 31 weeks** over the timescale in Rev.1 programme. The IM mitigated view of Issue 1 shows an increase in duration of **7 weeks** to the Rev.1 programme. There is presently no justification for the Infraco increased Rev.3 duration. That said however, AS believes that a reasonable period for this structure is circa 10 months (or **43 weeks**). That view appears to be based on the fact that the design of this structure has become more complex and hence is likely to take more time to construct. This would clearly affect projected finish of this structure.
- F. **tie position on area availability:** this area was available as per the original Rev.1 commencement date. The delay to commencement has been the INTC process associated with INTC 201.

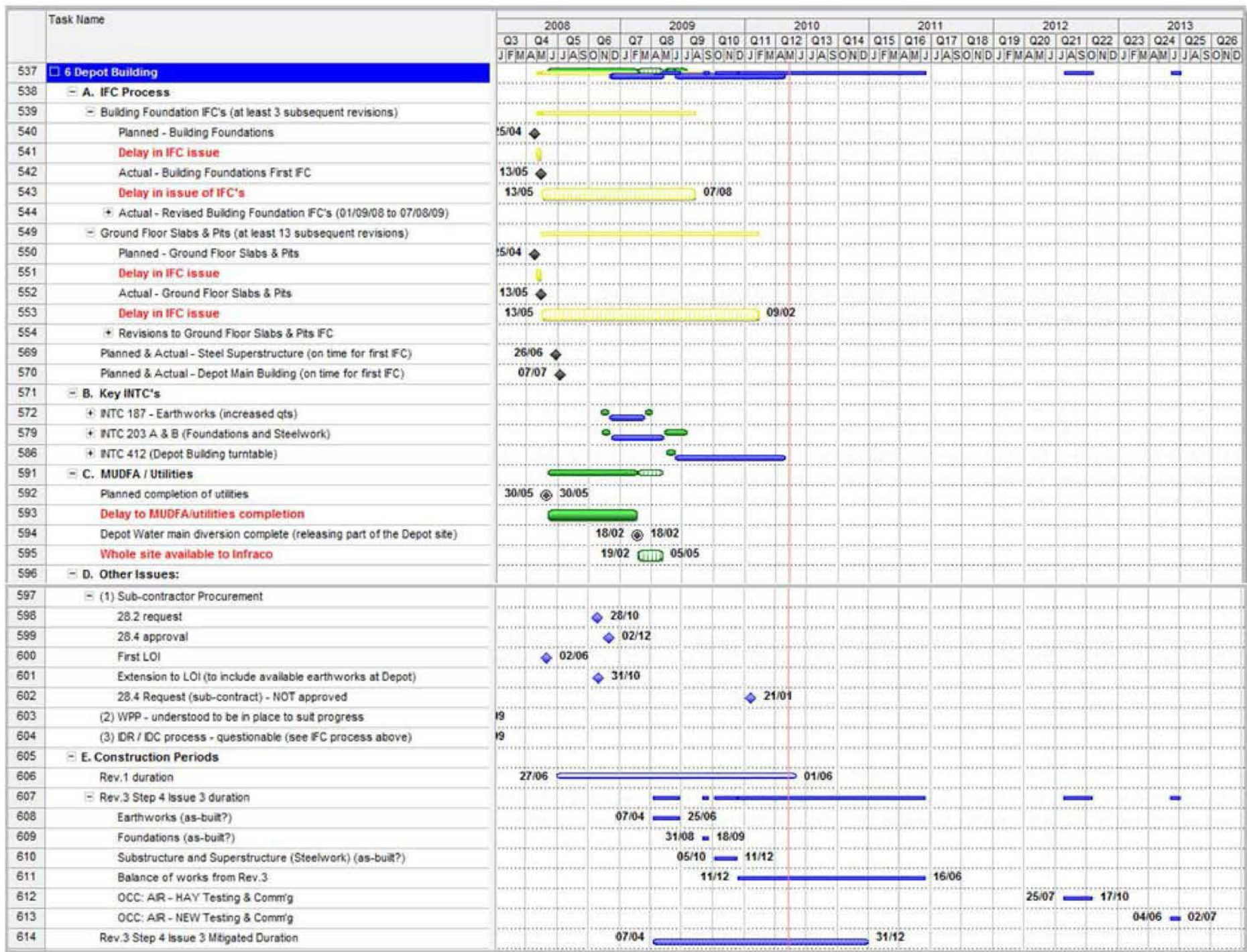
G. Conclusion:

- (i) **‘Significant’ issues/events:** the process of providing an Estimate and instruction in relation to INTC 201 appears to have been the issue affecting commencement of this structure. This was caused by an **Infraco delay** in provision of the Estimate; causing a minimum of **14 weeks** delay (between 05/08/09 16/10/09; plus 4 weeks mobilisation). **tie culpability** will most likely be **17 weeks** (from 17/10/09 to 15/02/10) as a result of the time taken to issue an 80.15 instruction for same.
 It may be that tie could try to argue that ‘but-for’ Infraco’s 45 week delay in provision of the Estimate, that no delay would have occurred as a result of tie’s period of review and reference to DRP. That however should be discussed.
 It also appears that Infraco will be due some further time for construction of this structure beyond the duration included within the Revision 1 Programme. That increase has arisen as a result of the increased complexity / workscope involved in the final design. It is estimated that an increase in duration in the region of **7 to 18 weeks** may be appropriate.
- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing, the WPP process) have less of a bearing on the late commencement of this area. Whilst in isolation these issues may have been / may yet be critical to commencement their significance is considerably diminished by the process associated with INTC 201.
- (iii) **Considerations of dominance:** the process of providing the Estimate for INTC 201, tie’s review of same and ultimate reference to DRP is the dominant delay affecting commencement. Thereafter forecast increase in construction period affects end date.

H. Current assessment of culpability

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
Delay; from INTC 201 estimate to 80.15 instruction	17/10/09	15/02/10	121	17.29	Delay in provision of INTC 201 estimate	05/08/09	16/10/09	72	10.29	No (material) delay to IFC	07/10/08	10/10/08	3	0.43
			0	-	Infraco mobilisation period	16/10/09	13/11/09	28	4.00				0	0.00
			0	-				0	-				0	0.00
				17.29					14.29					0.4286
2. UPPER LIMIT														
Delay; from INTC 201 estimate to 80.15 instruction	17/10/09	15/02/10	121	17.29	Delay in provision of INTC 201 estimate	05/08/09	16/10/09	72	10.29				0	0.00
			0	-	Infraco mobilisation period	16/10/09	13/11/09	28	4.00				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				17.29					14.29					0
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = +7 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period +7wks: this is likely to be issues flowing from INTC 201. These issues range from delays in provision of estimate (by Infraco) to delays attaching to tie’s instruction of said INTC. BDDI - IFC changes have resulted in increased complexities attaching to the construction of this structure. This however should be considered in the context of a reduction in the workscope to adjacent RW’s. Culpability remains unclear. Infraco Rev.3 period +31 wks: On the basis that Infraco can mitigate to 91 wks as per IM’s analysis then Infraco lower limit restricted to anything in excess of									
Infraco Rev.3 Period = +31 wks	tie	Infraco	tie	Infraco										
Lower Limit	0.00	0.00	0.00	24.00										
Upper Limit	7.00	7.00	7.00	31.00										

6 Depot Building

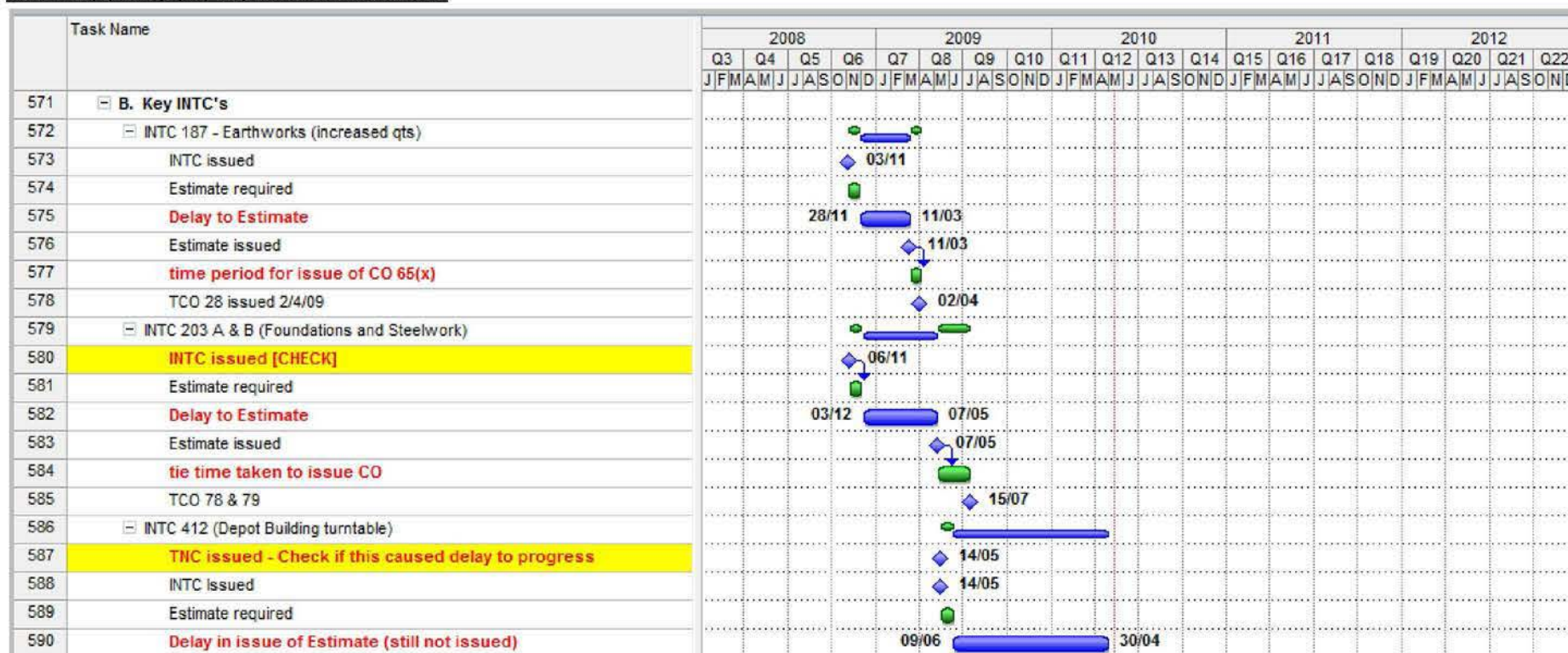


- A. **IFC Process:** Numerous IFC's have been and continue to be issued for this structure. Main elements as follows:-
- (i) **Building Foundations:** planned IFC **25/04/08**. Actual IFC **13/05/08**. Initial delay of **18 days (2.5 weeks)**. **4 No.** subsequent revisions to the IFC have been issued on 01/09/08, 24/10/08; 24/02/09; 07/08/09. It is understood that the latter revisions to the IFC's were brought about by SDS failure to consider foundation design integration with ground floor slab and pits design. This is **likely to be a failure of SDS under CE(u) – excusing Infracore culpability for delay**.
 - (ii) **Ground Floor Slab & Pits:** planned IFC **25/04/08**. Actual IFC **13/05/08**. Initial delay of **18 days (2.5 weeks)**. **13 No.** subsequent revisions to the IFC have been issued on 01/09/08; 23/09/08; 24/10/08; 24/02/09; 15/05/09; 23/06/09; 07/08/09; 20/08/09; 17/09/09; 13/10/09; 10/11/09; 10/11/09; 09/02/10. For the most part these revised IFC issues appear to relate to integration of Infracore design into the initial IFC design issued by SDS. This should not be a matter for tie i.e. it appears for the most part to be **Infracore culpability**. We understand that this has caused a delay to actual progress on ground floor slab and pits. Note however that **tie is responsible for addition of turntable into ground floor slab design** (this appears to have been incorporated into either Rev. 14 (17/9/09) or 15 (13/10/09)).
 - (iii) **Steel Superstructure:** planned IFC **06/06/08**; actual IFC **on time**. Details on extent and dates of revisions not yet available (see comment below).
 - (iv) **Depot Main Building:** planned IFC **07/07/08**; actual IFC **on time**. Details on extent and dates of revisions not yet available (see comment below).

Extent and time taken for design finalisation is a major area of concern. Recommendation: that this should be audited / investigated in detail.

- B. **Key INTC's:** numerous INTC's have been issued for the Depot Building. We are advised that the main INTC's which were obstacles to commencement (or progress) were INTC's 187, 203A & B; 412. Details as follows (see also chart extract below):-
- (i) **INTC 187 (Earthworks / Increased Qts):** INTC issued **03/11/08**; Estimate required **27/11/08**; Estimate issued **11/03/09 (15 weeks later than required)**. **TCO issued 02/04/09** (a 3 week turnaround does not appear unreasonable; but is also 'excusable' in terms of CE(x)). This process should however have occurred sooner (it appears that the delay in provision of Estimate contributed to the late start on earthworks between 18/02/09 and 07/04/09).
 - (ii) **INTC 203A (Depot Building Foundations):** INTC 203 issued on **06/11/08**; AS believes this is the trigger for 203A (not 07/05/09 as noted in the Master INTC list; **this needs to be verified by tie**). On that basis, Estimate required **01/12/08**; Estimate issued **07/05/09 (22 weeks later than required)**. **TCO issued 15/07/09 (10 week turnaround does not appear reasonable; this is also 'excusable' in terms of CE(x))**.
 - (iii) **INTC 203B (Depot Building Steelwork):** same details as INTC 203A above.
 - (iv) **INTC 412 (Depot Building turntable):** TNC issued **14/05/09**; Estimate required **09/06/09**; Estimate **not yet issued** (currently **46 weeks** late). IFC appears to have been revised on either Rev. 14 (17/9/09) or 15 (13/10/09). This timescale (4 to 5 months) appears quite long. **Recommendation:** Check SDS / Infracore performance (during tie audit). **tie accepts culpability for this issue.**

Summary (image) of key INTC's listed above



C. **MUDFA / Utilities:** Water main diversion is main issue. Planned completion of utilities was **30/05/08**. Actual completion of water main sufficient to permit material commencement of earthworks achieved on 18/02/09 (plus add time for mobilisation; approx. 1 week). **Delay to this milestone of 38 weeks; tie culpability.** Remainder of area available by 05/05/09 (**further delay of 11 weeks** – but understood that this would / should not have been critical to building progress).

Note: the above is slightly different from previous information supplied. 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**.

D. **Other Issues:**

- (i) **Sub-Contractor Procurement:** first LOI issued to Barr issued on 02/06/08; 28.2 approval sought 28/10/08 – approval given 02/12/08. Extension to LOI issued on 31/10/08 to include available earthworks. This is therefore not seen as an obstacle to commencement or progress.
- (ii) **WPP Process:** we do not understand this to have been an obstacle to commencement or progress.
- (iii) **IDR/IDC process:** there is a question here about SDS / Infraco design integration – see IFC process above and extent of revised IFC's which have been (and continue to be) issued. **Recommendation:** that this should be audited / investigated in detail.

E. **Construction Periods:**

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

Note: part of Rev.3 Issue 3 and IM mitigated Rev.3 duration include delays to early progress. This table shows a delay to completion of 54 weeks. However delays to start of **41 weeks** and subsequent progress delays of circa **16 weeks** equate to an overall delay of **57 weeks** which requires to be analysed.

- (i) **Delay to Start:** The table above refers to various programme dates. Delay to actual start of earthworks is **41 weeks**. Primary causes as follows:-
 - A. **IFC process:** see comments above. Considerable questions about SDS performance and possibly Infraco management of SDS and performance in providing Infraco Design. **Recommendation:** Detailed audit required.
 - B. **INTC's:** INTC 187 (delay in provision of Estimate) appears to have caused a **6 week delay to the earthworks** (from 25/02/09 to 07/04/09) (**Infraco culpability**); INTC 203A & B (and relevant TCO's) contributed to the delay to the start of foundations.
 - C. **MUDFA / Utilities:** delay due to water main, causing delay to access – 27/06/08 (planned start) to 18/02/09 (plus one week mobilisation; when material start should have commenced). **35 week delay** (from 27/06/08 to 25/02/09); **tie culpability**.
 - D. **Other:**
 - **Sub-Contractor procurement:** no material cause of delay.
 - **WPP process:** ditto.
 - **IDR/IDC process:** see comments above. Considerable questions about SDS performance and possibly Infraco management of SDS and performance in providing Infraco design. **Detailed audit required.**
- (ii) **Delay to Finish:** Issue 3 programme shows an **increase of circa 14 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 shows a decrease in duration of **10 weeks** to the Rev.1 programme. There is presently no justification for the Infraco increased Rev.3 duration (it appears to be masking Infraco culpability in early performance).
 Delay to progress up to start of foundations can be summarised as follows:-
 - Rev.1 Period from Earthworks to Foundation start is 5 weeks (27/06/08 to 01/08/08). Actual period from Earthworks commencement to foundation commencement 21 weeks (07/04/09 to 31/08/09). Increase in lag (i.e. further delay) of **16 weeks**.
 - Delay to actual steelwork erection commencement (compared to Rev.1 programme) was **also 16 weeks** (01/09/08 versus 05/10/09).

This equates to a further delay (beyond that incurred to earthworks start) of **16 weeks**. This appears to have been caused by the following:-

- Apparent Infraco refusal to excavate down to formation level under building footprint (until it found location for 'suitable' excavated material – linked to INTC 399). Delay 15/5/09 to 15/6/09; **4 weeks**. tie's current position is that handling of excavated material is an Infraco responsibility. We proceed on that premise for the time being but this should be further investigated;
- Increased workscope in respect of INTC 187 (increased volume of earthworks). Something should be allowed by tie here for this increase in workscope;
- Late Estimates from Infraco on INTC's 203A & B (Estimates issued 07/05/09; causing late issue of TCO in respect of same until 15/7/09). Estimates should have been issued 01/12/08 [but see note above re INTC date – it is crucial to understand correct INTC date];
- It is also possible that late steelwork procurement (delaying steelwork erection until 05/10/09 from 18/09/09; **3 weeks**). That is, Infraco holding off working on foundations because it knew that steelwork delivery had been delayed. This is likely to relate to late design approval between Barr (Solway) and Infraco. **A matter for which Infraco should be culpable. This needs to be verified however.**
- There may also be questions about SDS/Infraco design – see comments above re IFC revisions and audit being required.

Infraco failure to mitigate (and/or to accelerate?) is also an issue in respect of overall period to completion of Depot Building (see IM mitigation exercise).

