Appendix 11 - Prioritised Civil Works - Description

Edinburgh Tram Network

Prioritised Civil Works

29 March 2011

Summary

The works defined as 'Prioritised Works' are identified in the Mar Hall Heads of Terms dated 11 March 2011 and have been further developed, as discussed and agreed, through meetings and discussions.

The main items remain as per the Heads of Terms however it was felt prudent to highlight several areas where it would be beneficial to carry out work of low value to secure a programme benefit in the event that agreement is reached which would allow all of the works to proceed from Edinburgh Airport to Haymarket.

The attached schedule identifies work which could be defined as 'Prioritised Works' and contains elements of works which are Ongoing, On Hold and Not Yet Started.

Work which is On Hold and Not Yet Started would only start as a result of a Minute of Variation as envisaged by the Mar Hall Heads of Terms .

This note deals with the clarification of the original envisaged 'Prioritised Works' together with the development of other potential 'prioritised works and some additional comments on other ongoing issues.

We have also included some notes on the Advanced Expenditure of the On Street Target Price.

Prioritised Works

The Main Elements of the 'Prioritised Works' Minute of Variation consists of

- **The Princes Street Remedial Works and any outstanding Target Price works**
- **Haymarket Yards**
- **The A8 Underpass**
- **The Depot Access Bridge**
- **The Depot Building and External Works**
- **The Mini Test Track**
- **Auxiliary Works**

We have prepared the amounts due to be paid under the 'Prioritised Works' Minute of Variation with reference to our Project Phoenix Proposal. i.e. Actual cost of the Subcontract Works.

The amounts noted for the Princes Street Works excluded the cost of the remedial works and represent only the TM and Enabling Works required to implement a full closure on Princes Street which will allow work which was planned to be done under the Target Price to be carried out.

We anticipate that the works in Haymarket Yards will be valued at around £900k. This is based on an assessment of the quantities for this area and subcontractor rates and prices.

It was not originally envisaged under the 'Prioritised Works' Minute of Variation that any works would proceed on the A8 Underpass however CEC have requested that the A8 Underpass be included as part of any 'Prioritised Works'.

Before the works were suspended we were constructing Phases 1, 2 and 4 of the A8 Underpass, therefore there is significant traffic management arrangements and utility protection measures which need to remain in place until work restarts.

Phases 1 and 2 also interact with the 250mm dia watermain feed to the Depot and Scottish Water have previously indicated that they will not permit the connection to happen until such times as this main is completed in its entirety. There is a risk that Scottish Water may revert to this position which would require Phases 1 and 2 to be backfilled and constructed to finished level to allow the installation of the main.

The re-commencement of the works at the A8 Underpass would be highly visible to the public.

Prioritised Works (Contd)

It is anticipated that the Depot Access Bridge structure will be complete by the 3 May 2011 however the connection of the Depot Access Road, which is identified as being carried out under the 'Prioritised Works' Minute of Variation, across the Depot Access Bridge and onto the Gogarburn Roundabout may not be complete until July 2011.

The Depot External Civil works would be expected to be complete by August 2011, perhaps slightly earlier on the assumption of an early start in April.

The value of the remaining works in the Depot has been calculated using, as a base, the Project Phoenix Price from Barr Ltd with the addition of the Mini Test Track.

The civil element of the Depot Building is essentially complete with the exception of minor works related to the integration of Systems equipment.

We have assessed the value of the Mini Test Track using quantities and subcontractor rates.

Auxiliary Works

As a result of the ongoing mediation there are a number of areas across the site where work is currently suspended and it is not envisaged that any work will be done in these areas under a 'Prioritised Works' Minute of Variation however there is an ongoing requirement to maintain traffic management, site safety arrangements and utility protection measures in the meantime.

The following areas come under this category :-

- Section 1A Traffic Management and Safety Fencing to accommodate works to Lindsay Road Retaining Wall and Tower Place Bridge.
- Traffic Management and Safety Fencing Section 2A through 5A, B and C
- Traffic Management and Utility Protection Measures at the A8 Underpass

We have also identified some key areas of work, some of which are comparatively low in value, where it would be beneficial to the future Programme if these works were instructed under a 'Prioritised Works' Minute of Variation.

They are as follows

- **Additional testing in the Murrayfield Retaining Wall Corridor.**

  Through the normal process of submitting and agreeing Estimates under the Infraco Contract (INTC 625) it was identified that there was a need for extensive ground improvement works in the area of Murrayfield Stadium, in particular Retaining Walls S21B and D.

  We have identified that it would be prudent to instruct around this ground investigation work to finalise the design.

  The total cost of this work would be the order of 100k and would include testing and design costs. This process could be complete within 10 weeks of an instruction to proceed. This would allow the design to be finalised in advance of the works commencing in September 2011 thus ensuring the programme for this section of works.

Auxiliary Work (Contd)

- **Water of Leith Sewer Lining.**

  Through the normal process of submitting and agreeing Estimates under the Infraco Contract (INTC 479) it was identified that there was a need for advanced works to protect an existing sewer in the area of the Water of Leith Bridge (S21E).

  We consider that it would be prudent to instruct this work to ensure the Programme in this area, however we accept this structure is not on the critical path.

  The total cost of this work would be the order of 70k. These works could be complete within 8 weeks of an instruction to proceed.

- **Demolition of Plots 96/97 Roseburn Garage**

  Through the normal process of submitting and agreeing Estimates under the Infraco Contract (INTC 368) it was identified that there was a need for additional demolition in the area of Russell Road Retaining Wall.

  The demolition or otherwise of these properties will have a critical effect on the Programme in this discrete area and Section 5 as a whole.

  We require CEC to finalise an agreement with the current owner which allows Infraco to take access and demolish these properties. It would be necessary to start these works in advance of the currently planned date of 1 September 2011 to provide any programme benefit.

  We anticipate that it will take 10 weeks to demolish these properties from an instruction to proceed, the demolition works are likely to cost around £100k.

- **Demolition of Plots 101/102**

  Through the normal process of submitting and agreeing Estimates under the Infraco Contract (INTC 368) it was identified that there was a need for additional demolition in the area of Russell Road Retaining Wall.

  However this additional demolition (Plot 102) may have an impact on another existing property (Plot 101) and this needs to be resolved.

Auxiliary Work (Contd)

- **Demolition of Plots 101/102 (Contd)**

  The options available are to either strengthen and make watertight Plot 101 to allow the demolition of Plot 102 to proceed or alternatively extend the agreement with the current owner to demolish both plots in their entirety.

  Our preferred option is to demolish both properties

  It would be necessary to start these works in advance of the currently planned date of 1 September 2011 to provide any programme benefit.

  Again we understand that there is no agreement with the current owner to allow any of these works to proceed in any event.

- **Russell Road Retaining Wall**

  The early resolution of Plots 96/97 and 101/102 could allow a start of the main construction works on the 1 September 2011.

- **Site Clearance in Section 7A.**

  We have proceeded to clear trees in the area of the Gogarburn Retaining Wall (W14) prior to the start of the nesting season thus removing this constraint from future works. The works is of a nominal value of £20k and will be complete shortly.