F. tie position on area availability:

- (i) Area available for earthworks commencement as of 18/02/09 (plus one week for mobilisation of earthworks contractor). **Delay by tie (35 weeks)**. Infraco failure to provide Estimate on INTC 187 caused delay to issue of TCO (issued in reasonable time). Had Infraco issued Estimate timeously commencement would have been circa 25/02/09 (further delay of **6 weeks** to earthworks commencement). **Infraco delay.**

G. Conclusion:

- (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. 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 major 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. Thereafter, the delays to commencement of earthworks, foundations and steelwork are critical.

As such, our current opinion on allocation of culpability can be summarised as follows:-

Description	Opinion on tie culpability	Opinion on Infraco culpability
Delay to Start	Range of 25 to 35 weeks	Range of 6 to 16 weeks
Delay up to Steelwork erection: 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).	<i>Range of 0 weeks to 8 weeks</i>	<i>Range of 8 weeks to 16 weeks</i>
Lower limit:	25 weeks	14 weeks
Upper limit:	43 weeks	32 weeks

H. Areas of risk for tie which should be addressed:-

- (i) INTC 203A & B notification dates;
- (ii) Additional time for increased volumes (but this is partially recognised in that Rev.1 e/wks to Founds was 5 wks; we are currently allowing them 7.43 wks – but may need to excuse / extend);
- (iii) Period taken for tie to issue TCO in respect of INTC's 203A (tie had previously issued an instruction to Infraco on 4/6/08 to procure steelwork early; so TCO in respect of INTC 203B should not have caused delay).
- (iv) Effect of turntable INTC 412 on progress / design.

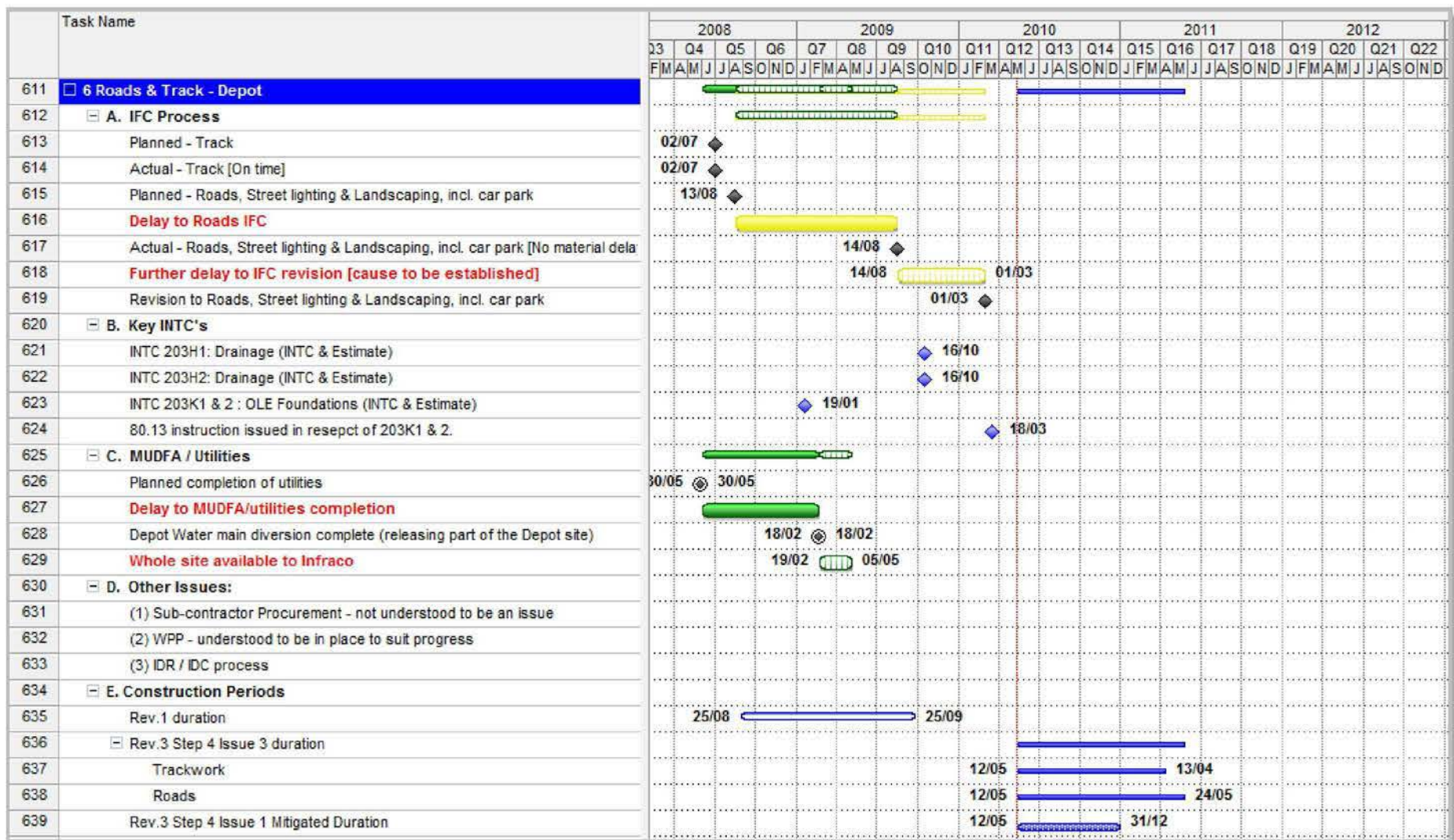
I. Current assessment of culpability

(See over)

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
MUDFA (watermain)	30/05/08	18/02/09	264	37.71	Infraco failure to commence when w/m complete	25/02/09	07/04/09	41	5.86	Ongoing IFC issues				
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				37.71					5.86					0
2. UPPER LIMIT														
MUDFA (watermain)	30/05/08	10/12/08	194	27.71	Infraco failure to commence when w/m <u>substantively</u> complete	10/12/08	25/02/09	77	11.00					
Recognises opportunity to start prior to completion of the w/m. (-10wks)			0	-	Infraco failure to commence when w/m complete	25/02/09	07/04/09	41	5.86				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				27.71					16.86					0
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = -10 wks	IM Mitigated Period		Infraco Rev.3 Period		<p>IM mitigated period -10 wks: notwithstanding MUDFA / Utility and INTC issues extant, this assessment is considered achievable on the basis of reasonable mitigation on the part of Infraco.</p> <p>Infraco Rev.3 period +14 wks: Infraco clearly accepts the possibility for mitigation. Though currently not to the same extent as noted above. On the basis however that Infraco can mitigate to -10 wks as per IM's analysis then Infraco lower limit restricted to anything in excess of -10 wks. tie liability remains at lower limit of -10 wks if Infraco responsible for all increased</p>									
Infraco Rev.3 Period = +14 wks	tie	Infraco	tie	Infraco										
Lower Limit	-10.00	-10.00	-10.00	14.00										
Upper Limit	0.00	0.00	0.00	24.00										

Draft for discussion

6 Roads & Track - Depot



This element must be considered in conjunction with the Depot Building (particularly in relation to mitigated completion date). It would be a rather artificial exercise to consider it in isolation. Following gaining access to this area the key to these external works appears to be the drainage and OLE foundations.

The current Rev.3 programme shows the Drainage and Outfall works commencing on 22/03/10; with the Track and road works commencing on 12/05/10 (a lag of 7 weeks). The Rev.1 programme dates were 28/07/08 and 25/08/08 respectively (a shorter 4 week lag to the Roads; but longer 18 week lag to track).

A. IFC Process: two IFC packages identified, being:-

- (i) **Track:** planned IFC **02/07/08**; actual IFC **on time**. Details on extent and dates of revisions not yet available (see comment below).
- (ii) **Roads, Street Lighting and Landscaping, including car park:** planned IFC **13/08/08**; actual **14/08/09**. **52 week delay**. Appears that this could be failure of SDS to prepare design to CEC satisfaction (possible dilatory progress by SDS – but detailed audit and analysis required). Delay arose during Technical Approvals process. This however needs to be traced through via audit process. Potential causes include:-
 - a. 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);
 - b. 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);
 - c. 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);
 - d. A tie Change;
 - e. 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);
 - f. A requirement of CEC for which tie will bear responsibility;

Delay by SDS, SDS /tie or Infraco?

We are also advised that the Roads IFC was reissued with some changes in **March 2010** (details to be established via tie audit of design process; AS will also provide further detail of design timeline – ongoing action on **tie**).

B. **Key INTC's:** the following INTC's have been identified by **tie** personnel as being key to progress:-

- (i) **INTC 203H1 (Drainage):** notified **16/10/09**, Estimate submitted **16/10/09**. No delay to submission of Estimate. Revised Estimate (203V) submitted by Infraco on 22/03/10. It is understood that Infraco has carried on with this work in the absence of a TCO.
- (ii) **INTC 203H2 (Drainage):** notified **16/10/09**, Estimate submitted **16/10/09**. No delay to submission of Estimate. Revised Estimate (203N) submitted by Infraco on 22/03/10. Understood that Infraco has carried on with this work in the absence of TCO.
- (iii) **INTC 203K1 (OLE foundations - Introduction of Piling to OHLE Bases) & INTC 203K2 (OLE foundations - Increase in number of OLE Bases):** notified 19/01/09, Estimate submitted 19 [possibly 26]/01/09. No delay to submission of Estimate. **tie** dispute the validity of this INTC (letter dated 03/02/10). **Period for tie reply (58 weeks) is excessive**. **tie** culpability may arise in respect of same (but may not be critical to overall completion – see issue below re design of OLE founds).

It is understood that in respect of the OLE foundations, Infraco received an IFC design from SDS but have decided to seek another different design (from Border Rail). This appears to be a preference (on Infraco's part) rather than a failure on the part of SDS or instruction from **tie**.

INTC's 203K1 & K2 are covered by the **tie** 80.13 Instruction dated 19/03/10. Neither 203H1 nor 203H2 are included in that instruction (but it is understood that Infraco is carrying out that work on site).

C. **MUDFA / Utilities:** See comments under 6 Depot Building. **Delay of 38 weeks (to 18/02/09); tie culpability**. Remainder of area available by 05/05/09 (**further delay of 11 weeks** – understood this would not be critical to building progress; this would however be relevant to commencement and progress of external works incl. road and track).

D. **Other Issues:**

- (i) Sub-Contractor Procurement: this is understood not to have been an issue in terms of commencement and progress (albeit sub-contractor working under LOI).
- (iv) WPP Process: we do not understand this to have been an obstacle to commencement or progress.
- (ii) IDR/IDC process: see comments above re Depot Building and IFC process immediately above.

E. **Construction Periods:**

6 Roads & Track - Depot					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	25/08/2008	12/05/2010	89.29 wks	12/05/2010	89.29 wks
Finish	25/09/2009	24/05/2011	86.57 wks	31/12/2010	66.00 wks
Cal. Duration	56.71 wks	54.00 wks	-2.71 wks	33.43 wks	-23.29 wks

- (i) Delay to Start: The table above refers to various programme dates. Both the Issue 3 and IM mitigated programmes show a delay to start of **89 weeks**. Primary causes of delay to start as follows:-
 - A. IFC process: see narrative above. **Track IFC on time; 'Roads, Street Lighting and Landscaping, including car park' IFC No material delay.** We are advised however that the Roads IFC was reissued with some changes in **March 2010** (details to be established via tie audit of design process; AS will also provide further detail of design timeline – ongoing action on **tie**). Any delay to progress should therefore be to Infraco account.
 - B. INTC's: see narrative above. INTC's 203K1 & K2 are covered by the **tie 80.13** Instruction dated 19/03/10. Neither 203H1 nor 203H2 are included in that instruction (but it is understood that Infraco is carrying out that work on site).
 - C. MUDFA / Utilities: See comments under 6 Depot Building. **Delay of 38 weeks (to 18/02/09); tie culpability.** Remainder of area available by 05/05/09 (**further delay of 11 weeks** – understood this would not be critical to building progress; would however be relevant to commencement and progress of external works incl. road and track).
 - D. Other:
 - **Sub-Contractor procurement:** we are not aware of any issues in relation to this
 - **WPP process:** ditto.
 - **IDR/IDC process:** See comments re design of OLE foundations. This appears to be an Infraco preference not something driven by tie / INTC's. Any delay to progress should therefore be to Infraco account.
- (ii) Delay to Finish: Issue 3 programme shows a slight decrease of **-3 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 shows a decrease in duration of **-23 weeks** in the Rev.1 programme durations. The delays incurred therefore appear to relate to the delayed start of this element.

F. **tie position on area availability:** Area available for earthworks commencement as of 18/02/09 – 05/05/09. **This is a delay for which tie is responsible.**

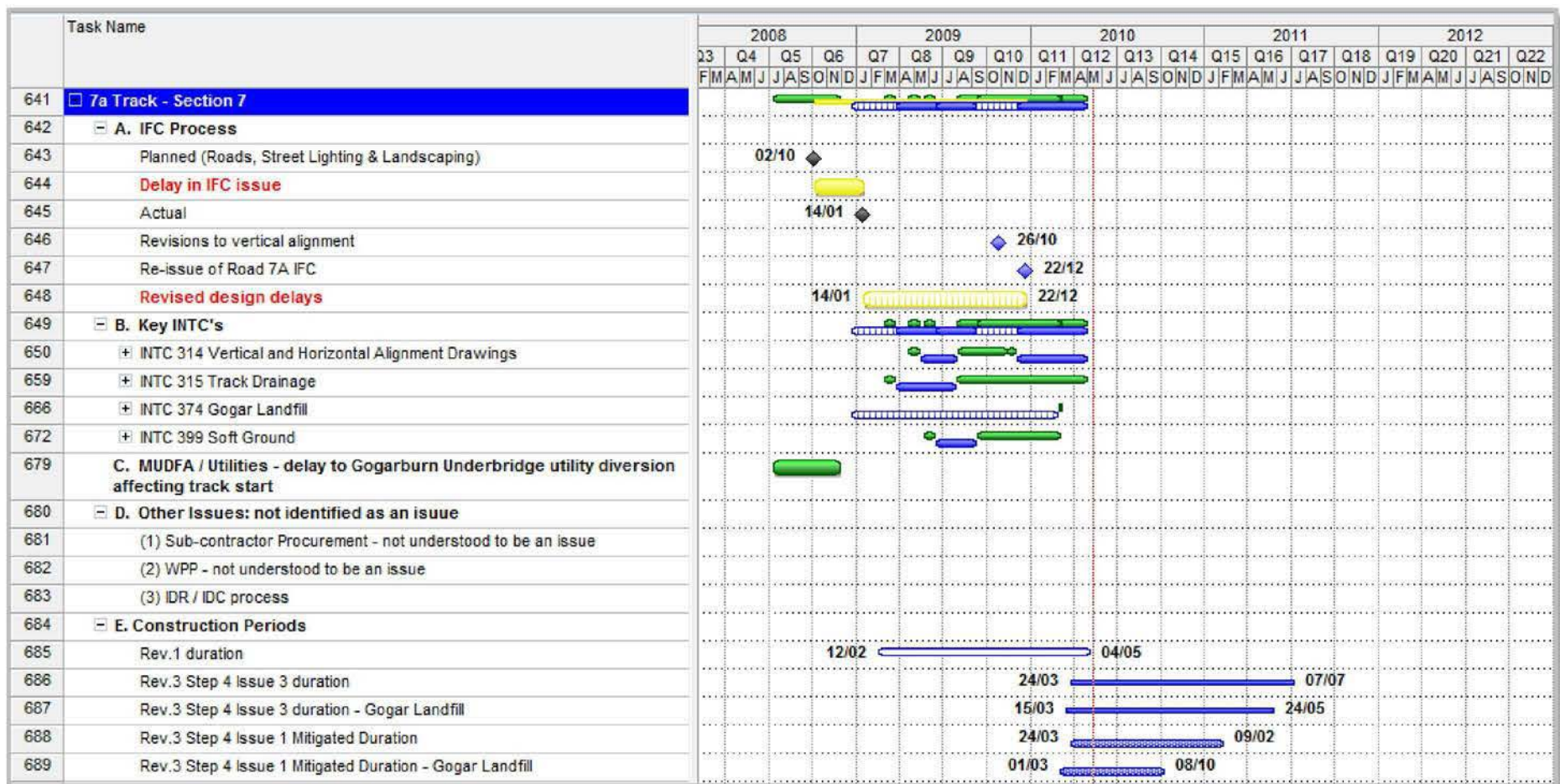
G. **Conclusion:**

- (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. Please refer to comments under '6 Depot Building' re (i) 7 and (ii); summarised as follows. 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 however major 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).

H. **Areas of risk for tie which should be addressed:-**

- (i) Design process leading up to issue of Roads IFC's.
- (ii) CEC approvals (part of the above).