- **Testing for Contamination**

  There is a nominal amount of testing required to be done to complete our assessment of the remaining contaminated land on the site.

  Whilst not critical to the overall programme it does allow for the measures for dealing with contamination to be finalised in advance of any works starting in September 2011.

  In addition we require the client to confirm the status of the Planning Application, which he has progressed, for the storage of non-hazardous material on or adjacent to the site. This would need to be in place for the 1 September 2011.

Milestone Schedule Updates

There are two areas of the site where work has been/is in progress and where either the current Milestone Schedule does not represent the works actually carried out or that we have been prevented from updating the Milestone Schedule due to the lack of the issue of a tie Change Order.

They are as follows

- **The Depot Building and External Work**
- **Section 5 Structures generally**

We propose that the 1st and 2nd Mobilisation payments as envisaged under the 'Prioritised Works' Minute of Variation take into account, equally, the fact that the works have been properly carried out and that save for the absence of a tie Change Order the Milestone Schedule would have been updated and allowed the recovery of this cost.

It would not be correct to simply spread any balance due through a new, revised and simplified milestone schedule which would only come into effect after the 1 September 2011.

In respect of the Depot Building and External Works there was, prior to the Mediation, an initiative to resolve many of the outstanding INTCs relating to the Depot Area and there was a general recognition that there was an entitlement to be paid for these works.

The initiative was never concluded given that events were overtaken by the Mar Hall Heads of Terms however we continue to carry a significant cost which has not been reimbursed by way of being able to update the Milestone Schedule.

The amount of work carried out in the Depot Area in advance of being able to update the milestone Schedule is approximately £2 million.

In respect of the Structures in Section 5 we have assessed the cost of work carried out in advance of being able to update the Milestone Schedule to be of the order of £3.5 million.

Target Price

The Mar Hall Head of Terms sets out that the On Street Works shall be paid for on a Target Sum basis and that the mechanism for calculating and amending the Target Sum will be agreed at a later date.

Since the Mar Hall Heads of Terms were signed further discussions have taken place whereby it has been identified that, for a variety of reasons, it would be beneficial to start these works before the 1 September 2011.

During discussions with CEC Roads Department it was identified that to inform both the Design and the Target Price it would be advantageous to identify, by way of trial holes, the condition of the existing road and sub-formation from Haymarket to St Andrews Square.

Additionally and at the same time this resource could identify the location of any utilities to allow CEC and the Infraco to plan and programme the works in these areas to minimise the effect of utilities on the construction of the Civils and Systems works.

We have for the purposes of this initial submission based the cost on our experience of trial holes on Leith Walk (INTC 490)

We understand also that a full closure on Princes Street will be permitted commencing early May 2011 and that the Embargo which prevents work being carried out in July and August will be lifted.

We had anticipated that we would carry out any remaining works on Princes Street in conjunction with the works to Haymarket to Lothian Road and Waverley Bridge to St Andrews Square.

It would be beneficial to take advantage of this closure and execute as much of the outstanding works as is technically feasible. We have not, in the time available, been able to prepare a detailed analysis of the value of the outstanding works, however we have provided an indication, by way of an assessment based on our experience, the value of the outstanding works.

We will work with you to develop this to conclusion to ensure that this element of the work does not prejudice any future mechanism which we will seek to develop and agree for the Target Price as envisaged by the Mar Hall Heads of Terms.

Bilfinger Berger Civils UK Limited
Edinburgh Tram Network

Updated : 29 Mar 11

Prioritised Civil Works

OFF STREET

						Application	42	43	44	45	46	47	48	
						Period End	31-Mar	26-Apr	28-May	25-Jun	23-Jul	20-Aug	17-Sep	
Item	**Description**		**Section**	**Work Description**	**Status**	**Due Certified**	**07-Apr**	**03-May**	**15 Jun**	**13 Jul**	**10-Aug**	**07 Sep**	**05-Oct**	**Total**
1	Prioritised Works	1	Site Wide	Mobilisation		10,240	5,120	5,120						10,240
		2	Site Wide	Preliminaries		7,200		1,200	1,200	1,200	1,200	1,200	1,200	7,200
		3	1C/1D	Princes Street TM /Enabling Works	Not Yet Started	550			350	50	50	50	50	550
		4	2A	Haymarket Yards	On Hold	875			175	175	175	175	175	875
		5	5C	A8 Underpass - Phase I,II & IV Works	Not Yet Started	750			150	150	150	150	150	750
		6	5C	Depot Access Bridge	Ongoing	518		403	115					518
		7	6	Depot Area : Building	Ongoing	1,000	500	500						1,000
		8	6	Depot Areas : External Works	On Hold	2,650		750	750	600	300	250		2,650
		9	6	Depot Areas : Mini Test Track	Not Yet Started	600			200	200	200			600
2	Auxiliary Items	1	1A	Ongoing Maintenance Works	Ongoing	105	15	15	15	15	15	15	15	105
		2	5A	Additional Testing in Murrayfield Corridor	Not Yet Started	110			20		90			110
		3	5A	Water of Leith Sewer Lining Works	Not Yet Started	70					70			70
		4	5A	Demoliton of Plots 97/102	Not Yet Started	100					100			100
		5	5C	A8 Underpass - Ongoing Maintenance Works	Ongoing	525	75	75	75	75	75	75	75	525
		6	5A,B & C	Structures Generally Work in Progress	On Hold	3,425	3,425							3,425
		7	6	Depot Area : Work in Progress including Change	Ongoing	2,000	1,000	1,000						2,000
		8	7A	Site Clearance Works (already underway)	Ongoing	20	20							20
		9	Site Wide	Testing for Contamination	Not Yet Started	20					20			20
Totals						**30,758**	**10,155**	**9,063**	**3,050**	**2,465**	**2,445**	**1,915**	**1,665**	**30,758**

ADVANCED EXPENDITURE OF TARGET PRICE ON STREET WORKS

Item	**Description**		**Section**	**Work Description**										
1	Target Price Works	1	1C/1D	Advanced Site Investigation works in Section 1C/1D	Not Yet Started	400			100	100	100	100		400
		2	1C/1D	Princes Street Outstanding Works	Not Yet Started	350				50	100	100	100	350
Totals						**750**	**0**	**0**	**100**	**150**	**200**	**200**	**100**	**750**

Appendix 12 - CEC Approvals – Technical Approval Comments

Suzanne Smith

From: Andy Conway [Andy.Conway@edinburgh.gov.uk]
Sent: 05 April 2011 17:21
To: Sue Bruce (Chief Executive); Dave Anderson
Cc: Colin Smith; Bob McCafferty; Ritchie Somerville; Marshall Poulton
Subject: Tram - CEC Approvals

Sue/Dave,

A further tram update.

We have continued to review the lighting, tram stops and roads design today and I have updated the outstanding technical approval comments table. We are now down to 85 outstanding comments remaining.

I have started to draft my consolidated report for all the approvals and consents and I intend to issue that by close of business tomorrow.

We have also received and approved out first Planning Variation submission (Planning gave formal approval for the A8 underpass in 16 hours) – that was a great turnaround achievement and if the rest follow that pattern then we should easily conclude the remaining 32 by 30 April (18 of them being between the Airport and York Place).

Date	Open Technical Approval Comments	Open Technical Approval Comments %	Closed Technical Approval Comments	Closed Technical Approval Comments %
24-Mar-11	2782	31.3	6099	68.7
25-Mar-11	2736	30.8	6145	69.2
26-Mar-11	2531	28.5	6350	71.5
27-Mar-11	2133	24.0	6748	76.0
28-Mar-11	1648	18.6	7233	81.4
29-Mar-11	1639	18.5	7242	81.5
30-Mar-11	1568	17.7	7313	82.3
31-Mar-11	1431	16.1	7450	83.9
01-April -11	1258	14.0	7723	86.0
02-April -11	394	4.4	8487	95.6
04-April-11	278	3.1	8603	96.9
05-April -11	85	1.0	8796	99.0

Regards

Andy Conway

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EDINBURGH TRAMS

REPORT ON PROGRESS SINCE COMPLETION OF HEADS OF TERMS TO 8TH APRIL 2011

Appendix 13
Design and Consent Issues (as at 30th March 2011)

Design Issues

1. Timelines for close out of design

   CEC have stated that timeline for AIR to HAY is 07 April 2011 which concurs with Infraco understanding; however, CEC believe deadline for remainder of route is 01 September 2011. Infraco understand that deadline is end of April 2011 and are aiming for this date. To date, CEC and Infraco working very well together to close out remaining issues. Outline programme below:

   14/03 – 20/03 – Tram Stops, Critical Comments (75 % complete)
   21/03 – 27/03 – Roads, Street Lighting, OLE, Road Safety Audits, Ducting etc (50% complete)
   28/03 – 03/04 – Structures, remaining Informatives (not close out above) (0% complete)
   04/04 – 07/04 – close out of final issues

   CEC also expressed desire for Phase 1b design to be completed (excluding integration of Infraco proposals). Infraco understand that this is excluded from new scope.

2. Design that will not be closed out by 30 April 2011

   i) Edinburgh Gateway
   ii) Picardy Place / Section 1C2 Roads Approval (& Planning Variation for this batch)
   iii) St Andrew Square Public Realm works (tie in with Tram Works)
   iv) Airport Canopy & Kiosk
   v) Roseburn Viaduct
   vi) York Place Terminal Point
   vii) A number of Planning Variations (process only)
   viii) Murrayfield RWs (S21 B - D) Ground Improvement Works
   ix) Close out of final signalling works
   x) Wall Mounted Lighting
   xi) Final IDCs and Design Assurance Statements (DAS)

3. Design that will not be closed out by 01 July 2011

   i) Edinburgh Gateway
   ii) Final IDC and DAS

4. Traffic Modelling

   CEC have accepted that SDS has done "all they can within the constraint of the LOD". Direction required from CEC as to whether Traffic Modelling can be approved as it stands or whether additional works are required outwith LOD prior to approval being granted (in which case, Approvals by end of April 2011 may not achievable). This applies to approximately five or six junctions within on-street section and impacts on signalling design.

Traffic Modelling still not signed off. This is impacting on Siemens ability to complete Traffic Light Control Design. This needs to be elevated for resolution ASAP to complete works by end April 2011.

5. TNC 129 Gogar Castle Access Road

New TNC issued by tie – letter INF CORR 7510/DB dated 11 March 2011 (copy attached). Redesign of road required to avoid land take issue (land not procured by tie). This impacts on "mini test track" and will require CEC Technical Approval. The scope of this change was unknown prior to issue of letter by tie.

Instruction required from tie.

6. TNC 130 Depot Access Road, Hammer Head

New TNC issued by tie– letter INF CORR 7508/DB dated 11 March 2011 (copy attached). Design options requested to be developed prior to selection of preferred option. Detailed design and CEC Technical Approval will be required. This potentially impacts on final Approvals for the Depot Access Road. The scope was unknown prior to issue of letter by tie.

Instruction required from tie.

8. Forth Ports – Tower Place Bridge – Ramp Issue

CEC have confirmed steps solution will be acceptable and this will remove any issue with Forth Ports. Infraco are progressing design solution.

9. Forth Ports Licence – Access Issue

Forth Ports Licence: we issued a program to tie which detailed the completion of all works within the TM closure (this highlighted issues such as unresolved Changes and outstanding design). This was agreed between Infraco and tie as the route for the licence approval. tie then disputed the works content (unresolved issues) and we revised the program and duration to only include works over the structure.

According to tie they have used this program duration/work scope for the Licence application to Forth Ports, comments via Malcolm Butchert (tie) indicate that Forth Ports want all the work scope for the closure and 'are of a mind not to grant the licence'.

From a Forth Ports perspective they would only like one more closure with all the work scope completed in it to cause minimum disruption.

10. Design Assurance Statements (DAS)

Infraco propose meeting with CEC to explain DAS and IDR / IDC process to give them comfort in this process.

11. Scottish Water (SW) Approvals issues

Number of approvals still outstanding (refer below Outstanding Consents list). Approvals issued by SW since October 2010 have a limited 6 month approval period (i.e. the approval lapses after 6 months and the drainage design needs to be resubmitted to SW every six months). Infraco's position is that this 6 month approval period is unreasonable – particularly for on-street sections where there is no net increase to the SW network. This has been raised to tie; however, tie has stated this is Infraco's issue to resolve with SW.

CEC should note that this will impact on the Design and Approvals between SAS and NEW.

Infraco to approach SW with proposal to resolve 6 month approval issue.

12. SW Depot Pipe Material Approval

Decision expected from SW by 01 April 2011.

13. PSCC and ICP Liaison meetings

Confirmed and agreed that management of the ICP is to remain with tie.

14. Scope of Works for Terminal Point

It was confirmed on 22 March 2011 that Terminal Point will be York Place Cross over.

15. Cathedral Lane Substation

Infraco will progress the original Cathedral Lane Substation Design (based on conversion of existing toilet block). Should the Henderson Global development proceed, a change order would be required.

16. Additional Cycle path at Lindsay Road – Hawthornvale

This additional design was introduced by CEC at meeting on 29 March 2011. CEC are to issue the scope of works to Infraco. Infraco will progress design but this was not considered within Phoenix and Infraco require change order from tie.

17. OLE Foundation – Utility Conflict at Princes St

    Building fixing option for two of the three poles; however third pole cannot be a building fixing. Will tie divert utilities to avoid conflict?

18. SEPA W14C CAR Licence

    SEPA confirmed on 29 March 2011 that flooding issue resolved and that SEPA had sufficient information to progress derogation and licence application. This is due end of May 2011 (statutory period) however, SEPA working towards completion date of end April 2011.

19. W18 and W4 – LOD issue

    Issue with Retaining Walls and LOD is to be resolved.

20. 250mm main connection (for Depot Water Supply)

    Infraco require date from tie for completion of 250mm main works. Infraco understand tie have put this work out to tender recently.

21. SRU / Murrayfield Accommodation Works

    Infraco carried out design works for tie; who, separate to Infraco Contract, completed the construction works. Change for as builts as well as a number of other issues need to be resolved.