7 Track



A. **IFC Process:** planned IFC date for 'Roads, Street Lighting & Landscaping' was **02/10/08**; actual was **14/01/09** i.e. **15 weeks late**. We are advised that explanation for delay is as follows:

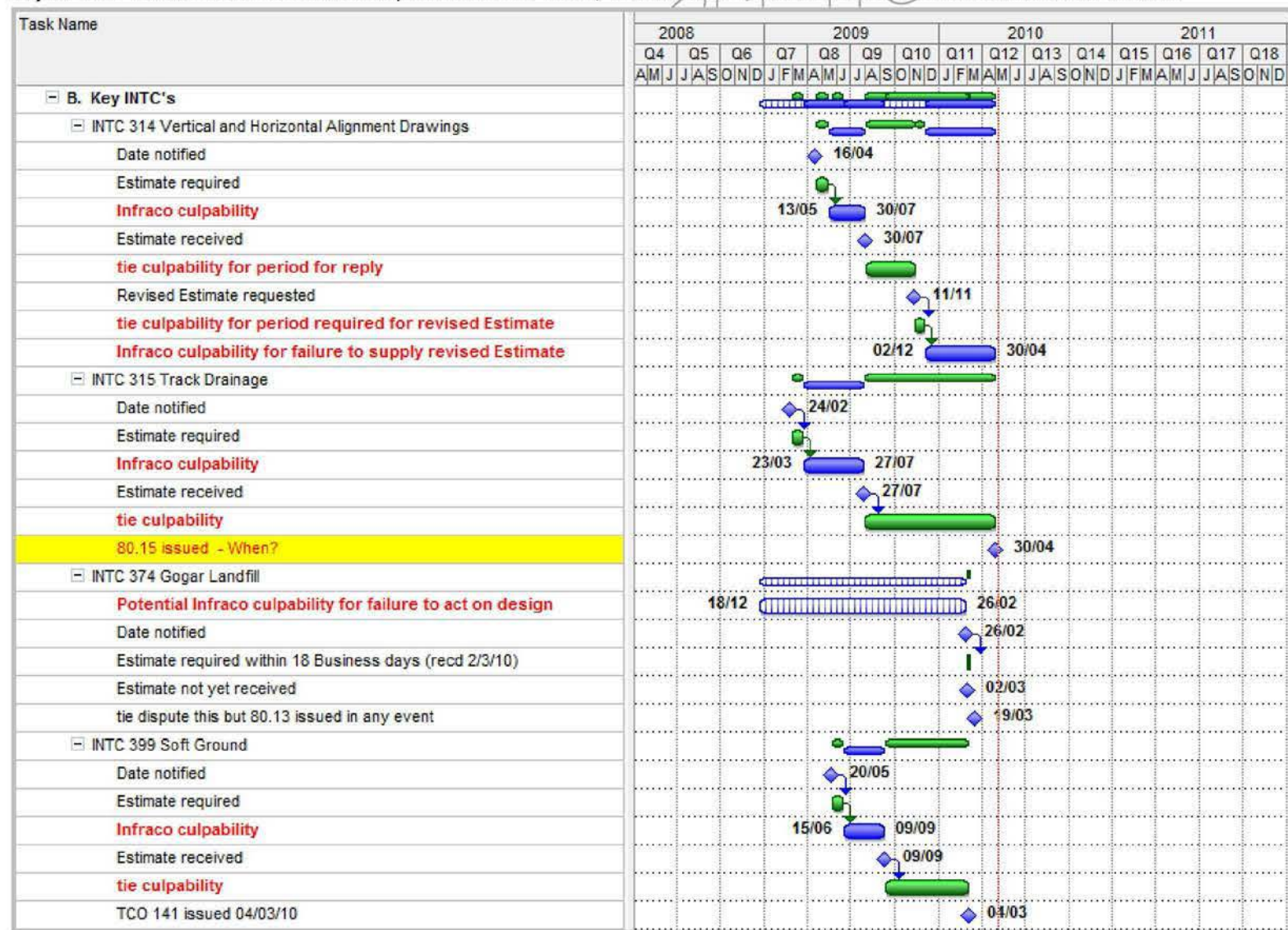
"SDS had allowed no time to incorporate CEC comments on the roads design. Initial approvals package for roads submitted 1 day late by SDS to CEC but approved **13 days late by CEC (14/10/2008)** – further info would be required [from] CEC but likely reason for delay will have been SDS not having provided all necessary information in their original package. SDS then took 3 months to incorporate CEC comments into final IFC – should not have been necessary if original SDS design had been competent and complete. I note that the track design was marked as IFC at 29/9/2008 but was held back as part of wider roads and track package."

Revisions to IFC's: we are also advised that "3 vertical alignment drawings were reissued 26/10/2009 due to need to re-profile earthworks following errors in original SDS survey – BSC was not paid for redesign work here so expect that SDS was not paid either as this was their original error. These 3 drawings cover the Ingliston Park & Ride site and the area immediately to the east of the site."

Possible failure on part of SDS; possibly a failure on part of Infraco to manage SDS.

Further analysis required in respect of whether there any issues about unforeseen ground conditions which Infraco may rely upon.

B. **Key INTC's:** We are advised that the key INTC's which were / are material to commencement in this area are as follows:-



- (i) INTC 399 (Soft Ground): INTC issued **20/5/09**; Estimate due **12/06/09**; Estimate provided **09/09/09**. Delay in provision of Estimate **13 weeks**. **Infraco culpability**. TCO 141 issued 04/03/10 (**25 weeks** after Estimate). **tie culpability**.
- (ii) INTC 315 (Track Drainage): INTC issued **24/02/09**; Estimate due **20/03/09**; Estimate provided **27/07/09**. Delay in provision of Estimate **18 weeks**. **Infraco culpability**. 80.15 issued by tie on **[awaiting details from AS]**. **tie culpability**.
- (iii) INTC 374 (Gogar Landfill): INTC issued **26/02/10**; Estimate due **24/03/10**; Estimate provided (for 374B) **02/03/10**. Disputed by tie. **80.13 instruction issued on 19/03/10**. If tie is correct, then there is no culpability for this issue. Risk may be that a third party decides against tie position. In that event, period from INTC to 80.13 may be a tie issue (only 3 weeks; longer however if 80.13 instructions are held as not being valid).
Note: Geotechnical IFC apparently issued on 18/12/2008. Understood that Infraco decided to verify design; but it took a long period to do so (dates not yet available). Initial design subsequently found to be acceptable; hence INTC issued 26/2/10 – but circa 14 months after geotechnical IFC issued in 12/08. **Potential Infraco culpability in failing to proceed with 'due expedition'**.
- (iv) INTC 314 (Quantity of earthworks in embankment): INTC issued **16/04/09**; Estimate due **12/05/09**; Estimate provided **30/07/09**. Delay in provision of Estimate **11 weeks**. **Infraco culpability**. tie requested a revised Estimate from Infraco on 11/11/09 (tie culpability for time period to 11/11/09). **tie culpability (circa 15 weeks)**.

C. **MUDFA / Utilities**: there is a period of **tie culpability** for the delay caused to the utility diversion affecting commencement of Gogarburn Underbridge. Trackwork in this section (7) was dependent upon the completion of that structure. Delay incurred to commencement of Gogarburn Underbridge was **21 weeks** (07/07/08 to 28/11/08). **tie culpability**.

[Understood from AS that subsequent progress on Gogarburn Underbridge was not affected by tie – we have proceeded on that premise (that structure is not part of the current exercise. It is also possible that Infraco delays to progress on that structure could affect completion of the associated track in Section 7. This however is a separate exercise distinct from the current prioritised elements].

D. **Other Issues**:

- (i) Sub-Contractor Procurement: no issues identified. Farrans appear to have been appointed (albeit under LOI) in sufficient time.
- (ii) WPP Process: no issues identified.
- (iii) IDR/IDC process: subject to audit.

E. **Construction Periods**:

7 Track - Section 7					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	12/02/2009	15/03/2010	56.57 wks	01/03/2010	54.57 wks
Finish	04/05/2010	07/07/2011	61.29 wks	09/02/2011	40.14 wks
Cal. Duration	63.86 wks	68.57 wks	4.71 wks	49.43 wks	-14.43 wks

- (i) Delay to Start: The table above shows both the Issue 3 and IM mitigated programmes showing a delay to start of **57 weeks** (IM programme takes earlier Issue 1 start date – so in practical terms there is no material difference). Actual start not yet achieved therefore actual delay will be greater than shown. Current cause of delay is understood to be **INTC 374** (although now subject to **tie 80.13** instruction). Primary causes of delay to start as follows:-

- A. IFC process: It is not entirely clear if design is the issue or INTC process.
- B. INTC's: There are delays on the part of both parties in respect of INTC Estimate submissions and TCO/80.13/80.15 instructions. See above. See chart under 'B' above. In terms of INTC 374, there is a significant question about the date this was notified by Infraco (i.e. delay in notification). To discuss. There are however other areas of tie culpability in terms of issue of instruction.
- C. MUDFA / Utilities: Critical delay (affecting commencement) of circa **21 weeks (tie culpability)**;
- D. Other:
 - **Sub-Contractor procurement**: not an obstacle to commencement;
 - **WPP process**: ditto;
 - **IDR/IDC process**: not identified as causing delay (but refer to IFC process above).

- (ii) Delay to Finish: Issue 3 programme shows a minimal **increase of circa 5 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 1 shows a decrease in duration of **-14 weeks** to the Rev.1 programme.

F. **tie position on area availability**: there is a period of **tie culpability** for the delay caused to the utility diversion affecting commencement of Gogarburn Underbridge. Trackwork in this section (7) was dependent upon the completion of that structure. Delay incurred to commencement of Gogarburn Underbridge was **21 weeks** (07/07/08 to 28/11/08). **tie culpability**. [See also comments at 'C' above re progress on Gogarburn Underbridge]

G. **Conclusion**:

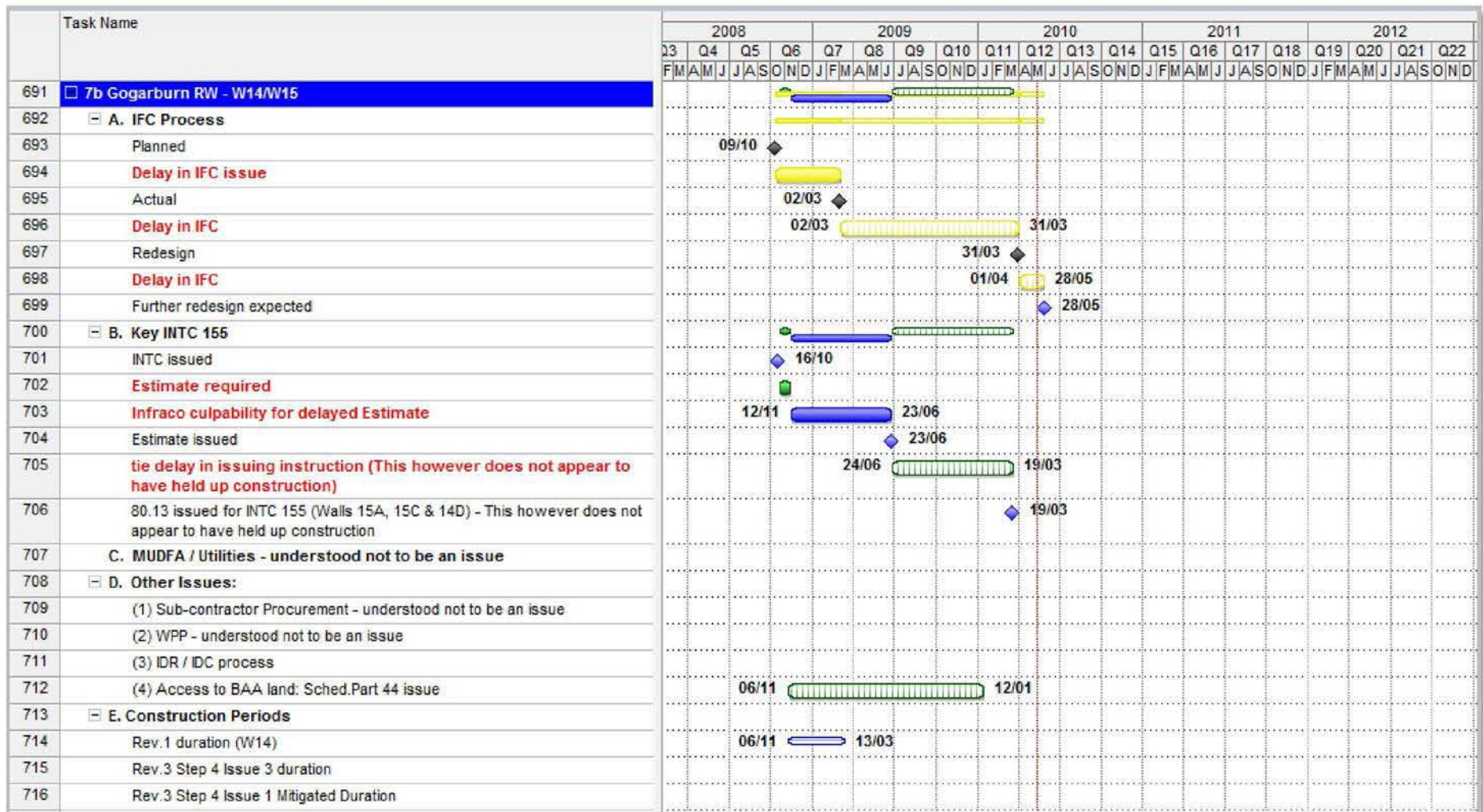
- (i) **'Significant' issues/events**: after initial critical delay due to utilities at Gogarburn Underbridge (**21 weeks; tie culpability**); design and INTC's appear to be the most significant issues affecting commencement.
- (ii) **Concurrent issues**: there is a considerable amount of culpability on the part of both parties in respect of the INTC process.
- (iii) **Considerations of dominance**: utility diversion at Gogarburn Bridge was critical to commencement. Thereafter a combination of revisions to IFC's and the protracted INTC process appears to have been the dominant obstacles to commencement.

H. **Current assessment of culpability**
(see over)

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
INTC 314 estimate period	16/04/09	13/05/09	27	3.86	Delay in provision of INTC 315 estimate	23/03/09	27/07/09	126	18.00	Delay to IFC	02/10/08	14/01/09	104	14.86
Tie culpability in review of INTC 314	30/07/09	02/12/09	125	17.86				0	-				0	0.00
			0	-				0	-				0	0.00
				21.71					18.00					14.857
2. UPPER LIMIT														
INTC 315 notification period	12/02/09	24/02/09	12	1.71	Rev 1 start date to INTC 314 notification	12/02/09	16/04/09	63	9.00	Delay to IFC	02/10/08	14/01/09	104	14.86
INTC 315 estimate period	24/02/09	23/03/09	27	3.86	Delay in provision of INTC 314 estimate	13/05/09	30/07/09	78	11.14				0	0.00
Delay; from INTC 315 estimate to 80.15 instruction (ongoing)	27/07/09	30/04/10	277	39.57	??	02/12/09	15/03/10	103	14.71				0	0.00
			0	-				0	-				0	0.00
				45.14					34.86					14.857
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = -14 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period -14 wks: .Notwithstanding delays attaching to the BDDI - IFC and subsequent INTC's this assessment is considered achievable on the basis of reasonable mitigation on the part of Infraco. Infraco Rev.3 period +5 wks: Infraco clearly considers slippage likely. On the basis however that Infraco can mitigate to -14 wks per IM analysis then Infraco lower limit restricted to anything in excess of -14 wks tie liability remains at lower limit of -14 wks if Infraco responsible for all increased durations									
Infraco Rev.3 Period = +5 wks	tie	Infraco	tie	Infraco										
Lower Limit	-14.00	-14.00	-14.00	-9.00										
Upper Limit	0.00	0.00	0.00	5.00										

Draft for discussion

7 – Gogarburn Retaining Walls W14 & W15 [Locating data for this structure has proven particularly difficult. Detailed as-built information together with accurate IFC & INTC data will assist in disentangling the issues arising. This chart is therefore a work in progress]



A. **IFC Process:** planned date for IFC issue was **09/10/08**; actual IFC (first) was **28/02/09**. This equates to a delay of **20 weeks**. We are advised that this delay resulted from a delay in submission for, and granting of, Prior Approval. This is explained below:-

W14 & W15: Prior Approval Process

Description	Planned	Actual	Delay (days)
Submission to CEC	30/06/08	05/09/08	67
CEC Approval	09/09/08	19/02/09	163
Period (days)	71	167	96

- (i) A **67 day delay** in submission by SDS; and
- (ii) A further **96 day delay** in CEC granting PA. We understand that this was driven by the delays to the Edinburgh Airport Tram Stop (same Prior Approval batch) which were driven by changes to the design being agreed between tie and BAA.

Revised IFC's:

It is understood that the original CEC TA was provided on the basis of the original design and erroneous information provided to it as part of the SDS TA submission. During **June 2009 BAA rejected** the SDS design on the basis that the SDS design was based on incorrect flood model data. Thereafter it took SDS/Infraco until September 2009 to accept that there was a problem with the design.

As a result, part of structures W14 & W15 were re-issued on **31/03/10**. A further redesign is expected on **28/05/10**. We are advised that this "redesign is at least partly to deal with differences in survey data for Gogar Burn and partly to do with flooding risk assessment". [What walls are affected by this]

B. Key INTC's:

- (i) INTC 155 (BDDI to IFC changes): [Check these dates – taken from Master List; dates advised by AS are very different] INTC issued **16/10/08**; Estimate required **11/11/08**; Estimate submitted **23/06/09**. Delay to Estimate **32 weeks**; **Infraco culpability**.
It is understood that INTC 155 was issued on the basis of the design of W14 & W15 contained in the first IFC issue. Subsequently however, that IFC was found to be incorrect in respect of **W14C & W14D** see explanation under 'A. IFC process' above).
On **19/03/10** tie issued an 80.13 instruction in respect of INTC 155.

C. **MUDFA / Utilities:** this is not identified as an issue affecting commencement or progress.

D. Other Issues:

- (i) Sub-Contractor Procurement: understood not to be an issue affecting commencement or progress.
- (ii) WPP Process: ditto
- (iii) IDR/IDC process: understood not to be an issue affecting commencement or progress (but see IFC process above).
- (iv) Access to BAA land: we understand that access to BAA land was not possible until **12/01/10**. Advised that this appears to have been as a result of delay in issue of BAA licence; brought about by (i) possible failure of Infraco to provide information to BAA; and (ii) due to design errors identified in IFC – re flood model. Sched.Part44 refers.
[What happened leading up to 12/01/10 to release the BAA approval/licence?]

E. **Construction Periods:** [Rev.1 & Rev.3 programmes contain details of W14 – but neither contain W15 details]

7b Gogarburn RW - W14/W15					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	06/11/2008		#####		#####
Finish	13/03/2009		#####		#####
Cal. Duration	18.29 wks	0.14 wks	-18.14 wks	0.14 wks	-18.14 wks

table to be finalised

- (i) Delay to Start: planned commencement was 06/11/08 (for W14);
- A. IFC process: actual IFC (first) was **28/02/09**. This equates to a delay of **20 weeks**. Combined culpability for delay.
- B. INTC's:
- C. MUDFA / Utilities: understood not to be an issue affecting
- D. Other: Access to BAA land not resolved until **12/01/10** (when works commenced).