Outstanding Consents

1. CEC Planning

   i) Access Road at Ocean Terminal – to be submitted
   ii) Listed Building Consent for 4 Dublin Street – to be submitted
   iii) Roseburn Viaduct Prior Approval – to be submitted
   iv) Planning Variations including OLE positions. 12 of 36 planning batches approved to date. Remainder are split as follows: 2 relate to Priority Works; 8 off street; and 14 on street.
   v) Planning Informatives- to be submitted
   vi) Trackform – meeting with CEC on 31 March 2011 to update on progress with agreed concept design.
   vii) Tram Stop Informatives – Infraco – final details being closed out this week. Update and submission of planning drawings required to close out.

2. CEC Technical (Roads) – to be submitted

   i) Section 1D - Grosvenor Street (amendment due to TRO) – OLE and Roads design issues to be resolved.
   ii) Picardy Place – design progressing based on scope of works issued by tie that excludes any Henderson Global development.
   iii) Technical Informatives – remainder to be submitted and closed
   iv) Critical Comments - 35 of 46 have been closed (76%)
   v) Trackform – CEC Technical are comfortable with current proposal – significantly reduced approval period can be achieved with close development of final solution (refer attached drawing ref ULE90130-SW-SKH-00133).
   vi) Overall tram and traffic signalling strategy – impacted on by Traffic Modelling (refer Item 3 of Design Issues)
   vii) Junction 91 (Section 2A) issue to be finalised - operator inputs required to resolve
   viii) Signalling and ducting details to be submitted to close Informatives

3. CEC Technical (Roads) – submissions with CEC

   i) Revised Drainage Design – Section 1A, 1B, 1C3, 2A, 7A
   ii) Traffic Modelling
   iii) Section 2A Close out Report – may now not be required.
   iv) Section 1A3 Close out Report – may now not be required.
   v) Close out of submitted Technical Informatives
   vi) Close out of Earthing & Bonding Informative
   vii) CEC to provide info on existing comms links for CCTV to permit design to be finalised
   viii) CEC / TEL to respond to Bus Tracker proposal

4. CEC Technical (Structures)

   i) Murrayfield Retaining Walls S21B – D – Ground Improvement Works
   ii) Edinburgh Gateway – Retaining Wall – preferred design option to be advised by tie / Transport Scotland following meeting on 21 March 2010.
   iii) Constitution Street Cemetery Wall (CEC Project); however interface with OLE foundation design. Infraco await cemetery wall details from CEC. Potential for change if special OLE Foundation required.
   iv) Step detail at Tower Place Bridge

5. CEC Building Control

   i) Edinburgh Gateway Tram Stop - Building Warrant – Infraco to respond to CEC comments
   ii) Edinburgh Airport Kiosk and Canopy – Building Warrant – tie provided final scope of works on 24 March 2011. SDS progressing design for Building Warrant.

6. Scottish Water

   i) Section 5A Drainage Approval
   ii) Edinburgh Gateway – 1525 sewer diversion and interface with Retaining Wall
   iii) Depot Water connection – pipe material / specification (and 250 mm main connection by tie)

7. SEPA

   i) W14C – CAR Licence – with SEPA for approval.

8. Third Party Approvals

   i) Consents and requirements required for 4 PIDs located outside LOD (BAA approval etc) – tie / CEC to advise
   ii) TEL – TEL to respond to proposal for Control Centre Disaster Recovery location
   iii) Forth Ports Licence issues

9. Network Rail

   i) Edinburgh Gateway – Retaining Wall - preferred design option to be advised by tie / Transport Scotland following meeting on 21 March 2010. Confirmation from NWR still required.

Appendix 14 - Red Flag Briefing Note – Scottish Water

Scottish Water

1. Introduction

The following briefing note has been prepared to highlight the current issues with Scottish Water (SW) that are impacting on the ability of Infraco to complete the design and obtain all necessary consents; and, any other SW issues that may impact on tram project.

2. General Background

tie selected Business Stream (BS) as the 'licensed provider' to manage the SW approval process for the Edinburgh Tram Project. At this time, SDS raised concerns with tie (22 May 2008) that with a new and lightly tested process of consents, there was limited confidence of the approvals process or the timescale to undertake the process.

The first formal applications were made to BS on 29 May 2008. It should be noted that the submission in May 2008 by SDS contained all the necessary information as agreed by BS and their representative at that time. Following further discussions between SDS and BS in early June 2008, an additional submission was made on 13 June 2008 in an attempt to speed up the approval process.

In August 2008, SDS received correspondence from SW who advised that they did not have any of the applications. At a meeting on 01 September 2008, SW representatives appeared to have little knowledge of the issues or likely impact on the project.

Despite SW having a dedicated Edinburgh Tram "team" in place, there continues to be a slow and inefficient approval process. SW concerns, issues etc are not being raised by BS / SW to Infraco or SDS in a timely manner, causing delay and frustration to the design and construction process.

3. Outstanding Items

Item 1: Depot Water Connection – Pipe Material Selection Approval

There is a long history of frustration and confusion in regards to the SW Approval for the Depot Water Connection that can be attributed to the communication issues both internally within SW and between SW and Business Stream as noted in General Background above. Further information specific to the Depot Water connection issue can be provided if required.

Infraco held meeting with SW on 29 March 2011 to request second opinion from SW based on the chemical testing and expert advice provided by Infraco. SW committed to providing a decision by 01 April 2011. Decision not received as of close of business 01 April 2011. Infraco followed up with SW on 01 April 2011 and they committed to provide a decision by 04 April 2011.

A verbal confirmation from SW (Public Health Officer and Customer Connections Manager) was provided to Infraco on 04 April 2011 with email confirmation to be issued by 05 April 2011.

ACTION: Infraco to forward SW email confirmation to Colin Smith for information once received

Item 2: Outstanding Approvals

As of 04 April 2011, Infraco still require SW Approval for Section 5A. This sub section was issued to Business Stream and Scottish Water on 05 November 2010. SW has confirmed this is technically acceptable; however, the formal approval is still to be received.

ACTION: C Smith to elevate this issue to close out the remaining Approval

It should also be noted that Section 3 (Phase 1b) Approvals are outstanding from SW; although these are no longer a requirement for Infraco to obtain or maintain these Approvals.

ACTION: C Smith to note

Item 3: Six Month Period for Approval

Prior to October 2010, Approvals received from SW did not have a six month time limit – i.e. the design did not need to be resubmitted six months from the date of Approval. A total of 13 subsections were approved on this basis by SW.

On 07 October 2010, Infraco received Approval from SW for Section 1C1 & 1C2 with a time limit of six months on the Approval. This perceived "new approach" by SW was raised with tie upon receipt of the Approval. In addition to raising this directly with SW, Infraco requested tie to raise this to SW to seek clarification on why this condition has been imposed on the Tram Project; particularly within the on-street sections when there is no net increase in discharge due to the tram works and the proposed design is merely reconfiguring or improving the existing drainage design for Scottish Water. No response has been received from tie or SW in this regard.

At the start of April 2011, Infraco / SDS have approached SW to arrange a meeting to provide clarity and minimise the work required for all parties and to discuss how best to manage the re-application process. The intention is to hold this meeting week commencing 04 April 2011; however, we await confirmation from SW.

ACTION: Infraco to update C Smith at Design & Consents meeting on 13 April 2011

Item 4: OLE Base / SW Infrastructure Clashes

SW advised tie and Infraco at a meeting in September 2010 that they had concerns over OLE bases being built over their infrastructure. tie took the action to resolve this at Board level with SW. This appears to have not been progressed and SW (John Flett) confirmed in an email on 31 March 2011 to Infraco that *"SW legal have advised that OLE bases cannot be built over sewers (or water mains); however, build-overs will be applicable for track slab construction (non OLE bases)."*

This impacts on potentially 50 to 80 OLE bases (primarily on-street). This has very significant impacts in regards to the OLE and Roads design, CEC Technical and Planning Approvals etc.

It should be noted that under the Tram Acts, the Council, as authorised undertaker, has the powers to construct the tram which includes all necessary infrastructure including OLE bases.

ACTION: C Smith to elevate this issue within CEC for discussion with SW

EDINBURGH TRAMS

REPORT ON PROGRESS SINCE COMPLETION OF HEADS OF TERMS TO 8TH APRIL 2011

Appendix 15 - Design & Build – Design Tracker

Edinburgh Tram Network

Interdisciplinary Design Check (IDC) Procedure

Doc. Ref: ULE90130-SW-PRE-00005 V5

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01st May 2007

AUTHORISATION PAGE

Title: Interdisciplinary Design Check (IDC) Procedure				
Approvals	**Name**	**Position**	**Signed**	**Date**
Author	A Bishop	Consultant	[redacted]	1 May 07
Reviewer	K Derrington	Design Manager		1/5/07
Technical Approver	C Mason	Engineering Manager		1 May 07
Project Manager	J Chandler	Project Manager		2/5/07

Revision History

Ver No	Date	Description	Prepared By
1	27 Mar 06	Draft for comment	M Stacy
2	4 Apr 06	Draft for comment	M Stacy
3	10 April 06	Issued to SDS	M Stacy
4	22 May 06	Issued to SDS	M Stacy
5	01 May 07	Issued to SDS	A Bishop

Distribution

Ver No	Date	Name	Role	Company
1	27 Mar 06	J Chandler, C Mason	Internal review	PB
2	4 Apr 06	J Chandler, C Mason	Internal review	PB
3	10 Apr 06	SDS – SDMs, DTLs, EM	Action procedure	SDS
4	22 May 06	SDS – SDMs, DTLs, EM	Action procedure	SDS
5	01 May 07	SDS – SDMs, DTLs, EM	Action procedure	SDS

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1 INTRODUCTION

1.1 General

During the design process for the Edinburgh Tram Network (ETN) System (referred to hereon as the permanent works) there are various categories of requirements that must be met before the overall System Design is acceptable.

1.1.1 Fundamental and Interdisciplinary (Supplier) Requirements

Firstly, there is the need to meet the fundamental requirements of functionality, performance and safety in order for the System to provide the service it is intended for. However, as the individual disciplines designing the permanent works develop the solution to achieve this they encounter the additional requirements that arise from the interfaces that they share with each other that include dependencies, risk mitigation, co-location and interaction. These requirements (identified as 1st Party Interfaces) are met through the interdisciplinary design coordination that takes place during the System Integration's interface management process.

1.1.2 Acquirer Requirements

Secondly, there are requirements of acquisition throughout the lifecycle of the System. These comprise criteria regarding the System's constructability (including commissioning), operability, usability, maintainability, changeability and disposability, both for the currently planned works, referred to as the Initial Works, and, through future proofing, the possibility of and opportunity for economic change at some later stage in the System's Lifecycle. These requirements (identified as 2nd Party Interfaces) are met through the Client's Comments and Approval Process for design elements.

1.1.3 Social, Built and Natural Environment Requirements

Finally, there are the various requirements imposed by the external parties of the Host Environment that need to be addressed and which result from statutory demand and consultation with external stakeholders. These requirements (identified as 3rd Party Interfaces) are met through the Approvals and Consents (and Acceptance) Process.

1.1.4 The Integrated Design

All the requirements identified above are managed and monitored consecutively (in accordance with the design disciplines' engineering plans) until met and their development formally recorded for traceability by the designers as the designs progress. This is an ongoing process taking place on a day to day basis punctuated by formal Intermediate Design Reviews (IDRs – see ULE90130-SW-PRE-00034 for more details) at which all designers of the permanent works meet to review their individual and coordinated progress. These review meetings are held so that the Project Management Team is able to monitor and assess progress, including the implementation of any recovery measures should they be necessary, to ensure that the works will be technically compliant, completed on time and to budget. The actual review process is managed by the Project Design Management Team, operated by the Design Team Leaders (DTLs) and facilitated and supported by the Engineering and Systems Integration Team.

1.1.5 Preparing for Final Design Submission

Design elements for information, comment or approval, whether system wide or section wide, may be submitted as and when required throughout the design process. However, for final approval, designs must be submitted in complete packages. System wide designs are submitted as a sub system package and section wide designs as packages comprising all the relevant design elements of each discipline for that section or sub section. Before any design is submitted for final approval the design

team leaders responsible for designing the permanent works check that all fundamental requirements have been met, all interfaces are successfully coordinated and closed out, with appropriate records as evidence to demonstrate this, and all the necessary checks conducted.

1.1.6 Interdisciplinary Design Check

Because the interdisciplinary design coordination requirements are supplier, rather than acquirer or host environment developed and not predefined, the DTLs commit to one final check in order to provide the assurance that their designs are fully integrated; this is the Interdisciplinary Design Check (IDC) and is the final stage of interdisciplinary design coordination. When the IDC has been successfully completed and any outstanding issues resolved, clean IDC Certificates are raised as proof of closure and are submitted with the design(s).

1.2 Document Purpose

The purpose of this document is to provide a procedure for the Interdisciplinary Design Check (IDC) of the designs in readiness for submission to ***tie*** for final approval.

1.3 Technical Scope

The technical scope of this document covers the interdisciplinary requirements for all designs of the permanent works for the tramway and associated works. The full technical scope can be found in the documents System Architecture Specification (ULE 90130-SW-SPN-00058), Interface Specifications and the interface register (a live document and database of interface records developed and maintained throughout the design process).

1.4 Scope of Work

The scope of work covers the final checking of all technical interfaces between the design disciplines for the permanent works to ensure that all the interfaces have been captured and closed out. Should there be any outstanding interfaces or design coordination issues identified they are to be closed out, records kept of all the details and the IDC re-run until clear. An IDC Certificate is used to provide a record of the IDC process and all relevant references.

IDC, as the final activity of interdisciplinary design coordination of the designs, is part of System Integration and Interface Management. For details refer to the System Integration Plan and Interface Management Procedure (ULE 90130-SW-PPN-00029 and ULE 90130-SW-PRE-00019 respectively).

2 RESPONSIBILITIES

2.1 Design Manager

The Design Manager (DM) is responsible for the IDC process and will ensure it is conducted to programme and that appropriate engineering and logistical support is provided to the design teams.

The DM will take particular responsibility for controlling the overall design workflow for system wide designs and is responsible for planning and initiating the system wide IDCs and ensuring that the relevant disciplines partake at the appropriate time and complete their IDCs to programme.