(ii) Delay to Finish:

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

(i) **BAA licence**

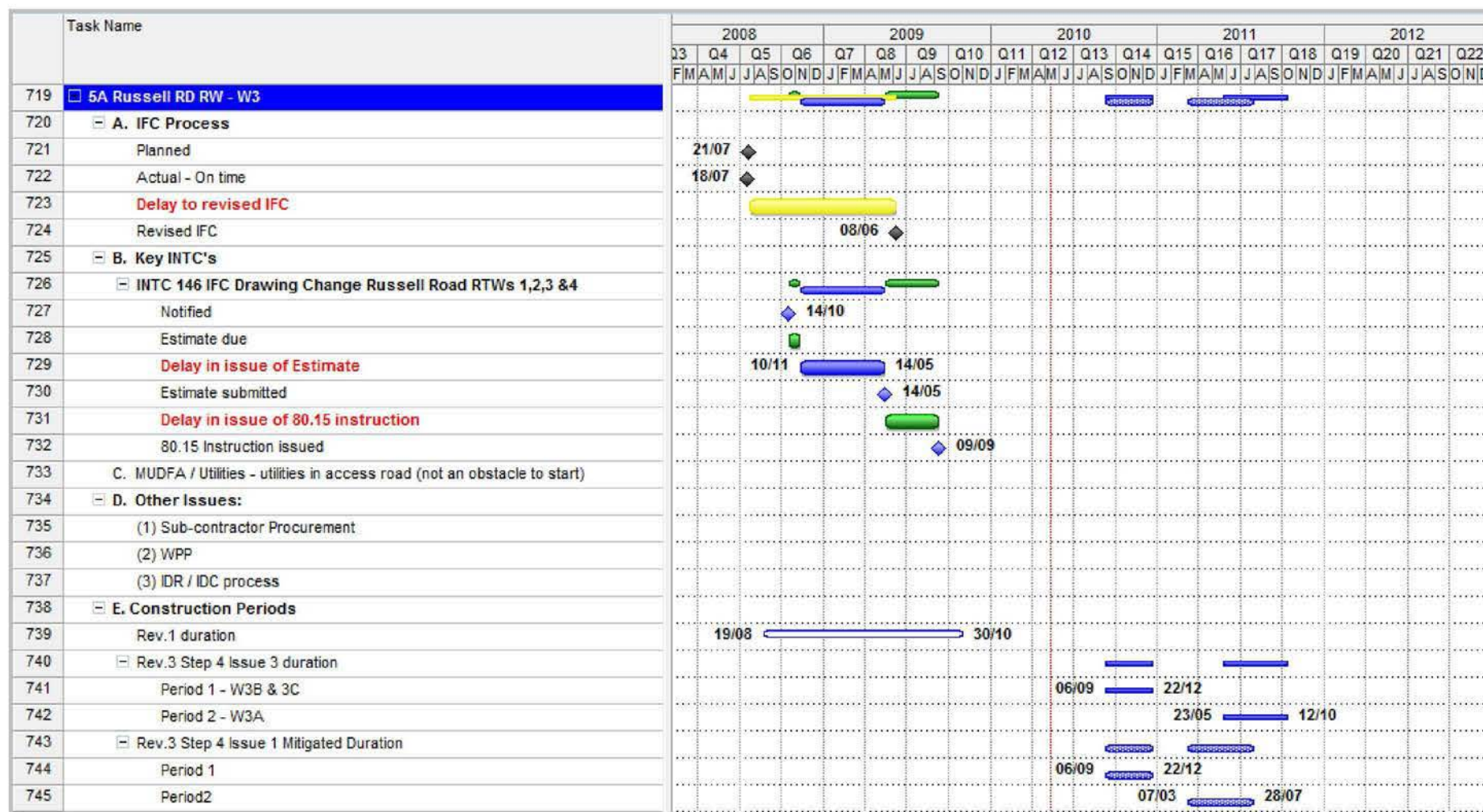
G. **Conclusion:**

- (i) **'Significant' issues/events**: *access to land and design*.
- (ii) **Concurrent issues**: *INTC 155 (not clear whether this held up commencement or progress though)*
- (iii) **Considerations of dominance**: *access and design issues*

H. **Current assessment of culpability**

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
Insufficient date to assess this issue			0	-	Insufficient date to assess this issue			0	-	Delay to 1st IFC	09/10/08	02/03/09	144	20.57
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
														20.571
2. UPPER LIMIT														
Insufficient date to assess this issue			0	-	Insufficient date to assess this issue			0	-	Delay to overall IFC completion	09/10/08	28/05/10	596	85.14
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
														85.143
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period =	IM Mitigated Period		Infraco Rev.3 Period		Currently insufficient information to accurately assess this structure / structures.									
Infraco Rev.3 Period =	tie	Infraco	tie	Infraco										
Lower Limit														
Upper Limit														

5A Russell Road RW – W3



A. **IFC Process:** Initial IFC issued on time (planned 21/07/08; actual 18/07/08). This original IFC addresses / satisfied 'Geotechnical TAA'. However, a subsequent IFC was issued on 08/06/09. There is no information presently available to inform culpability for this delay. As a consequence, it is (likely) that the late issue of this IFC flows from one or more of the following reasons:-

- 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 Infracore to provide the Infracore Design to SDS in accordance with the Consents Programme and Schedule. Part 14 (clause 19.19 refers);
- A tie Change;
- A failure of Infracore in respect of its management of SDS or another breach by Infracore (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 Infracore?

B. **Key INTC's:** From information provided Infracore issued 10 no. key INTC's in relation to this structure; INTC's 073, 092, 117, 146, 282, 284, 506, 507, 511, & 518. We are advised that it is unlikely that the majority of the foregoing has materially / critically affected Infracore's ability to commence works in accordance with the Rev 01 programme. INTC's 092, 117, 146, 506 & 518 were the subject of an 80.13 Instruction issued by tie on 19/03/10. We understand that the key INTC which prevented commencement was INTC 146 (IFC Drawing Change Russell Road RTW's 1, 2, 3 & 4). That INTC was notified on 14/10/08; the Estimate was provided on 14/05/09 (27 weeks later than due). **Delay by Infracore.** This was the subject of an 80.15 instruction issued on 09/09/09; 17 weeks after submission of Estimate). **Delay by tie.** Issues attaching to the withdrawal and subsequent re-issue of INTC 092 should be the subject of further investigation.

C. **MUDFA / Utilities:** There are a number of MUDFA / Utilities issues which need addressed on the access road. These however are not an obstacle to commencement; but will require to be carried out during construction. These issues were the subject of a MUDFA to Infracore transfer. This will result in a **delay by tie. Tie culpability.**

D. **Other Issues:**

- (i) **Sub-Contractor Procurement:** Understood that Expanded Ltd have been issued with an extension to their current LOI to cover the mobilisation of a piling rig to complete the piling on Wall W4, units 11 to 18. – see tie audit and Infracore Period Report No.3-1 report to 24/04/10. No sub-contract yet in place. Subject to further tie audit. **Delay by Infracore. Infracore culpability.**
- (ii) **WPP Process:** Assumed WPP in place given the fact that works have commenced. **No Delay (to date).**
- (iii) **IDC/IDR process:** IDR was in place as at 29/10/09.
- (iv) **Form 'C':** No information available on this issue. Assumed Form 'C' in place given the fact that works have commenced

E. **Construction Periods:**

5A Russell RD RW - W3					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	19/08/2008	06/09/2010	106.86 wks	06/09/2010	106.86 wks
Finish	30/10/2009	12/10/2011	101.71 wks	28/07/2011	90.86 wks
Cal. Duration	62.57 wks	57.43 wks	-5.14 wks	46.57 wks	-16.00 wks

(iii) **Delay to Start:** The table above refers to various programme dates. Issue 3 programme shows a delay to start of 107 weeks; the IM mitigated programme also shows a delay to start of 107 weeks. Primary causes of delay to start as follows:-

- A. **IFC process:** Initial IFC issued on time (planned 21/07/08; actual 18/07/08). This original IFC addresses / satisfied 'Geotechnical TAA'. However, a subsequent IFC was issued on 08/06/09. There is no information presently available to inform culpability for these delays. **Delay by SDS, SDS /tie or Infraco?**
- B. **INTC's:** We understand that the key INTC which prevented commencement was INTC 146 (IFC Drawing Change Russell Road RTW's 1, 2, 3 & 4). That INTC was notified on 14/10/08; the Estimate was provided on 14/05/09 (27 weeks later than due). **Delay by Infraco.** This was the subject of an 80.15 instruction issued on 09/09/09; 17 weeks after submission of Estimate). **Delay by tie.**
- C. **MUDFA / Utilities:** There are a number of MUDFA / Utilities issues which need addressed on the access road. These however are not an obstacle to commencement; but will require to be carried out during construction.
- E. **Other:**
- **Sub-Contractor procurement:** Understood that Expanded Ltd have been issued with an extension to their current LOI to cover the mobilisation of a piling rig to complete the piling on Wall W4, units 11 to 18. – see tie audit and Infraco Period Report No.3-1 report to 24/04/10. No sub-contract yet in place. Subject to further tie audit. **Delay by Infraco. Infraco culpability**
 - **WPP process:** Permit to commence work has been received. **No Delay.**
 - **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. This process is dependent upon the IFC completion – not yet in place.
 - **Form 'C' Approval:** not yet identified as being an obstacle to commencement (but this still has the potential to cause delay depending on documentation collation and submission).
- (i) **Delay to Finish:** Issue 3 programme shows a decrease in duration of circa 5 weeks over the timescale in Rev.1 programme. IM mitigated view of Issue 3 also shows a decrease in duration of 16 weeks to the Rev.1 programme.

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

- (i) First available date for the meaningful commencement of works to this area is governed by the completion of Russell Road RW4 Units 1-10 (we understand that there is a BBDI to IFC issue for this work – however no details available). This allows the access road to be moved over to allow commencement on W3B & C. See Russell Road RW narrative for details of delays (INTC 146 process).

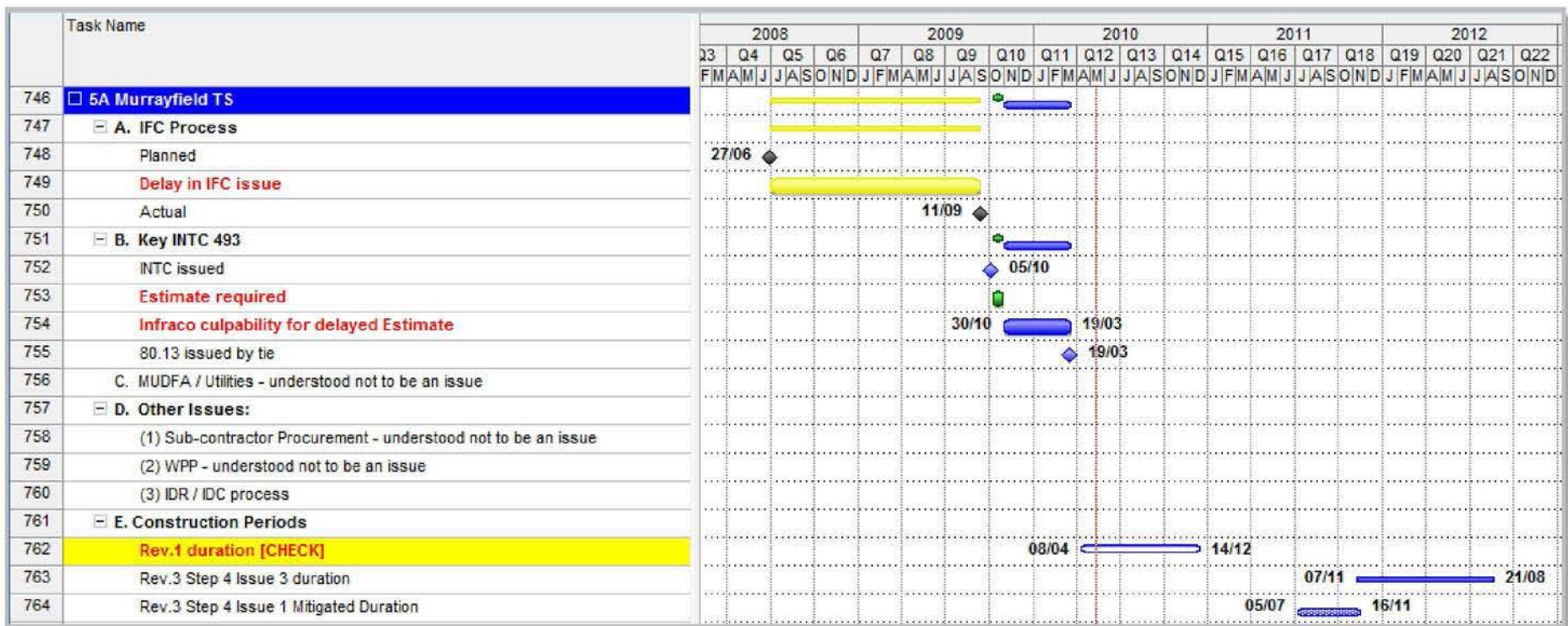
G. **Conclusion:**

- (i) **'Significant' issues/events:** In our opinion there were two main contributory factors, being (a) the INTC process in respect of INTC 146; and (b) the subsequent completion of Russell Road RW4 Units 1-10.
- (ii) **Concurrent issues:** In our opinion the other events detailed above i.e. MUDFA / Utilities and the IFC process have less of a bearing on the late commencement of this area. Whilst in isolation completion on this issue may have been a hindrance to commencement, its significance is considerably diminished by the fact that Infraco did commence. Incomplete MUDFA / Utilities issues will be more significant to the successful completion of the works in this area.
- (iii) **Considerations of dominance:** The protracted delay attaching to the INTC process on this structure has clearly affected commencement. Subsequent INTC (BBDI-IFC) may yet also affect commencement.

H

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
INTC estimate period	14/10/08	10/11/08	27	3.86	Delay to estimate	10/11/08	14/05/09	185	26.43	No delay to 1st IFC			0	0.00
Delay to 80.15 instruction	14/05/09	09/09/09	118	16.86				0	-				0	0.00
			0	-				0	-				0	0.00
				20.71					26.43					0
2. UPPER LIMIT														
INTC estimate period	14/10/08	10/11/08	27	3.86	Delay to estimate	10/11/08	14/05/09	185	26.43	Delay to 2nd IFC	21/07/08	08/06/09	322	46.00
Delay to 80.15 instruction	14/05/09	09/09/09	118	16.86	Delay to INTC	19/08/08	14/10/08	56	8.00				0	0.00
			0	-		09/09/09	06/09/10	362	51.71				0	0.00
				20.71					86.14					46
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = -16 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period -16 wks: notwithstanding INTC issues extant, this assessment is considered achievable on the basis of reasonable mitigation on the part of Infraco.									
Infraco Rev.3 Period = -5 wks	tie	Infraco	tie	Infraco	Infraco Rev.3 period -5 wks: Infraco clearly accepts the possibility for mitigation. Though currently not to the same extent as noted above. On the basis however that Infraco can mitigate to -16 wks per IM analysis then Infraco lower limit restricted to anything in excess of 0 wks. tie liability remains at lower limit of -16 wks if Infraco responsible for all increased durations									
Lower Limit	-16.00	-16.00	-16.00	-5.14										
Upper Limit	0.00	0.00	-10.86	0.00										

5A Murrayfield TS



A. **IFC Process:** Initial IFC was 63 weeks late (planned 27/06/08; actual 11/09/09). DS advises that delays flowed from the interface between tie, SDS, the Police and CEC. The main focus of this was staircase arrangements at the Murrayfield TS. A combination of misconceptions and misunderstandings between the parties resulted in an overly protracted timeframe to resolve this issue. DS further explained that once agreement was reached tie deliberated over the formalising of said agreement. Thereafter, a slow response from SDS in issuing the drawings served to exacerbate the ongoing delay. Infraco had a very limited input into the process and as such may therefore bear minimal responsibility (depends on management of SDS). It is believed culpability on this issue is twofold: (1) tie responsibility for time lapse in formalising its position to SDS; and (2) the protracted timeframe beyond this for SDS to issue the IFC. It is therefore likely, that the late issue of this IFC flows from one or more of the following reasons:-

- 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 tie Change;
- A requirement of third parties for which tie will bear responsibility;

Delay by SDS, SDS /tie or tie? Subject to more detailed audit by tie.

B. **Key INTC's:** From information provided Infraco issued 1 no. INTC in relation to this structure; **INTC 493 (Issue of Drawings for Murrayfield Stadium TS)**. It is unlikely however that issues attaching to this INTC will materially / critically affect Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-

- (i) **INTC 493:** issued by Infraco on 05/10/09 (24 days after IFC issue) Estimate should have been submitted on or around 02/11/09. As at 30/04/10 Estimate is currently outstanding i.e. 179 days later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce an Estimate for INTC 493.**
INTC 493 was the subject of an 80.13 Instruction issued by tie on 19/03/10.

C. **MUDFA / Utilities:** There are no MUDFA / Utilities issues impacting on this structure. **No Delay**

D. **Other Issues:**

- (i) **Sub-Contractor Procurement:** No sub-contract yet in place. Nothing noted specific to this TS in tie audit and Infraco Period Report No.3-1 report to 24/04/10. Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco; Infraco culpability.**
- (ii) **WPP Process:** Not in place as yet. **Delay by Infraco; Infraco culpability.**
- (iii) **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. **Delay by Infraco; Infraco culpability.**
- (iv) **Form 'C':** The Rev.3 programme does not contain any activity for a NR Form 'C'. Presumed not required.

E. **Construction Periods:**

5A Murrayfield TS					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	08/04/2010	07/11/2011	82.57 wks	05/07/2011	64.71 wks
Finish	14/12/2010	21/08/2012	88.00 wks	16/11/2011	48.14 wks
Cal. Duration	35.86 wks	41.29 wks	5.43 wks	19.29 wks	-16.57 wks

- (i) **Delay to Start:** The table above refers to various programme dates. Issue 3 programme shows a delay to start of **83 weeks**; the IM mitigated programme projects an earlier delay to start of **65 weeks**. Primary causes of delay to start as follows:-

- A. **IFC process:** Initial IFC was 63 weeks late (planned 27/06/08; actual 11/09/09). Culpability on this issue is twofold; (1) tie responsibility for time lapse in formalising it's position to SDS; and (2) the protracted timeframe beyond this for SDS to issue the IFC. **Delay by SDS, SDS /tie or tie? Audit detail required to establish measure of culpability.**
- B. **INTC's 493:** issued by Infraco on 05/10/09 (24 days after IFC issue) Estimate should have been submitted on or around 02/11/09. As at 30/04/10 Estimate is currently outstanding i.e. 179 days later than permitted by the Contract. **Delay by Infraco; Infraco culpability.** Delay up to 19/03/10 when tie issued clause 80.13 instruction.
- C. **MUDFA / Utilities:** **No impact** on this structure.
- D. **Other:**

- **Sub-Contractor procurement:** No sub-contract yet in place. Nothing noted specific to this TS in tie audit and Infraco Period Report No.3-1 report to 24/04/10. Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco; Infraco culpability.**
- **WPP process:** Not in place as yet. **Delay by Infraco; Infraco culpability**
- **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place **Delay by Infraco; Infraco culpability.**
- **Form 'C' Approval:** Presumed not required (see 'D'(iv) above)

(ii) **Delay to Finish:** Issue 3 programme shows an increase in duration of **circa 5 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 shows a reduction **circa -16 weeks** to the Rev.1 programme. There is presently no justification for the Infraco increased Rev.3 duration.

F. tie position on area availability:

(i) First available date for the meaningful commencement of works to this area is governed by construction of the Murrayfield Tram Stop Retaining Wall. However, that is dependent on completion of the VE exercise on Roseburn Viaduct, which is currently predicted to complete **mid May 2010 (IFC by 09/06/10).**

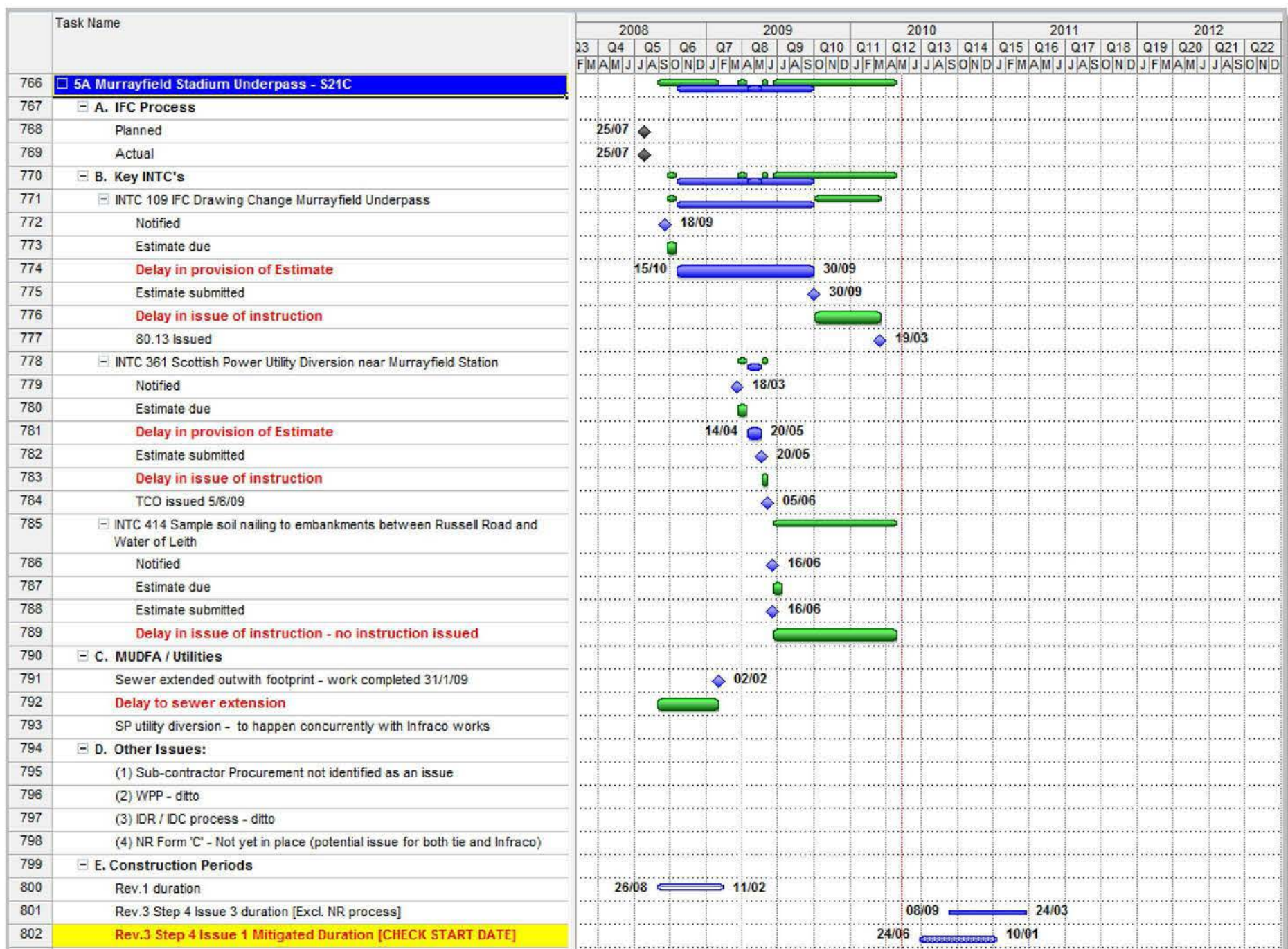
G. Conclusion:

- (i) **'Significant' issues/events:** In our opinion the main obstacle to commencement on this structure is the delay to the issue of the IFC (which was 63 weeks late). This however, is subsumed by the delays attaching to Murrayfield TS RW's which is clearly the determinant / predecessor to commencement of the TS construction; and as such has greater 'causative potency' than the above. Murrayfield TS RW is itself dependent on (i) completion of the Roseburn Viaduct design (which is the subject of a 'late' VE exercise design); and (ii) the west end of the Russell Road RW4.
- (ii) **Concurrent issues:** In our opinion the other events detailed above (i.e. the sub-contractor procurement timing, the WPP process & the IDC / IDR 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 may however become more significant in the lead up to the area availability in July 2011. Running concurrently with this is the late provision by Infraco of Estimates for INTC 493. This is a matter for which Infraco is responsible. Delay measured to 19/03/10 (when clause 80.13 instruction issued; but unlikely to be an obstacle to actual commencement).
- (v) **Considerations of dominance:** The protracted delay attaching to the IFC on this structure has clearly affected commencement. This however, is subsumed by the delays attaching to Murrayfield TS RW's which is clearly the determinant / predecessor to commencement of the TS construction; and as such has greater 'causative potency' than the above.

H

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				-					-					0
2. UPPER LIMIT														
Delay from Rev 1 - Rev 3 date (Affected by RV VE)	08/04/10	07/11/11	578	82.57	Delay from Rev 1 - Rev 3 date (Affected by RV VE)	08/04/10	07/11/11	578	82.57	Delay to 1st IFC	27/06/08	11/09/09	441	63.00
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				82.57					82.57					63
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = -17 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period -17 wks: .Notwithstanding delays attaching to the RV VE exercise this assessment is considered achievable on the basis of reasonable mitigation on the part of Infraco.									
Infraco Rev.3 Period = +5 wks	tie	Infraco	tie	Infraco	Infraco Rev.3 period +5 wks: On the basis that Infraco can mitigate to -17 wks per IM analysis then Infraco lower limit restricted to anything in excess of -17 wks tie liability remains at lower limit of -17 wks if Infraco responsible for all increased durations									
Lower Limit	-17.00	-17.00	-17.00	-12.00										
Upper Limit	0.00	0.00	0.00	5.00										

5A – Murrayfield Stadium Underpass – S21C



- A. **IFC Process:** Initial IFC issued on time (planned 25/07/08; actual 25/07/08). No Delay
- B. **Key INTC's:** From information provided it appears that the Infraco issued 7 no. INTC in relation to this structure; INTC's 98, 99, 100, 101, 109, 361 & 414. We are further advised that INTC 109 (IFC Drawing Changes Murrayfield Underpass), INTC 361 (Scottish Power Utility Diversion near Murrayfield Underpass) & INTC 414(Sample Soil Nailing to Embankments between Russell Road & Water of Leith) in particular, appear to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-
 - (i) **INTC 109:** issued by Infraco on 18/09/08 (55 days after IFC issue). Estimate should have been submitted on or around 14/10/08. Estimate was received on 30/09/09; 351 days later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 109.
 - (ii) **INTC 361:** issued by Infraco on 18/03/09 (236 days after IFC issue). Estimate should have been submitted on or around 13/04/09. Estimate was received on 20/05/09, 37 days later Estimate yet to be provided. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 361. TCO issued 05/06/09; **tie will be culpable for the period to instruction.**
 - (iii) **INTC 414:** issued by Infraco on 16/06/09 (326 days after IFC issue); Estimate was received on 16/06/09; **(tie to CHECK if correct refer INTC list provided by tie)**. No instruction issued by tie – **tie will be culpable for the period to instruction.**

INTC 109 was the subject of an 80.13 Instruction issued by tie on 19/03/10. Infraco Period Report No 3-1, to 24 April 2010 notes "Change from BDDI to IFC have yet to be agreed". TC currently advises that tie responded to Infraco on 14/04/10 disputing Infraco's Estimate in regard to INTC 109. There therefore remains the potential that issues attaching to this process may yet prevent / compromise commencement.
- C. **MUDFA / Utilities:** There are two main MUDFA / Utilities issues impacting on this structure; (1) Sewer extended outwith footprint of the proposed works to MSU; and (2) Scottish Power utility diversion. The sewer diversion was the subject of a MUDFA to tie transfer. This work was completed in January 2009. **Delay by tie; tie culpability** exists as the late completion of these works would have been an obstacle to the 'Rev 1' commencement date of 26/08/08. The Scottish Power utility diversion was the subject of a MUDFA to Infraco transfer. This work will be undertaken by Infraco concurrently with construction of the Underpass. This issue appears to have arisen on 03/02/09 and was not concluded until 05/06/09 when tie issued TCO 065 instructing Infraco to proceed with the works. **Delay by tie; tie culpability.**
- D. **Other Issues:**
 - (i) **Sub-Contractor Procurement:** On 08/01/09 Infraco requested permission to sub-contract works to Grahams for work between Haymarket Terrace and Murrayfield Underpass. This permission was granted on 25/02/09 – see tie audit and Infraco Period Report No.3-1 report to 24/04/10. **Delay by Infraco; Infraco culpability.**
 - (ii) **WPP Process:** No information available.
 - (iii) **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place **[Discuss]** **Delay by Infraco; Infraco culpability.**

- (iv) Form 'C': not yet in place. This may yet become a hindrance to commencement. It is anticipated that Infraco will have been relying on lack of instruction on INTC's. **Delay by Infraco; Infraco culpability (but may be excusable if tie culpable for any INTC related delays).**

E. **Construction Periods:**

5A Murrayfield Stadium Underpass - S21C					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	26/08/2008	08/09/2010	106.14 wks	24/06/2010	95.29 wks
Finish	11/02/2009	24/03/2011	110.14 wks	10/01/2011	99.71 wks
Cal. Duration	24.29 wks	28.29 wks	4.00 wks	28.71 wks	4.43 wks

- (i) Delay to Start: The table above refers to various programme dates. Issue 3 programme shows a delay to start of **106 weeks**; the IM mitigated programme projects an earlier delay to start of **95 weeks**. Primary causes of delay to start as follows:-

- A. IFC process: Initial IFC **issued on time** (planned **25/07/08**; actual **25/07/08**). **No Delay.**
- B. INTC's 109, 361 & 414: Delays by Infraco in issue of INTC's and subsequent provision of Estimates. **Delay by Infraco; Infraco culpability.** As at 30/04/10 delays extant on INTC414. Delay on INTC 109 up to 19/03/10 when tie issued clause 80.13 instruction. TCO issued for INTC 361 on 05/06/09 (not in Master INTC list) **tie culpability for late instruction on INTC's.**
- C. MUDFA / Utilities: There are two main MUDFA / Utilities issues impacting on this structure; (1) Sewer extended outwith footprint of the proposed works to MSU; and (2) Scottish Power utility diversion. The sewer diversion was the subject of a MUDFA to tie transfer. This work was completed in January 2009. **Delay by tie; tie culpability** exists as the late completion of these works would have been an obstacle to the 'Rev 1' commencement date of 26/08/08. The Scottish Power utility diversion was the subject of a MUDFA to Infraco transfer. This work will be undertaken by Infraco concurrently with construction of the Underpass. This issue appears to have arisen on 03/02/09 and was not concluded until 05/06/09 when tie issued TCO 065 instructing Infraco to proceed with the works. **Delay by tie; tie culpability.**
- D. Form 'C': not yet in place. This may yet become a hindrance to commencement. It is anticipated that Infraco will have been relying on lack of instruction on INTC's. **Delay by Infraco; Infraco culpability (but may be excusable if tie culpable for any INTC related delays).**
- E. Other:
- **Sub-Contractor procurement:** On 08/01/09 Infraco requested permission to sub-contract works to Grahams for work between Haymarket Terrace and Murrayfield Underpass. This permission was granted on 25/02/09. **Delay by Infraco; Infraco culpability.**
 - **WPP process:** Not in place as yet. **Delay by Infraco; Infraco culpability**
 - **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. **Delay by Infraco; Infraco culpability.**
 - **Form 'C' Approval:** Not yet in place. **Delay by Infraco; Infraco culpability.**

- (ii) Delay to Finish: Issue 3 programme shows an (minor) increase in duration of **4 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 also shows an increase in duration of **circa 4 weeks** to the Rev.1 programme.

- F. **tie position on area availability:** First available date for the meaningful commencement of works to this area is governed by two separate issues; (1) the sewer extension (completed in January 2009); and (2) repositioning of the pitches at Murrayfield Stadium (date?). **These matters will be tie liability.** The latest date for completion on the above was the date of the TCO issued against INTC 361 on 05/06/09. This in effect became the first date at which meaningful commencement could take place.

G. **Conclusion:**

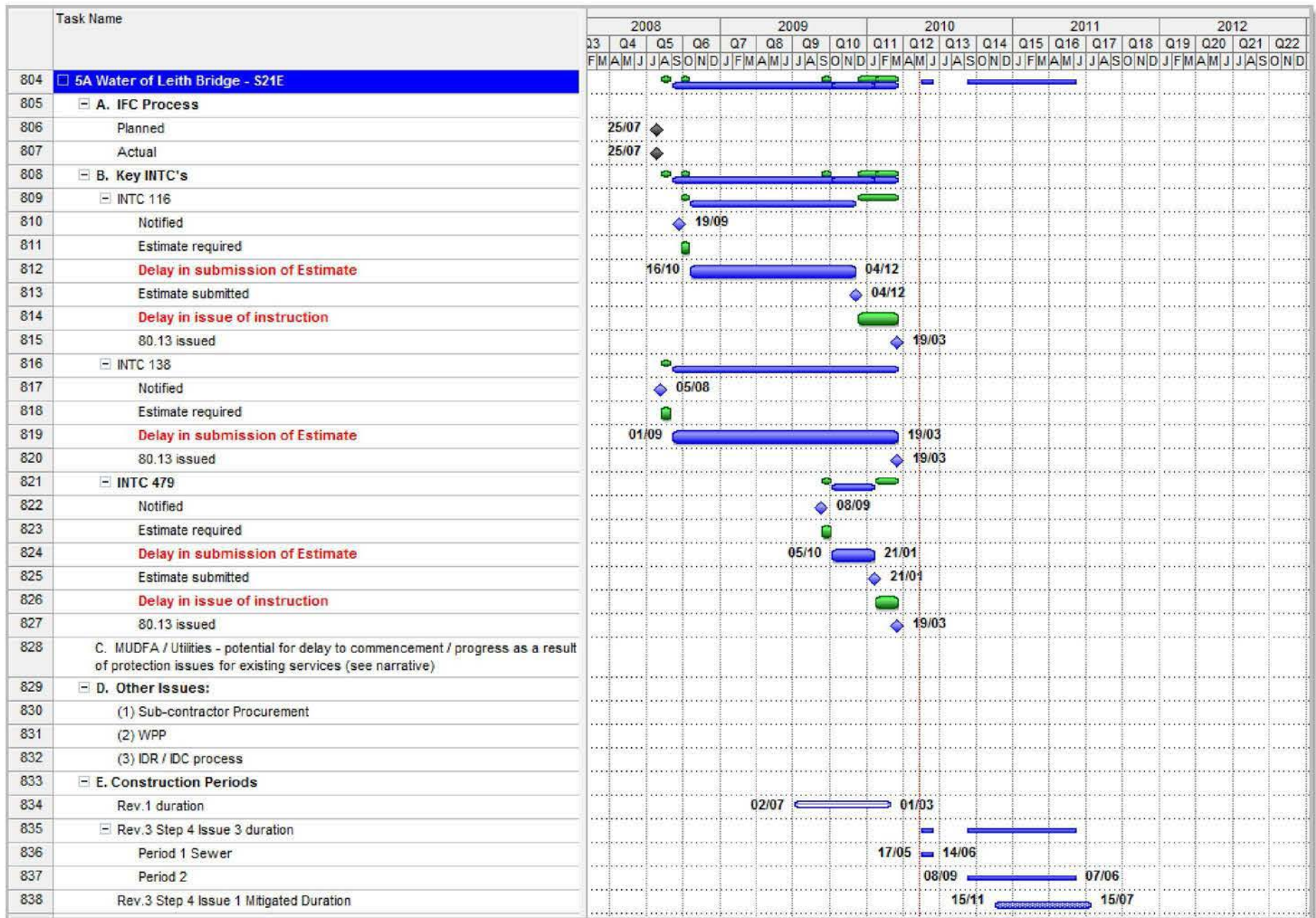
- (i) **'Significant' issues/events:** In our opinion there were four main contributory factors, being (1) the INTC process; (2) extension of sewer outwith footprint of the proposed works to MSU; (3) Scottish Power utility diversion; and (d) repositioning of the pitches at Murrayfield Stadium. Taking those events in chronological order:-
- (1) Infraco delays in issuing **INTC's 109, 361 & 414** from the IFC issue date are significant (see Preamble). The subsequent timeframe taken by Infraco to provide compliant Estimates following the issue of the INTC are matters for which Infraco is responsible. Delays in issue of instruction INTC's are matters for which tie is responsible.
 - (2) Running concurrently with this is the late completion of the sewer extension; a matter for which Infraco is responsible.
 - (3) It is also our understanding that there was an obligation on tie to complete the repositioning of pitches at Murrayfield Stadium in advance of the MSU works. The delay in completion of this exercise is a matter for which tie is responsible (need date).
- (ii) **Concurrent issues:** In our opinion other events detailed above (i.e. the sub-contractor procurement timing & WPP process) have much 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:** The significant delays attaching to the INTC process on this structure have clearly affected commencement. Commencement however, was compromised by; (1) the sewer extension impacting on this structure; and (2) repositioning of the pitches at Murrayfield Stadium. These three issues are the dominant causes of delay on this particular structure. Both are likely to have a similar 'causative potency' in that both provide significant obstacles to area and workface availability for the meaningful commencement of works.