2.2 Engineering Manager

The Engineering Manager (EM) is the owner of this document and will liaise with the DM on a regular basis (normally at least once a month) to ensure that the overall design coordination and review process is working efficiently so that IDC can be initiated as and when required.

The EM is responsible for ensuring that the IDCs are of the required technical standard, that the appropriate disciplines take part in the IDC process and that they deploy suitably competent personnel.

2.3 Section Design Managers

The Section Design Managers (SDMs) take direction from the DM. They are responsible for controlling the overall design workflow for their respective sections, including meeting programme schedule and ensuring the necessary engineering and logistical support is provided to the design teams. They are responsible for planning and initiating the section wide IDCs and ensuring that all relevant disciplines partake at the appropriate time and complete their IDCs to programme.

2.4 Design Team Leaders

The Design Team Leaders (DTLs) are custodians of their respective design and are responsible for the technical content therein meeting all the various requirements, including those associated with the coordination of the interfacing elements of the other disciplines that are party to the design of the permanent works.

The Design Team Leaders (DTLs) are responsible for initiating the IDCs and ensuring that all relevant disciplines partake at the appropriate time and complete their IDCs before submission of the design packages.

The DTLs liaise with the SDMs for guidance on preparation and scheduling of design submissions. In the event of a conflict between the SDMs the DM's decision is final. Upon completion of IDC the DTLs are responsible for the signature of check and obtaining the signature of approval *(from the nominated approver identified in their engineering plans)*. The DTL will include signed copies of the IDCs with the relevant designs being submitted and place a copy on the Electronic Document Management System (EDMS).

2.5 Systems Integration Manager

The Systems Integration Manager (SIM) is responsible for the interface register and keeping all the records of technical interface coordination up to date. These records are the formal results of interdisciplinary design coordination. The SIM will provide supporting information to the DTLs whenever they need it, particularly when they wish to interrogate the records to review and/or confirm closure of their respective interfaces.

2.6 Technical Assistant/Systems Integration

The Technical Assistant (TA) for Systems Integration is responsible for liaison between the various parties and will provide general assistance and support to the DTLs for their coordination activities.

3 PROCEDURE

*(IDCs will be formally scheduled and appear on the project programme. They will be undertaken towards the end of the design phase for each system wide design submission and each section/sub-section design submission in preparation for submission to **tie** for final approval. Deliverables may only be formally submitted external to SDS after an IDC has been successfully completed).*

STAGE 1 – REQUEST PREPARATION OF IDC CERTIFICATE

At least three weeks before submission date the DM (for system wide submissions) or the relevant SDM (for section submissions) will email all DTLs giving them notice to raise their IDC Certificates.

(Preparation request date will be shown on the programme as "IDC" and will be three weeks before the submission date shown on the programme).

STAGE 2 – PREPARATION OF IDC CERTIFICATES

Upon being given notice all DTLs will prepare their IDC Certificates by completing all the relevant boxes on the certificates in order to identify the sub section or system for which designs are to be submitted for final approval, to provide a certificate no. and programme code, to identify interfacing parties in accordance with the current interface matrix (on the EDMS) and to list all documents and/or drawings for submission.

STAGE 3 – REGISTER IDC CERTIFICATES WITH SYSTEM INTEGRATION MANAGER

After preparation is complete each DTLs will email their IDC Certificate to the SIM who will check that all IDC Certificates have been received and agree with the current interface matrix (on the EDMS).

STAGE 4 – ATTACH INTERFACE DATA TO IDC CERTIFICATE

After checking that all IDC Certificates agree with the current interface matrix (on the EDMS) the SIM will attach the extracts from the current interface register (a database document under the direct control of the SIM) relevant to each IDC to each IDC Certificate and email the IDC Certificates with these details attached back to all the relevant DTLs respectively.

STAGE 5 – ATTACH DOCUMENTS AND DRAWINGS FOR SUBMISSION TO IDC CERTIFICATE

After receiving their respective IDC Certificates back from the SIM complete with the interface register data all DTLs will attach their documents and drawings intended for submission to the IDC Certificate with the interface register data attached and will email this package to all DTLs with whom they share an interface. ***Please do not send it to everyone just "To be sure"; this overloads the recipients.***

(Note: the interface register data may be broken down selectively so that only the relevant sections are sent out to interfacing parties and not the whole data block – to be advised).

STAGE 6 – INTERNAL INTERDISCIPLINARY DESIGN CHECK COMMENCES

The individual design teams will be familiar with the designs of their interfacing partners through the IDR Process and the majority of the interfaces, if not all, will have been closed out at this stage.

However, each DTL will hold an internal review with their respective design teams and conduct a thorough check of the designs and interface data received to confirm whether or not there are any additional interfaces or changes to be made. All output from this review will be formally recorded in

the form of comments on the official Design Review Report (DRR - appended to the IDC Certificate); even if there are no additions and/or changes discovered.

STAGE 7 – EXTERNAL INTERDISCIPLINARY DESIGN CHECK COMMENCES

Upon completion of the internal interdisciplinary design check each DTL will commence liaison with their interfacing DTL partners to conduct an external review of the interfaces and confirm whether or not there are any (further) additional interfaces or changes to be made. External liaison may be conducted by holding meetings, through telephone conversations and/or by email communication. *(The DM or relevant SDM will have the authority to decide whether or not a full and formal design review, involving as many teams as required, is held).* All output from this review will be formally recorded in the form of comments on the official DRR; even if there are no additions and/or changes discovered.

STAGE 8 – CLOSURE OF INTERDISCIPLINARY DESIGN CHECK

Through their liaison the DTLs will close out all open interfaces and the designs will be revised accordingly where necessary. All deliberations will be recorded by the DTLs on their DRRs as a continuation of the issues so that full traceability is achieved. The DTLs will advise the SIM of updates to interfaces (by copy of the DDRs and other relevant communications) and the SIM will update the interface register accordingly to demonstrate full closure of all interfaces.

STAGE 9 – INTERDISCIPLINARY DESIGN CHECK CERTIFICATION

Having closed out all interface issues the DTLs will place a tick in each box where there is an interface and sign off their final IDC Certificates as "Clean". They will include the DRRs as attachments to demonstrate how they achieved closure so that IDC, the final activity of Interdisciplinary Design Coordination, may be audited later if required. They will complete two copies and sign both.

After signing, the DTLs will each send their IDC Certificate to their nominated approver (identified in their respective engineering plans) for them to approve. When the approvers have satisfied themselves that the IDCs have been properly conducted and completed they will sign the certificates as approved (two copies, each signed for each IDC Certificate).

STAGE 10 – INTERDISCIPLINARY DESIGN CHECK COMPLETED

After signing the IDC Certificates the approvers will return them to their DTLs. The DTLs will send one copy to the DM or SDM managing the design package for submission and the other to the Document Controller for lodging on the EDMS in accordance with document control procedures.