H. Current

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]															
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability				
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks	
1. LOWER LIMIT															
MUDFA (Sewer)	26/08/08	02/02/09	160	22.86	Delay; INTC 361 estimate	14/04/09	20/05/09	36	5.14					0	0.00
Delay; From INTC 109 estimate to 80.13 instruction	30/09/09	19/03/10	170	24.29				0	-					0	0.00
			0	-				0	-					0	0.00
				47.14					5.14						0
2. UPPER LIMIT															
Delay; Rev 1 start to MUDFA (Sewer)	26/08/08	02/02/09	160	22.86	Delay; sewer complete to INTC 109 estimate	02/02/09	30/09/09	240	34.29					0	0.00
INTC 361 estimate period	18/03/09	14/04/09	27	3.86	Delay; 80.13 instruction to Rev 3 start	19/03/10	08/09/10	173	24.71					0	0.00
Delay to issue of INTC 361 instruction	20/05/09	05/06/09	16	2.29				0	-					0	0.00
Delay to issue of INTC 414 instruction (ongoing)	16/06/09	30/04/10	318	45.43				0	-					0	0.00
				74.43					59.00						0
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]															
IM Mitigated Period = +4.43 wks	IM Mitigated Period		Infraco Rev.3 Period		<p>IM mitigated period +4wks: this is likely to be MUDFA / Utilities, BDDI/IFC issues and / or consequential 'knock on' issues from other structures. . Culpability not clear; range of possibilities - upper / lower limits recognise extremes of liability.</p> <p>Infraco Rev.3 period +4.43 wks: On the basis that Infraco can mitigate to 4 weeks per IM analysis then Infraco lower limit restricted to anything in excess of 4 wks. tie liability remains at lower limit of 0.43 wks if Infraco responsible for all increased durations</p>										
Infraco Rev.3 Period = +4.00 wks	tie	Infraco	tie	Infraco											
Lower Limit	0.00	0.00	0.43	0.00											
Upper Limit	4.43	4.43	4.43	4.00											

Draft for discussion

5A - Water of Leith Bridge - S21E



- A. **IFC Process:** Initial IFC issued on time (planned 25/07/08; actual 25/07/08). Although no subsequent IFC's have been issued, some additional drawings were reissued on 03/07/09 reflecting changes to piling arrangement and removal of bat boxes. (Refer INTC's 138 & 479) below. **No material delay**
- B. **Key INTC's:** From information provided it appears that the Infraco issued 4 no. INTC in relation to this structure; INTC's 116, 138, 426 & 479. We are further advised that INTC 116 (IFC Drawing Changes Water of Leith Bridge), INTC 138 (Pile Sewer Conflict) & INTC 479 (Sewer Lining at Water of Leith Bridge) in particular, appear to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-
 - (i) INTC 116: issued by Infraco on 19/09/08 (56 days after IFC issue). Estimate should have been submitted on or around 15/10/08. Estimate was received on 04/12/09; 415 days later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 116.
 - (ii) INTC 138: issued by Infraco on 05/08/08 (11 days after IFC issue). Estimate should have been submitted on or around 29/08/08. As at 30/04/10, 609 days later Estimate yet to be provided. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 138
 - (iii) INTC 479: issued by Infraco on 08/09/09 (45 days after IFC issue). Estimate should have been submitted on or around 02/10/09. Estimate was received on 21/01/10; 111 days later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 479.

All of the above were the subject of an 80.13 Instruction issued by tie on 19/03/10. Infraco Period Report No 3-1, to 24 April 2010 notes "Change order for protection of existing utilities has yet to be agreed". TC currently advises that Infraco has yet to submit INTC specifically addressing this issue. There therefore remains the potential that issues attaching to this process may yet prevent / compromise commencement.
- C. **MUDFA / Utilities:** There are a number of MUDFA / Utilities issues impacting on this structure. Central pier of the Water of Leith Bridge clashes with the existing sewer. Consequent to this, in conjunction with sewer lining measures, piled foundations have been redesigned to avoid sewer clash. (Refer INTC's 138 & 479 above). TC advises that further protection measures are necessary for Scottish Power cables and Gas mains in close proximity to the works. As noted in the last paragraph of 'B' above, these issues are yet to be processed and as such have the potential to prevent / compromise commencement. Although there is **tie culpability** attaching to this issue, **Infraco culpability** exists in regard to its dilatory approach to the provision of INTC's / Estimates for same.
- D. **Other Issues:**
 - (i) Sub-Contractor Procurement: Understood that Infraco intend to sublet this structure to Expanded Ltd – 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 first available date for this structure nears.
 - (ii) WPP Process: Not in place as yet. **Delay by Infraco; Infraco culpability.**
 - (iii) IDR/IDC process: Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. **Delay by Infraco; Infraco culpability.**
 - (iv) Form 'C': Not yet in place. **Delay by Infraco; Infraco culpability.**

E. Construction Periods:

5A Water of Leith Bridge - S21E					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	02/07/2009	17/05/2010	45.57 wks	15/11/2010	71.57 wks
Finish	01/03/2010	07/06/2011	66.14 wks	15/07/2011	71.57 wks
Cal. Duration	34.71 wks	55.29 wks	20.57 wks	34.71 wks	0.00 wks

- (i) **Delay to Start:** The table above refers to various programme dates. Issue 3 programme shows a delay to start of **45 weeks**; the IM mitigated programme projects a later delay to start of **72 weeks**. Primary causes of delay to start as follows:-
- A. **IFC process:** Initial IFC **issued on time** (planned **25/07/08**; actual **25/07/08**). **No Delay**.
- B. **INTC's 116, 138 & 479:** Delays by Infraco in issue of INTC's and subsequent provision of Estimates. **Delay by Infraco; Infraco culpability.** Delay up to 19/03/10 when tie issued clause 80.13 instruction. Some (minor) **tie culpability** in process.
- C. **MUDFA / Utilities:** There are a number of MUDFA / Utilities issues impacting on this structure. Central pier of the Water of Leith Bridge clashes with the existing sewer. Consequent to this, in conjunction with sewer lining measures, piled foundations have been redesigned to avoid sewer clash. (Refer INTC's 138 & 479 above). TC advises that further protection measures are necessary for Scottish Power cables and Gas mains in close proximity to the works. As noted in 'B' above, these issues are yet to be processed and as such have the potential to prevent / compromise commencement. Although there is **tie culpability** attaching to this issue (this also relates to potential delay to progress), **Infraco culpability** exists in regard to its dilatory approach to the provision of INTC's / Estimates for same.
- D. **Other:**
- **Sub-Contractor procurement:** Understood that Infraco intend to sublet this structure to Expanded Ltd Not clear if LOI issued covering this work or area. Subject to further tie audit. **Delay by Infraco; Infraco culpability.**
 - **WPP process:** Not in place as yet. **Delay by Infraco; Infraco culpability**
 - **IDR/IDC process:** Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place. **Delay by Infraco; Infraco culpability.**
 - **Form 'C' Approval:** Not yet in place. **Delay by Infraco; Infraco culpability.**
- (ii) **Delay to Finish:** Issue 3 programme shows an increase in duration of **circa 21 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 shows no increase in duration to the Rev.1 programme. There is presently no justification for the Infraco increased Rev.3 duration. Please see notes above re potential for delay due to protection of existing utilities.

- F. **tie position on area availability:** First available date for the meaningful commencement of works to this area is governed by the completion of reinforced earthworks on both Murrayfield Pitches RW and Baird Drive RW is required to form the underside of the bankseat to WoL Bridge. Baird Drive however, has been subject to protracted delays flowing from BDDI – IFC Changes (refer Baird Drive Summary Chart / Narrative above). Infraco Period Report No 3-1, to 24 April 2010 predicts Baird Drive commencement on 17 May 2010. (Murrayfield Pitches RW's does not feature in the current analysis).

Commencement of works to this structure will also depend on agreement on protection measures necessary for Scottish Power / SGN utilities in close proximity to the works. As noted in 'B' above, these issues are yet to be processed and as such have the potential to prevent / compromise commencement.

G. Conclusion:

- (i) **'Significant' issues/events:** In our opinion there were four main contributory factors, being (a) the INTC process; (b) non agreement on protective measures needed for utilities in close proximity to the works; (c) incomplete reinforced earthworks on both Murrayfield Pitches RW and Baird Drive RW's required to form the underside of the bankseat to WoL Bridge and (d) failure to sign off Form 'C' approval. Taking those events in chronological order:-
Infraco delays in issuing **INTC's 116, 138 & 479** from the IFC issue date and the subsequent timeframe taken by Infraco to provide compliant Estimates following the issue of same, are matters for which Infraco is responsible. Beyond **21/01/10** however, tie's review and inaction on the Estimate for INTC 479 ran until **19/03/10** (when the 80.13 instruction was issued). This may be a period for which tie bears the responsibility. Running concurrently with this Infraco has yet to submit (INTC) proposals for protective measures for utilities known to be in close proximity to the works. This is a matter for which Infraco is responsible. Following the issue of the 80.13 instruction Infraco *should* be obliged to commence the works. Commencement however, was further compromised by incomplete reinforced earthworks on both Murrayfield Pitches RW and Baird Drive RW's required to form the underside of the bankseat to WoL Bridge. For responsibility for this issue (refer Baird Drive Summary Chart / Narrative) above. Finally the potential to commence is further compounded by Infraco not yet having submitted NR Form 'C' for approval.
- (ii) **Concurrent issues:** In our opinion other events detailed above (i.e. the sub-contractor procurement timing & WPP process) have much 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 may however become more significant in the lead up to the area availability. (Date dependant on the issues noted at G(i) above).
- (iii) **Considerations of dominance:** The significant delays attaching to the INTC process on this structure have clearly affected commencement. The delays have in effect three constituent parts (1) Infraco's delay in issuing an INTC from the IFC issue date; (2) the protracted timeframe taken by Infraco to provide a compliant Estimate following the issue of the INTC; and (3) tie's delay in issuing an 80.13 beyond that date. Following the issue of the 80.13 instruction Infraco is obliged to commence the works. The late approval of the Form 'C' may also have restricted access to this area.

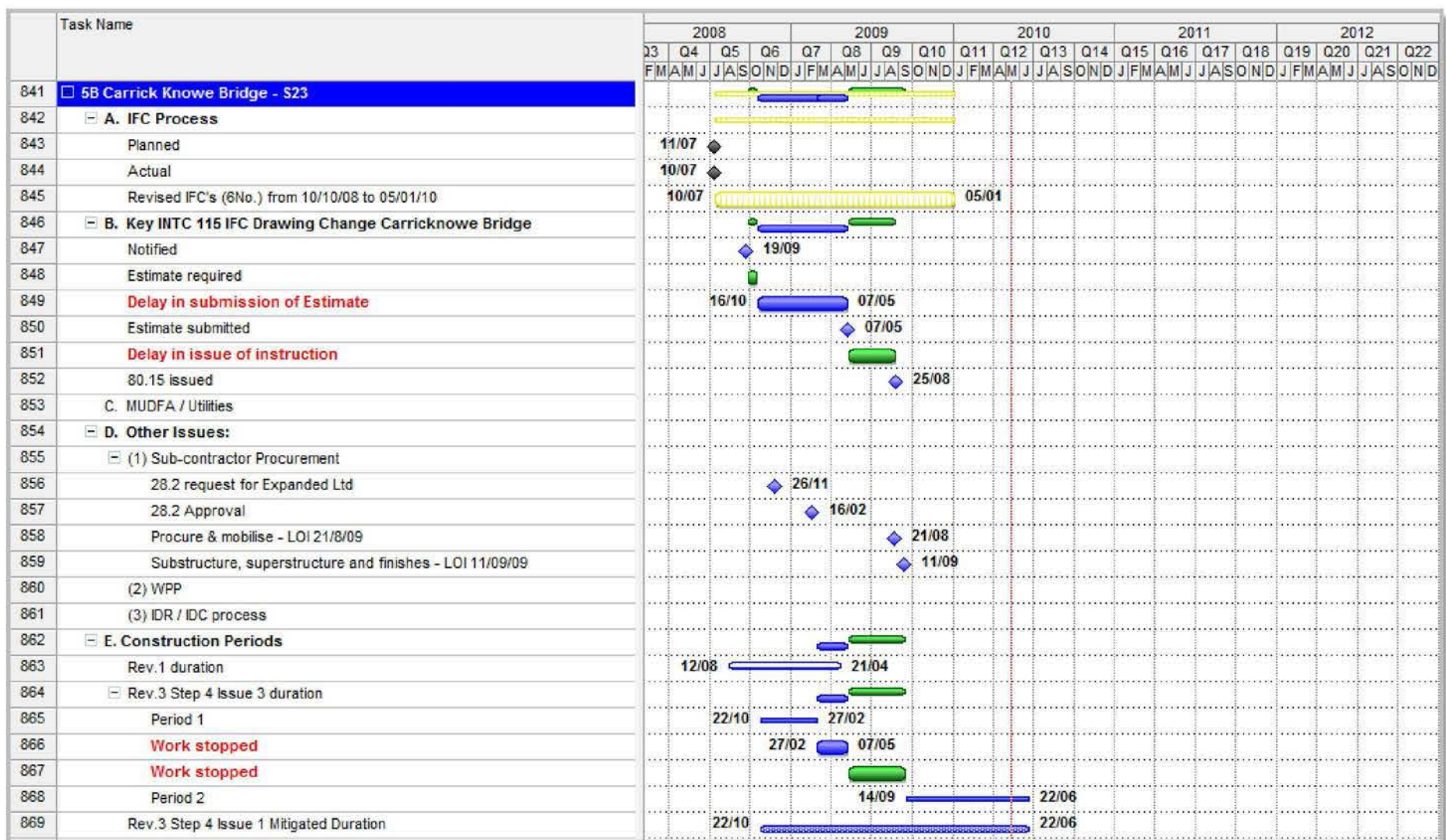
Commencement however, may be compromised by non agreement on protective measures for utilities known to be in close proximity to the works and the incomplete reinforced earthworks on both Murrayfield Pitches RW and Baird Drive RW's, required to form the underside of the bankseat to WoL Bridge. These issues are the dominant causes of delay on this particular structure. Both are likely to have a similar 'causative potency' in that both provide significant obstacles to area and workface availability for the meaningful commencement of works.

H. Current

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]															
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability				
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks	
1. LOWER LIMIT															
INTC 479 estimate period	08/09/09	05/10/09	27	3.86	Delay; Rev 1 start to delay to estimate INTC 138	02/07/09	19/03/10	260	37.14					0	0.00
Delay; From INTC 479 estimate to 80.13 instruction	21/01/10	19/03/10	57	8.14	Delay; INTC 138 instruction to commencement	19/03/10	17/05/10	59	8.43					0	0.00
			0	-				0	-					0	0.00
				12.00					45.57					0	
2. UPPER LIMIT															
Delay; From INTC 116 estimate to 80.13 instruction	04/12/09	19/03/10	105	15.00	Delay; Rev 1 start to delay to estimate INTC 138	02/07/09	19/03/10	260	37.14					0	0.00
			0	-	Delay; INTC 138 instruction to commencement	19/03/10	17/05/10	59	8.43					0	0.00
			0	-				0	-					0	0.00
			0	-				0	-					0	0.00
				15.00					45.57					0	
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]															
IM Mitigated Period = 0 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period 0 wks: No mitigation considered possible . Rev 1 construction duration still considered achievable. Affected by protracted delays attaching to Baird Drive RW's.										
Infraco Rev.3 Period = +21 wks	tie	Infraco	tie	Infraco	Infraco Rev.3 period +21 wks: Infraco clearly considers slippage likely. On the basis however, that Infraco can maintain the original Rev 1 programmed duration as per IM analysis then Infraco lower limit restricted to anything in excess of 0 wks. tie liability remains at lower limit of 0 wks if Infraco meets planned duration of the Rev 1 programme.										
Lower Limit	0.00	0.00	0.00	0.00											
Upper Limit	0.00	0.00	0.00	21.00											

Draft for discussion

5B Carrick Knowe Bridge – S23



A. **IFC Process:** Initial IFC was on time (planned 11/07/08; actual 11/07/08). Although the initial IFC date was achieved, DS advises that this structure was the subject of multiple revisions thereafter. Revisions were presented on 10/10/08, 19/08/09, 01/09/09, 23/10/09, 16/12/09 and 05/01/10 respectively. With respect to delays attaching to the revisions noted (or indeed the reason for revising same) there is no information presently available to inform culpability. (see Preamble). Potential reasons for the late issue of IFC's to this area include:-

- 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 Infracore to provide the Infracore Design to SDS in accordance with the Consents Programme and Schedule. Part 14 (clause 19.19 refers);
- A tie Change;
- A failure of Infracore in respect of its management of SDS or another breach by Infracore (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 Infracore?

B. **Key INTC's:** From information provided it appears that the Infracore issued 7 no. INTC in relation to this structure; INTC's 115, 188, 308, 322, 390, 437, & 502. We understand that INTC 115 is likely to have materially / critically affected Infracore's ability to (re)commence works on 14/09/09. Details are as follows:-

- (i) **INTC 115:** issued by Infracore on 19/09/08 (70 days after first IFC issue). Estimate should have been submitted on or around 15/10/08. Estimate was received on 07/05/09; 204 days later than required. **Delay by Infracore; Infracore culpability** for time taken to produce Estimate for INTC 115
- (ii) **INTC 188:** issued by Infracore on 04/11/08 (116 days after first IFC issue). Estimate should have been submitted on or around 28/11/08. Estimate was received on 12/06/09, 196 days later than required. **Delay by Infracore; Infracore culpability** for time taken to produce Estimate for INTC 188; **tie will be culpable for the period to instruction.**
- (iii) **INTC 308:** issued by Infracore on 23/02/09 (227 days after first IFC issue). Estimate should have been submitted on or around 18/03/09. As at 30/04/10, 540 days later, Infracore has yet to provide an estimate. **Delay by Infracore; Infracore culpability** for time taken to produce Estimate for INTC 308. No instruction issued by tie – **tie will be culpable for the period to instruction.**
- (iv) **INTC 322:** issued by Infracore on 23/02/09 (227 days after first IFC issue). Estimate should have been submitted on or around 19/03/09. Estimate was received on 12/06/09, 85 days later than required. **Delay by Infracore; Infracore culpability** for time taken to produce Estimate for INTC 322; **tie will be culpable for the period to instruction.**
- (v) **INTC 390:** issued by Infracore on 07/05/09 (300 days after first IFC issue). Estimate should have been submitted on or around 02/06/09. Estimate was received 07/05/09 on time. **tie will be culpable for the period to instruction.**
- (vi) **INTC 437:** issued by Infracore on 08/07/09 (362 days after first IFC issue). Estimate should have been submitted on or around 03/08/09. Estimate was received 08/07/09 on time. **tie will be culpable for the period to instruction.**
- (vii) **INTC 502:** issued by Infracore on 19/10/09 (465 days after first IFC issue). Estimate should have been submitted on or around 12/11/09. Estimate was received 06/11/09, on time. **tie will be culpable for the period to instruction.**

None of the above were the subject of an 80.13 Instruction issued by tie on 19/03/10. Infracore Period Report No 3-1, to 24 April 2010 notes "Issues and concerns. None". This appears to suggest that none of the above are likely to prevent / compromise ongoing progress / completion. However it is notable that INTC 115 became the subject of a reference to DRP and an 80.15 instruction (on 25/8/09). This had the effect of stopping the works late Feb. 2009, until re-commencement on 14/09/09.

C. **MUDFA / Utilities:** no MUDFA issues impacting on this structure.

D. Other Issues:

- (i) Sub-Contractor Procurement: Expanded Ltd; LOI as at 21/08/09 to procure & mobilise. Expanded Ltd substructure, superstructure & finishes LOI 11/09/09. Subject to further tie audit. **Delay by Infraco; Infraco culpability.**
- (ii) WPP Process: Substantive WPP's recorded in DAC charts (assumed in place).
- (iii) IDC/IDR process: In place. **No Delay**

E. Construction Periods:

5B Carrick Knowe Bridge - S23					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	12/08/2008	22/10/2008	10.14 wks	22/10/2008	10.14 wks
Finish	21/04/2009	22/06/2010	61.00 wks	22/06/2010	61.00 wks
Cal. Duration	36.14 wks	87.00 wks	50.86 wks	87.00 wks	50.86 wks

Precise start date not clear; Prior information advised 22/10/08; Permit to commence issued 06/11/08. As-built required.

- (i) Delay to Start: The table above refers to various programme dates. Issue 3 programme shows a delay to start of **10 weeks** as does the IM mitigated programme. Primary causes of delay to start as follows:-
 - A. IFC process: Initial IFC **was on time** (planned **11/07/08**; actual **11/07/08**).
 - B. INTC's: no impact on commencement
 - C. MUDFA / Utilities: no impact on commencement
 - D. Other:
 - **Sub-Contractor procurement**: Expanded Ltd LOI as at 21/08/09 to procure & mobilise. Expanded Ltd substructure, superstructure & finishes LOI 11/09/09. Subject to further tie audit. **Delay by Infraco. Infraco culpability.**
 - **WPP Process**: Substantive WPP's recorded in DAC charts assumed in place..
 - **IDC/IDR process**: In place. **No Delay.**
 - **Infraco delay in commencement**: to date no information as to cause of delayed start has been obtained. tie PM personnel believe this was merely slow reaction to workface availability by Infraco. **10 week delay; Delay by Infraco. Infraco culpability.**
- (ii) Delay to Finish: Issue 3 programme shows a circa **51 week** increase in duration over the timescale in Rev.1 programme (as does the IM mitigated view of Issue 3). That increase in duration includes a period of 28 weeks when work on this structure stopped pending resolution of INTC 115. Delayed from 27/02/09 to 14/09/09). Split culpability for that period. **Infraco (delayed Estimate) 10 weeks (27/2/09 to 07/05/09). tie (delayed 80.15 instruction) 16 weeks (08/05/09 to 14/09/09). Re-mobilisation period split at present 1 week per party.**

F. **tie position on area availability**: Work face available as originally programmed.

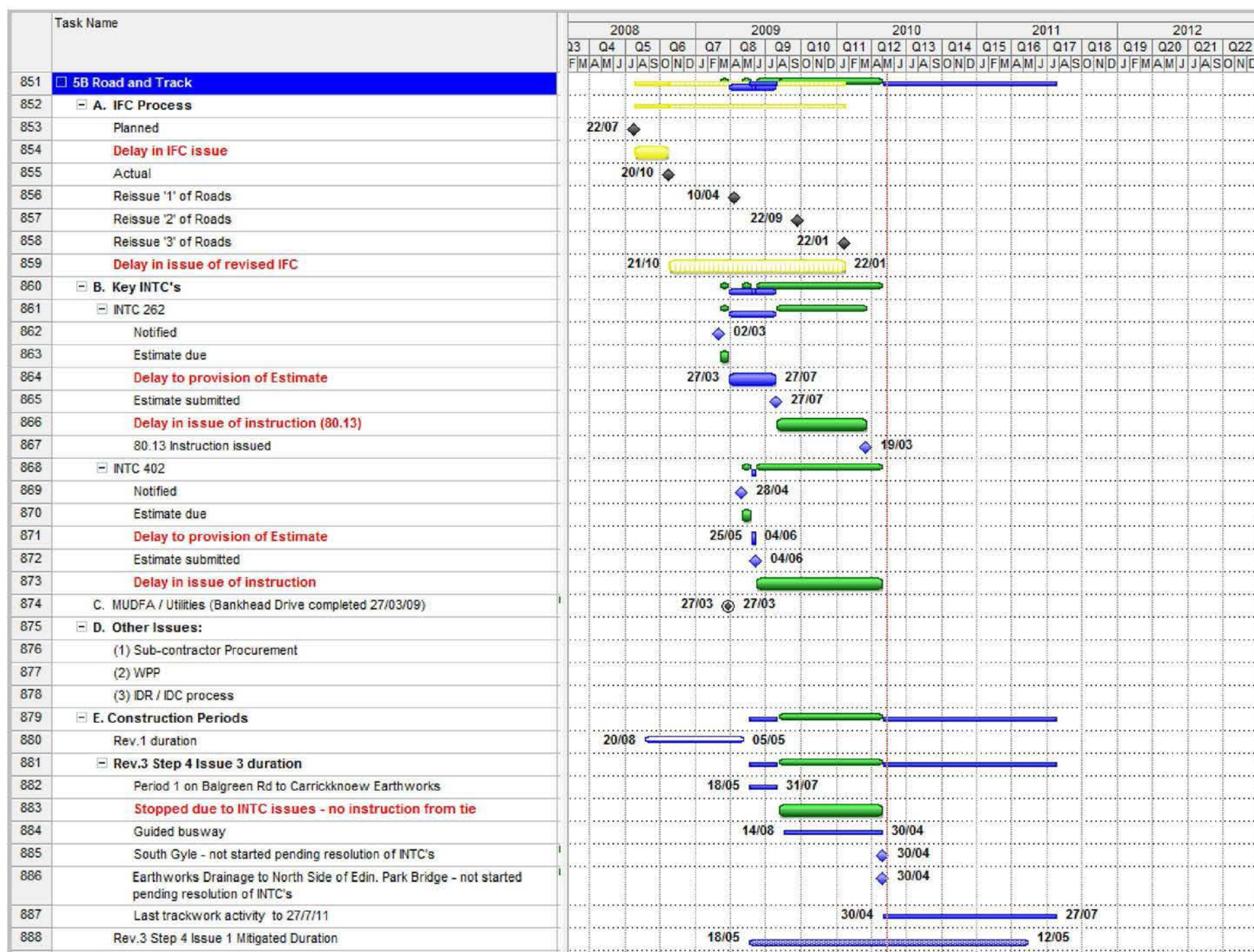
G. Conclusion:

- (i) **'Significant' issues/events**: In our opinion the main delaying factors appear to be (a) late start by Infraco (circa **10 week** delay) (b) the INTC process associated with INTC 115 (**28 week** delay to progress); and (c) an unexplained increase in structure duration (**23 weeks**) some of which may relate to the extensive list of INTC's applicable to this structure.
- (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.
- (iii) **Considerations of dominance**: see (i) above.

H. Current

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Infraco culpability				Poss. SDS culpability					
	From	to	Days	Weeks	Cause	From	to	Days	Weeks	Cause	From	to	Days	Weeks
1. LOWER LIMIT														
INTC 115 estimate period	19/09/08	16/10/08	27	3.86				0	-	No delay	11/07/08	11/07/08	0	0.00
			0	-				0	-				0	0.00
				3.86										0
2. UPPER LIMIT														
INTC 115 estimate period	19/09/08	16/10/08	27	3.86	Unexplained Infraco delay to commencement	12/08/08	22/10/08	71	10.14				0	0.00
			0	-				0	-				0	0.00
				3.86					10.14					0
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = +51 wks	IM Mitigated Period			Infraco Rev.3 Period				IM mitigated period +51wks : this is likely to be initial slow reaction to workface availability, consequent dilatory progress by Infraco and BDDI/IFC issues. Works stopped works pending resolution of INTC 115. Culpability mainly Infraco.. Infraco Rev.3 period +51 wks : On the basis that Infraco can mitigate to 51 wks as per (both) it's and IM's analysis then Infraco lower limit restricted to anything in excess of 11 wks. tie liability remains at lower limit of 17 wks if Infraco responsible for all increased durations. (Breakdown detailed opposite).						
Infraco Rev.3 Period = +51 wks	tie	Infraco	tie	Infraco										
Lower Limit	17.00	11.00	17.00	11.00										
Upper Limit	51.00	51.00	51.00	51.00										
Observations on Actual Progress	tie	Infraco												
Analysis of ongoing progress, considered in 'Delay to Finish' periods detailed above.	-17.00	-11.00												
<i>*Split culpability as follows:- Infraco initial delay to start of 10 wks, subsequent delay to provision of estimate also 10 wks. Tie 16 wks to issue 80.15 instruction. Period for mobilisation split between tie / Infraco 1 wk each. (Breakdown detailed in CKB summary narrative).</i>														

5B Road & Track



A. **IFC Process:** Initial IFC was 13 weeks late (planned 22/07/08; actual 20/10/08). This initial IFC appeared to have addressed Trackworks. Subsequent IFC's however, were necessary to incorporate Roads drawing updates. The first Roads reissue took place on 10/04/09 followed by further reissues on 22/09/09 & 22/01/10 respectively. We are advised that delays to the initial IFC can be attributed to poor design by SDS. DS advises that "Delay in production follows poor SDS design – original design 9 days late not complete; nevertheless CEC reviewed and granted TAA subject to comments 16 days late. SDS then took 2 months incorporating some comments – further issues necessary to close other legitimate CEC comments". With respect to delays attaching to the Roads reissues there is no information presently available to inform culpability for delay to the foregoing (see Preamble). It is notable however, that as both Trackform and Roads (normally) require the further integration of Infraco design there is a responsibility on Infraco to provide information to SDS for incorporation, on time. (It is not known if this did happen). Potential reasons for the late issue of IFC's to this area include:-

- 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?

B. **Key INTC's:** From information provided it appears that the Infraco issued 2 no. INTC's in relation to this structure; INTC's 262 & 402. We are further advised that both INTC 262 (IFC Drawing Changes for Section 5B Track Drainage) and INTC 402 (Addition of Starter and Capping Layers in Section 5B)) appear to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-

- (i) **INTC 262:** issued by Infraco on 02/03/09 (133 days after first IFC issue). Estimate should have been submitted on or around 26/03/09. Estimate was submitted by Infraco on 27/07/09. This is 17weeks later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 262.**
- (ii) **INTC 402:** issued by Infraco on 28/04/09 (190 days after first IFC issue). Estimate should have been submitted on or around 22/05/09. Estimate was submitted by Infraco on 04/06/09. This is 2 weeks later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 262**

Both estimates have been the subject of much debate since receipt of estimates attaching. As at 30/04/10 agreement has yet to be reached on both issues. It is notable that tie issued an 80.13 instruction on INTC 262 on 19/03/10. **tie liability for delay in issuing 80.13 instruction.** INTC 402 has yet to be instructed.

C. **MUDFA / Utilities:** We are advised that works on Bankhead Drive were dependant on the completion of MUDFA / Utility works in that area. These works were completed on 27/03/09. Given issues attaching to the INTC process completion of these works had little effect on progress. **Delay by tie.**

D. **Other Issues:**

- (v) **Sub-Contractor Procurement:** Understood that Crummock are contracted to carry out some work at the Busgate in Section 5B (see tie audit and Infraco Period Report No.3-1 report to 24/04/10). Subject to further tie audit. **Delay by Infraco. Infraco culpability.**
- (vi) **WPP Process:** Assumed WPP in place given the fact that works have commenced. **No Delay.**
- (vii) **IDC/IDR process:** IDR was in place as at 26/11/09.

E. **Construction Periods:**

5B Road and Track					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	20/08/2008	18/05/2009	38.71 wks	18/05/2009	38.71 wks
Finish	05/05/2009	27/07/2011	116.14 wks	12/05/2011	105.29 wks
Cal. Duration	37.00 wks	114.43 wks	77.43 wks	103.57 wks	66.57 wks

(i) **Delay to Start:** The table above refers to various programme dates. Issue 3 programme shows a delay to start of **39 weeks**; the IM mitigated programme also shows a delay to start of **39 weeks**. Primary causes of delay to start as follows:-

A. **IFC process:** The initial IFC appeared to address Trackworks. Subsequent IFC's however, were necessary to incorporate Roads drawing updates. The first Roads reissue took place on 10/04/09 followed by further reissues on 22/09/09 & 22/01/10 respectively. We are advised that delays to the initial IFC can be attributed to poor design by SDS. With respect to delays attaching to the Roads reissues there is no information presently available to inform culpability. **Delay by SDS, SDS /tie or Infraco?**

B. **Key INTC's:**

INTC 262: issued by Infraco on **02/03/09** (19 weeks after first IFC issue). Estimate should have been submitted on or around **26/03/09**. Estimate was submitted by Infraco on **27/07/09**. This is **17 weeks** later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 262.**

INTC 402: issued by Infraco on **28/04/09** (27 weeks after first IFC issue). Estimate should have been submitted on or around **22/05/09**. Estimate was submitted by Infraco on **04/06/09**. This is **2 weeks** later than permitted by the Contract. **Delay by Infraco. Infraco culpability for time taken to produce Estimate for INTC 262**

Both estimates have been the subject of much debate since receipt of estimates attaching. As at 30/04/10 agreement has yet to be reached on both issues. It is notable that tie issued an 80.13 instruction on INTC 262 on 19/03/10 (delay of **34 weeks**). **tie liability for delay in issuing 80.13 instruction.** INTC 402 has yet to be instructed (a current delay of **47 weeks**).

C. **MUDFA / Utilities:** We are advised that works on Bankhead Drive were dependant on the completion of MUDFA / Utility works in that area. These works were completed on 27/03/09. Given issues attaching to the INTC process completion of these works had little effect on progress. **Delay by tie.**

F. **Other:**

- **Sub-Contractor procurement:** Understood that Crummock are contracted to carry out some work at the Busgate in Section 5B. see tie audit and Infraco Period Report No.3-1 report to 24/04/10. Subject to further tie audit. **Delay by Infraco. Infraco culpability**
- **WPP process:** Permit to commence work has been received. **No Delay.**
- **WPP Process:** Assumed WPP in place given the fact that works have commenced. **No Delay.**
- **IDC/IDR process:** IDR was in place as at 26/11/09. **No Delay.**

(ii) **Delay to Finish:** Issue 3 programme shows an increase in overall duration of **circa 77 weeks** over the timescale in Rev.1 programme. IM mitigated view of Issue 3 also shows an increase of **67 weeks** in duration compared with the Rev.1 programme. It appears that those increases include **39 weeks** of delay due to lack of INTC instruction (01/08/09 to 30/04/10).

Having regard to Infraco's 'Rev3 Issue 3' programme it is notable that activities which were previously running concurrently are now much less so. All separate activity durations are longer – due to 'Additional Earthworks and Drainage activities'. Previous advice confirmed that additional duration required for drainage and earthworks was necessary. TC confirms that view still holds. The extent to which durations should be extended requires further information from Infraco (the current increased durations are not substantiated).

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

(i) Observations on area availability, identifies four potential workfaces attaching to 5B Road & Track. They are as follows:-

- a. **Balgreen Road to Carrick Knowe Earthworks:** commencement is dictated by completion of substantive works to Carrick Knowe Bridge to allow commencement of Balgreen Road to Carrick Knowe Earthworks. This is a position articulated by Infraco (to maintain access to CKB) but disputed by tie. Works started on 18/05/09 and stopped as at 31/07/09 pending resolution of **INTC's 262 & 402**. It is unlikely that Infraco will conclude that works undertaken were in effect 'meaningful'.
- b. **Guided Busway from Carrick Knowe Bridge to South Gyle access Bridge:** the construction of new bus stops / bus lanes designed to take bus route off the line of the proposed Guided Busway. This work was completed prior to Infraco to commence of the works as at 14/08/09 on the Guided Busway from Carrick Knowe Bridge to South Gyle Access Bridge. This work is continuing;
- c. **South Gyle Access Bridge to Edinburgh Park (along Bankhead Drive):** commencement dictated by resolution of **INTC's 262 & 402**. This was subject of an 80.13 instruction on 19/03/10. Works yet to commence
- d. **Earthworks Drainage to North Side of Edinburgh Park Bridge:** commencement dictated by resolution of **INTC's 262 & 402**. This was subject of an 80.13 instruction on 19/03/10. Works yet to commence.

G. **Conclusion:**

(i) **'Significant' issues/events:** In our opinion the main delaying factor on 5B Road & Track is the resolution of **INTC 262 (IFC Drawing Changes for Section 5B Track Drainage) & INTC 402 (Addition of Starter and Capping Layers in Section 5B)**. See chart and 'B' above. Split liability (majority

resting with tie due to lack of instruction). In addition, increased earthworks and drainage workscope will result in increased activity durations (the extent of which Infraco has yet to demonstrate).