4 REFERENCES

4.1 Intermediate Design Review (IDR) Procedure (ULE90130-SW-PRE-00034)

4.2 System Architecture Specification (ULE90130-SW-SPN-00058)

4.3 System Integration Plan (ULE90130-SW-PPN-00029)

4.4 Interface Management Procedure (ULE90130-SW-PRE-00019)

4.5 Document control procedures not addressed here (refer to ULE90130-SW-SW-PRE-00001)

4.6 Included as Appendix A - IDC Certificate - comprises several information fields for it to identify - the author discipline, the subject system and/or section, the certificate's identification within the project program and document management system, the design element drawings and/or documents under submission, the other disciplines party to the design of the permanent works, those disciplines with which an interface is shared (including confirmation of check and acceptance). Additional field is attached at the bottom of the information field matrix for the signatures of check and approval.

4.7 Included as Appendix B - Design Review Report (DRR).

A1 APPENDIX A - IDC CERTIFICATE

ULE90130-xx-IDC-xxxxx v x

(Hummingbird ref #24479. Save a copy as a new document with document type 'IDC').

CERTIFICATE of IDC

Edinburgh Tram Network Pr

IDC :Discipline and Section

WBS Activity ID
Certificate ref and # no. *(Hummingbird)* ULE90130-XX-REV-NNNNN

Drawings/Documents for submission

Drawing/Document No.	Drawing/Document title
ULE90130-	
ULE90130-	
ULE90130-	
ULE90130-	
ULE90130-	
ULE90130-	
ULE90130-	
ULE90130-	

Disciplines for the Permanent Works	DTLs	Discipline responsible for IDC	Interfacing Disciplines	All comments addressed and closed out. Tick	All comments addressed and closed out. Date	Comments
		Place ticks ✓	✓			If brief use this column. If more detailed refer to and attach an IDC Comments Sheet (Design Review Report). When all comments have been addressed and closed out the IDC may be considered as complete and this Certificate signed accordingly.
1 Tram (TRM)	Tony Goodyear					
2 Track (TRK)	Tony Jory					
3 Track Auxiliaries (TRA)	Mike Reeves					
4 Roads (RDS)	Malcom Bissett					
5a Structures by PB (STR-P)	Paul McQuade					
5b Structures by Halcrow (STR-H)	Colin Walker					
6 Traction Power Supply (TPS)	Graeme Evans					
7 Substations (SUB)	Ian Brown					
8 Depot (DEP)	Ian Brown					
9 Tram Stops (STP)	Ian Brown					
10 Overhead Line Equipment (OLE)	Farhad Janani					
11 Supervisory, Control and Comms (SCC)	John Christoffersen					
12 Integrated Fare Collection (IFC)	Ian Sproul					
13 Low Voltage Supplies (LVS)	Ian Brown					
14 Street Lighting (STL)	Paul Riley					
15 Drainage (DRN)	Bruce Leatherbarrow					
16 Ducting (DUC)	Russell Cohen					
17 Utilities (UTL)	David Pluse					
18 Geotechnical (GEO)	David Raeside					
19 Environment (ENV)	Louise Hill					
20 Landscape (LSC)	Ian Brown					

Checked b	Position:	Date:	Signature:
	Design Team Leader		

A2 APPENDIX B – DESIGN REVIEW REPORT (DRR)

ULE90130-SW-REV-00016

(Hummingbird ref #24088)

Edinburgh Tram Network Project – Design Review Report (DRR) for IDC

Project No.	(IDC) Discipline and Section	(IDC) Certificate Reference
ULE 90130		

Interfacing Party and Comment No. *(code/000)*	Reviewer's comment(s)	Action taken to close out comment(s)	Accepted (√)

BSC Project Specific Procedure –

Design Assurance Statement (DAS) & Interdisciplinary Design Check (IDC)

BSC Consortium	
Position	**Date**
BSC Project Director	22/9/09
BSC Deputy Project Director	22/09/09

Inter Discipline Checking Process			
	Name	**Position**	**Date**
Checked by (BB)	Colin Brady	Technical Director	
Checked by (Siemens)	Michael Wilken	System Engineering Manager	15/9/09
Reviewed by (CAF)	Antonio Campos	CAF Project Director	9/10/9
Checked by (RB)	Douglas Ross	Quality Manager	14/09/09
Author	Stefan Rotthaus	Civil Eng. Manager	14/09/09

Document History			
Rev.	Issue Date	Description of Change	Author
A	02/09/2009	First Issue	Stefan Rotthaus

This document/procedure applies only to goods / services delivered to the by BSC under the Infraco Contract. CAF's scope delivered under the Tram Supply Agreement and Tram Maintenance Agreement is not covered by this document. The procedures/documents equivalent to be applied by CAF will be established according to the TSA and TMA, as and where required by these agreements

REVISION	SUMMARY OF CHANGES	
	REFERENCE	DESCRIPTION
A	N/A	First Issue

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1 INTRODUCTION

The intension of this document is to define the requirements on the Design Assurance Statement (DAS) and the Interdisciplinary Design Check (IDC) as part of the overall Design Management Plan and its relation to the Interface Management Process.

1.1 SCOPE

The DAS of the civil designer for each section, the DAS of the E&M systems and tram designer for each of the lots / disciplines (Appendix 1) as part of the Generic Integration Approach (Appendix 2) will form the basis for the Interdisciplinary Design Check (IDC) and the overall Design Assurance Statement (DAS, Appendix 3) to be submitted to tie by the BSC consortium.
The process for the IDC is shown in Appendix 5.

The DAS of the lots / disciplines will be provided after the relevant design is completed. The main purpose of the IDC procedure is to ensure that the design of the system meets the requirements on functionality, performance and safety it is intended for and as defined in the Employer's Requirements.

While the Interface Management Process is an ongoing process over the complete design stage (Appendix 2), the IDC is the final check and confirmation, that the design is fully integrated.
With the DAS (Appendix 3, item No 10) BSC confirms that the design is fully integrated and the IDC has been performed in an appropriate way.

1.2 DEFINITIONS

N/A

1.3 REFERENCES

Design Management Plan (BSC/25.1.201/DMP/001),
Interface Management Procedure (ETN(SPM$Q&ADB#050151 Revision B)
Infraco Contract Schedule Part 14

2 IDC - PROCESS

2.1 GENERAL

The IDC process and the DAS in accordance with this procedure are shown in Appendix 2 and 5.

The Interface Management Process takes place during the design process, making each of the disciplines aware of specific requirements of other disciplines. The design of the disciplines will be submitted for tie's review as defined in the Design Management Plan. Design documents, accepted with Level A and Level B status, and the Design Assurance Statement (DAS) of the relevant disciplines will form the basis for the required IDC as part of the overall DAS. (Appendix 2)

The basic requirement for performing the IDC is a frozen design status. In the event amendments to the design or drawings are required due to the results of the IDC workshop or other minor design changes, these amendments have to be documented in an appropriate way. Details for this documentation are defined by the documentation management.

The System Integration Manager (SIM) will invite to and prepare the IDC workshop, which will be performed as a "walk – through" the designs for the relevant geographical sections based on the design documents and drawings. Within the workshop experiences and results gained in previous workshops will be used to ensure that the design of neighbouring sections is consistent and fulfils the overall requirements.

Within the workshop performed per section, the representative of the disciplines will ensure and confirm that the design and the DAS performed on subsystem basis, meets the specific requirements of the relevant section of the ETN system.