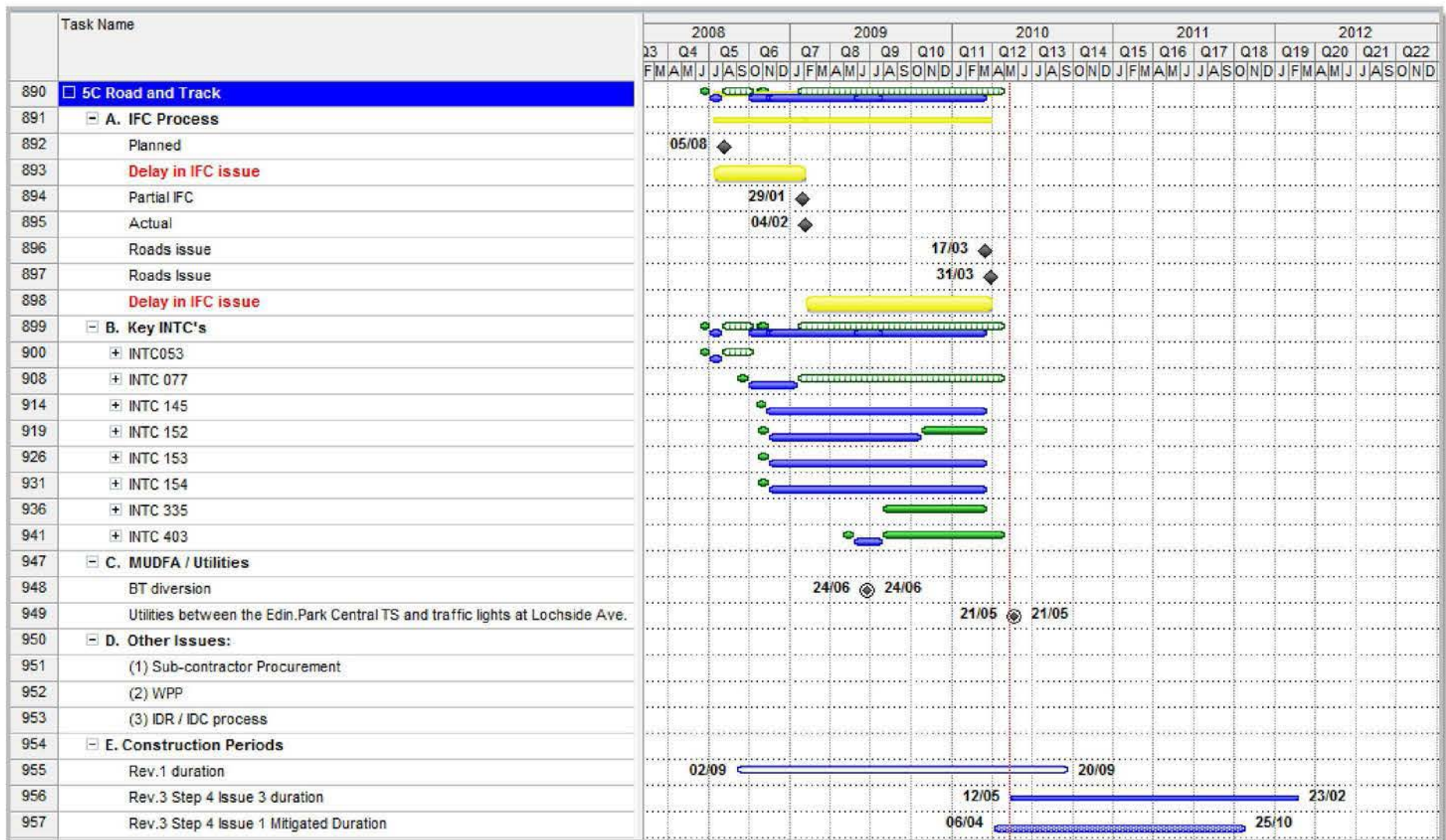
- (ii) **Concurrent issues:** In our opinion the other event detailed above i.e. MUDFA / Utilities has less of a bearing on the late commencement of this area. Whilst in isolation completion on this issue may have been a hindrance to commencement, its significance is considerably diminished by the fact that Infraco did commence. Incomplete MUDFA / Utilities issues will be more significant to the successful completion of the works in this area.
- (iii) **Considerations of dominance:** Delays attaching to agreement on **INTC 262 (IFC Drawing Changes for Section 5B Track Drainage) & INTC 402 (Addition of Starter and Capping Layers in Section 5B)** have clearly affected (meaningful) progress in this area. The delays have in effect three constituent parts (1) Infraco's delay in issuing an INTC from the IFC issue date (2) the protracted timeframe taken by Infraco to provide a compliant estimate following the issue of the INTC; and (3) the time taken by tie to issue an 80.13 instruction following receipt of the estimate. Works are currently progressing along the Guided Busway. However, no progress has been made on either Bankhead Drive or to the North Side of Edinburgh Park Bridge. It is also notable that following initial progress at Balgreen Road to Carrick Knowe, works stopped pending resolution of INTC's 262 & 402. This demonstrates that delays attaching to agreement on **INTC 262 (IFC Drawing Changes for Section 5B Track Drainage) & INTC 402 (Addition of Starter and Capping Layers in Section 5B)** have clearly affected (meaningful) progress in this area.

As such, in our opinion the delay to the INTC process in 5B Road & Track is the dominant / critical factor affecting commencement and hence completion in this intermediate section. **Note:** as yet 30/04/10 INTC 402 had not been instructed by tie under an 80.15 instruction (i.e. delaying commencement).

H Current assessment of

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
INTC 262 estimate period	02/03/09	27/03/09	25	3.57	Lack of Infraco reaction to workface availability after IFC	10/04/09	18/05/09	38	5.43	Delay to 1st IFC	20/08/08	20/10/08	61	8.71
INTC 402 estimate period	28/04/09	18/05/09	20	2.86				0	-				0	0.00
			0	-				0	-				0	0.00
				6.43					5.43					8.7143
2. UPPER LIMIT														
INTC 262 estimate period	02/03/09	27/03/09	25	3.57	Delay to commencement of Balgreen Road to CKB	20/08/08	18/05/09	271	38.71	Delay to last IFC pre-start	20/08/08	10/04/09	233	33.29
INTC 402 estimate period	28/04/09	18/05/09	20	2.86				0	-				0	0.00
Period to INTC notice	20/08/08	02/03/09	194	27.71				0	-				0	0.00
				34.14					38.71					33.286
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = +67 wks	IM Mitigated Period		Infraco Rev.3 Period		IM mitigated period +67wks: this is likely to be INTC issues ranging from delays to provision of estimates (by Infraco) through to delays in issue of instructions thereafter (by tie). Additional works attaching to these INTC's also impact in the form of increased earthworks / drainage. Infraco have also introduced different working sequences. Culpability not clear; range of possibilities - upper / lower limits recognise extremes of liability. Infraco Rev.3 period +77 wks: On the basis that Infraco can mitigate to 67 wks as per IM's analysis then Infraco lower limit restricted to anything in excess of 0 wks. tie liability remains at lower limit of *39 wks (for details on this 39 wk period - see chart opposite) if Infraco responsible for all increased durations. (Clarification required on legal position regarding tie delay to instruct).									
Infraco Rev.3 Period = +77 wks	tie	Infraco	tie	Infraco										
Lower Limit	*39.00	0.00	*39.00	10.00										
Upper Limit	67.00	67.00	67.00	77.00										
Observations on Actual Progress	tie	Infraco												
Analysis of ongoing progress, considered in 'Delay to Finish' periods detailed above.	-39.00													
*Partial tie culpability attaching to INTC 402 ref. Balgreen Rd to CKB. Period														

5C Road & Track



A. **IFC Process:** Initial IFC was **26 weeks late** (planned **05/08/08**; actual **04/02/09**). Although this is noted as being the first IFC date DS advises that there was a partial IFC issued on **29/01/09** addressing Track Vertical Alignment in isolation. Subsequent IFC's however, were necessary to incorporate Roads drawing updates. The first Roads reissue took place on **17/03/10** followed by a further reissue on **31/03/10**. With respect to delays attaching to the Roads reissues there is no information presently available to inform culpability for delay to the foregoing (see Preamble). It is notable however, that as both Trackform and Roads (normally) require the further integration of Infraco design there is a responsibility on Infraco to provide information to SDS for incorporation on time. (It is not known if this did happen). DS also advises that further IFC's are required for tie instructed change to adoption lines at Lochside Avenue. This is a matter for which tie is responsible. Potential reasons for the late issue of IFC's to this area include:-

- 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?

B. **Key INTC's:** From information provided it appears that the Infraco issued 8 no. INTC in relation to this structure; **INTC's 053, 077, 145, 152, 153, 154, 335 & 403**, We are further advised that the aforementioned INTC's are likely to have materially / critically affected Infraco's ability to commence works in accordance with the Rev 01 programme. Details are as follows:-

- (i) **INTC 053:** issued by Infraco on **06/06/08** (in advance of IFC issue). Estimate should have been submitted on or around **02/07/08**. Estimate was received on **28/07/08**; **26 days** later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 053.
- (ii) **INTC 077:** issued by Infraco on **29/08/08** (24 days after IFC issue). Estimate should have been submitted on or around **24/09/08**. Estimate was received on **16/01/09**, **114 days** later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 077; **tie will be culpable for the period to instruction.**
- (iii) **INTC 145:** issued by Infraco on **13/10/08** (69 days after IFC issue). Estimate should have been submitted on or around **06/11/08**. As at 30/04/10, 540 days later, Infraco has yet to provide an estimate. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 145. No instruction issued by tie – **tie will be culpable for the period to instruction.**
- (iv) **INTC 152:** issued by Infraco on **16/10/08** (72 days after IFC issue). Estimate should have been submitted on or around **11/11/08**. Estimate was received on **21/10/09**, **344 days** later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 152; **tie will be culpable for the period to instruction.**
- (v) **INTC 153:** issued by Infraco on **16/10/08** (72 days after IFC issue). Estimate should have been submitted on or around **11/11/08**. As at 30/04/10, 535 days later, Infraco has yet to submit an estimate. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 153; **tie will be culpable for the period to instruction.**
- (vi) **INTC 154:** issued by Infraco on **16/10/08** (xx days after IFC issue). Estimate should have been submitted on or around **11/11/08**. As at 30/04/10, 535 days later, Infraco has yet to submit an estimate. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 154; **tie will be culpable for the period to instruction.**
- (vii) **INTC 335:** issued by Infraco on **27/07/09** (356 days after IFC issue). Estimate should have been submitted on or around **20/08/09**. Estimate was received on **27/07/09**, **on time**. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 335; **tie will be culpable for the period to instruction.**

- (viii) INTC 403: issued by Infraco on **28/04/09** (266 days after IFC issue). Estimate should have been submitted on or around **22/05/09**. Estimate was received on **27/07/09**, **66 days** later than required. **Delay by Infraco; Infraco culpability** for time taken to produce Estimate for INTC 403; **tie will be culpable for the period to instruction**.

INTC's 145, 152, 153, 154 & 335 were the subject of an 80.13 Instruction issued by tie on 19/03/10. Infraco Period Report No 3-1, to 24 April 2010 notes "Trackwork, Earthworks, Drainage Changes from BDDI to IFC have yet to be agreed". There therefore remains the potential that issues attaching to the foregoing may yet prevent / compromise commencement.

- C. **MUDFA / Utilities**: There are two main MUDFA / Utilities issues impacting on this structure; (1) BT diversion carried out under MUDFA (completed 24/06/09; and (2) private and public utilities between the Edinburgh Park Central TS and the traffic lights at Lochside Avenue (which were transferred to Infraco). tie notes that Infraco took an inordinate amount of time to expedite said issues. This resulted in tie cancelling its order with Infraco and contracting the works separately to Clancy Docwra. Forecast completion on these works is expected on or around 21/05/10. These issues have clearly prevented / hindered commencement (of certain areas) within this area. Although there is clear **tie culpability** attaching to this issue, **Infraco culpability** exists in regard to its dilatory approach to the provision of INTC's / Estimates for same.

D. **Other Issues**:

- (i) Sub-Contractor Procurement: Infraco Period Report No.3-1 report to 24/04/10 notes that Infraco intends to sublet the remaining structures on Sections 5A, B and C to Expanded Ltd. We have not yet been advised that works on 5C in particular will extend to 5C Road & Track. Subject to further tie audit. **Delay by Infraco. Infraco culpability**.
- (ii) WPP Process: No information available.
- (iii) IDC/IDR process: Not yet in place. It is not clear whether Infraco will be permitted by tie to commence without this paperwork in place **[Discuss]** **Delay by Infraco; Infraco culpability**.

E. **Construction Periods**:

5C Road and Track					
	Rev.1	Rev.3 Issue 3	Delay	IM Mitigated Rev.3	Delay
Start	02/09/2008	12/05/2010	88.14 wks	06/04/2010	83.00 wks
Finish	20/09/2010	23/02/2012	74.43 wks	25/10/2011	57.14 wks
Cal. Duration	107.00 wks	93.29 wks	-13.71 wks	81.14 wks	-25.86 wks

- (i) Delay to Start: The table above refers to various programme dates. Issue 3 programme shows a delay to start of **88 weeks**; the IM mitigated programme also shows a delay to start of **83 weeks** (but that was based on Issue 1 not Issue 3). Actual delay to start will be longer than above due to INTC resolution process. Primary causes of delay to start as follows:-

- A. IFC process: Initial IFC was **26 weeks late** (planned **05/08/08**; actual **04/02/09**). Although this is noted as being the first IFC date DS advises that there was a partial IFC issued on **29/01/09** addressing Track Vertical Alignment in isolation. Subsequent IFC's however, were necessary to incorporate Roads drawing updates. The first Roads reissue took place on **17/03/10** followed by a further reissue on **31/03/10**. With respect to delays attaching to the above there is no information presently available to inform culpability for delay to the foregoing (see Preamble). **Delay by SDS, SDS /tie or Infraco?**
- B. INTC's 053, 077, 145, 152, 153, 154, 335 & 403: Delays by Infraco in issue of INTC's and subsequent provision of estimates. **Delay by Infraco; Infraco culpability**. Delay on INTC's 145, 152, 153, 154 & 335 up to 19/03/10 when tie issued clause 80.13 instruction. **tie culpability for late instruction on INTC's**.
- C. MUDFA / Utilities: There are two main MUDFA / Utilities issues impacting on this structure; (1) BT diversion carried out under MUDFA (completed 24/06/09; and (2) private and public utilities between the Edinburgh Park Central TS and the traffic lights at Lochside Avenue (which were transferred to Infraco). tie notes that Infraco took an inordinate amount of time to expedite said issues. This resulted in tie cancelling its order with Infraco and contracting the works separately to Clancy Docwra. Forecast completion on these works is expected on or around 21/05/10. These issues have clearly prevented / hindered commencement (of certain areas) within this area. Although there is clear **tie culpability** attaching to this issue, **Infraco culpability** exists in regard to its dilatory approach to the provision of INTC's / Estimates for same.

D. Other:

- **Sub-Contractor procurement**: Infraco Period Report No.3-1 report to 24/04/10 notes that Infraco intends to sublet the remaining structures on Sections 5A, B and C to Expanded Ltd. We have not yet been advised that works on 5C in particular will extend to 5C Road & Track. Subject to further tie audit. **Delay by Infraco. Infraco culpability**.
 - **WPP Process**: No information available.
 - **IDC/IDR process**: Not yet in place. **Delay by Infraco. Infraco culpability**
- (ii) Delay to Finish: Issue 3 programme shows a circa 13 week reduction in duration compared with the timescale in Rev.1 programme. IM mitigated view of Issue 3 also shows a reduction but of 26 weeks. Having regard to Infraco's 'Rev3 Issue 3' programme it is notable that there are now three separate activities now running concurrently for longer periods. Notably however, all of these separate activity durations are longer. This appears to result from 'additional' earthworks and drainage activities. TC accepts that some increase in duration should be recognised but might be reduced on further analysis of durations.

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

- (i) First available date for the meaningful commencement of works to this area is governed by two separate issues; (1) the completion of private and public utility transfers, currently forecast to complete on or around 21/05/10; and (2) BDDI – IFC changes attaching to INTC's 145, 152, 153, 154 & 335 which were the subject of an 80.13 instruction on 19/03/10. Although the latest date for completion on the above attaches to the completion of private and public utility transfers. It is notable that this issue only relates to one section of the 5C Road & Trackworks. tie therefore contends that under its obligation to mitigate Infraco could have made progress in other areas within 5C Road & Track. It was therefore the issue date of 19/03/10 for INTC's 145, 152, 153, 154 & 335 which was the first date at which meaningful commencement could take place.

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 **05/08/08**; this process was not fully complete until the final roads reissue on **31/03/10 (86 weeks late)**. It is not clear if commencement depended on this late reissue or whether earlier IFC’s were sufficiently complete to facilitate progress. Nevertheless delays beyond the issue of the initial IFC on **04/02/09** are matters which may have affected commencement. Responsibility for said delays is uncertain. In our opinion however, the main delaying factor was the protracted INTC process attaching to **145, 152, 153, 154 & 335**. Infraco is culpable for delays in notification and the subsequent provision of estimates attaching to same. tie is likely to be responsible for late instructions attaching. Running concurrently with the above was the late completion of MUDFA / Utility works particularly with respect to the currently incomplete private and public utility transfers. This is a matter for which tie is responsible.

(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:** The protracted delay attaching to the IFC on this structure is likely to have affected commencement. This however, is subsumed by the delays attaching to the INTC process. These delays have in effect three constituent parts (1) Infraco’s delay in issuing an INTC from the IFC issue date (2) the protracted timeframe taken by Infraco to provide a compliant estimate following the issue of the INTC; and (3) the time taken by tie to issue an 80.13 instruction following receipt of the estimate. This process was not complete until such times as tie issued the 80.13 instruction on 19/03/10.

Although works to private and public utility transfers is not yet complete. We are advised that this issue only relates to one section of the 5C Road & Trackworks. tie therefore contends that under its obligation to mitigate Infraco could have made progress in other areas within 5C Road & Track.

As such, in our opinion the delay to the INTC process in 5C Road & Track is the dominant / critical factor affecting commencement and hence completion in this intermediate section.

H. Current assessment of

A. DELAY TO START: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
	tie culpability				Cause	Infraco culpability				Cause	Poss. SDS culpability			
	From	to	Days	Weeks		From	to	Days	Weeks		From	to	Days	Weeks
1. LOWER LIMIT														
INTC process	02/09/08	07/11/08	66	9.43	INTC Est. Delay	25/09/08	16/01/09	113	16.14	Delay to IFC	02/09/08	29/01/09	149	21.29
			0	-				0	-				0	0.00
			0	-				0	-				0	0.00
				9.43					16.14					21.29
2. UPPER LIMIT														
INTC 077 to Start	16/01/09	12/05/10	481	68.71	INTC's Est. 145 to 80.13	07/11/08	19/03/10	497	71.00	Delay to IFC	02/09/08	29/01/09	149	21.29
INTC 077 Est. Period	29/08/08	24/09/08	26	3.71	Late start after 890.13	19/03/10	12/05/10	54	7.71				0	0.00
			0	-				0	-				0	0.00
				72.43					78.71					21.286
B. DELAY TO FINISH: Current view on culpability [analysis of Lower and Upper Limits of culpability]														
IM Mitigated Period = -26 wk	IM Mitigated Period				Infraco Rev.3 Period				IM mitigated period -26 wks: notwithstanding INTC issues extant, this assessment is considered achievable on the basis of reasonable mitigation on the part of Infraco.					
Infraco Rev.3 Period = -14 wk	tie	Infraco			tie	Infraco			Infraco Rev.3 period -14 wks: Infraco clearly accepts the possibility for mitigation. Though currently not to the same extent as noted above. On the basis however that Infraco can mitigate to -14 wks per IM's analysis then Infraco lower limit restricted to anything in excess of 0 wks. tie liability remains at lower limit of -26 wks if Infraco responsible for all increased durations					
Lower Limit	-26.00	-26.00			-26.00	-14.00								
Upper Limit	0.00	0.00			-12.00	0.00								