Findings of the IDC will be documented in the IDC report and referred back for action listed (Appendix 5). a special check shall take place on the relevance of the reported items in respect to a potential application for other sections or the overall system. By signing the IDC Certificate each of the discipline's representatives will confirm this specific cross - check and the conclusions gained during this walk-through approach (Appendix 4).

After the IDC is performed the SIM shall issue the DAS (Appendix 3) to tie. Additional documentation like the reports shall be made available on request.

2.2 RESPONSIBILITIES

SYSTEM INTEGRATION MANAGER

The System Integration Manager (SIM) is coordinating the IDC process and will ensure it is conducted to programme.

The SIM will take particular responsibility for controlling the overall design workflow for system wide designs and is responsible for planning and initiating the system wide IDCs and ensuring that the relevant disciplines partake at the appropriate time and complete their IDCs to programme.

The SIM is the owner of this document. He shall liaise with Civil Engineering Manager, Systems Engineering Manager and the Tram Technical Manager regularly. He shall ensure that the overall design coordination and review process is working efficiently so that IDC can be initiated as and when required.

The SIM shall ensure that the IDC's are of the required technical standard and that the appropriate representatives of the disciplines take part in the IDC

Further responsibilities of the SIM can be summarized as follows.

- Ensure that the required IDC milestones are considered in the programme
- Ensure that DAS of lots /disciplines and other preparations for IDC are in place
- Invites lots / disciplines required to IDC meeting
- Convene and chair IDC meetings
- Ensure that design input gained in IDC workshop will be transferred into other IDC workshops Prepare IDC report
- Issue IDC report and final DAS

APPENDIX 1: DESIGN ASSURANCE STATEMENT LOTS / DISCIPLINES

Design Assurance Statement – Lots / Disciplines

Section:

Lot / Discipline:

	Items	Statement	Reference document
1	Engineering Standards (ER Chap 8) and requirements stipulated in the Employer Requirements or Change Order Process have been met	Fully / partly	
2	Approval and consents requirements as defined in Sched. 14 Part C Cl 2.6.1 have been obtained		
3	Issues raised in Records of Review (refer to Sched 14 Part A Chap 7.2) have been addressed		
4	Requirements defined in CEC's Roads & Tram Design Manual have been met		
5	Designers Requirements as defined in the CDM Regulations, 2007, have been met		
6	The status of design is consistent with the actual status of the required verification & validation		
7	All Hazards requiring design mitigation measures have been agreed as 'Closed' by the PSCC		
8	Requirements stipulated in the Detailed Design Assurance Plan have been met		
9	Requirements for EMC and Earthing & Bonding have been met (RAA and NR considered separately)		

Appendix Reference submissions including drawings and documents.

Under "References" a derivation from the subject has to be documented only in case of a "partly" statement.

Checked by (Engineer):

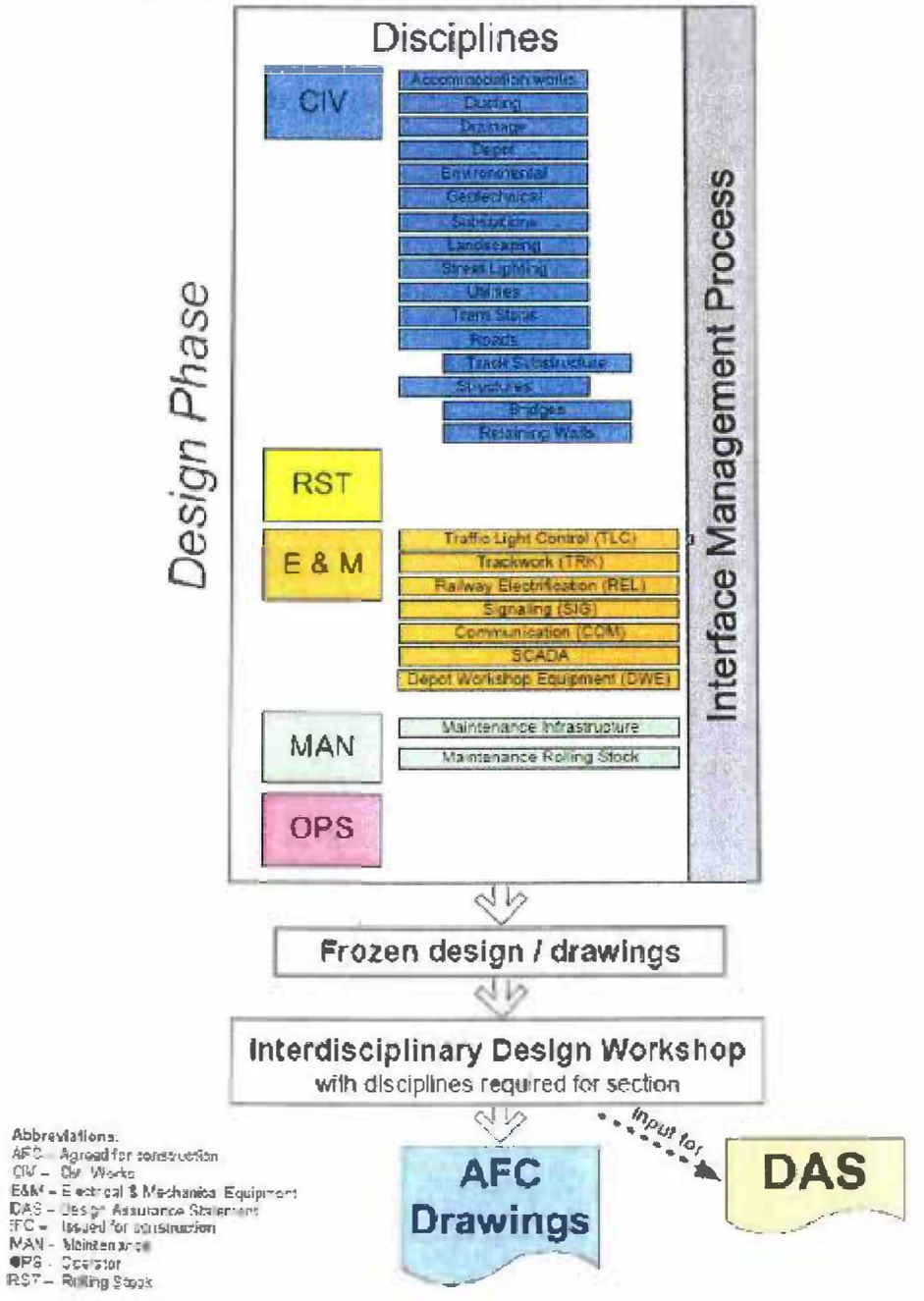
Name Date Signature

Released by (LoI Manager):

Name Date Signature

APPENDIX 2: GENERIC INTEGRATION APPROACH

BSC – Generic Integration Approach



APPENDIX 3: BSC - DESIGN ASSURANCE STATEMENT

BSC Infraco for
ETN, Edinburgh Tram Network
BILFINGER BERGER SIEMENS CAF

BSC - Design Assurance Statement
BSC/25.1.201/PSP/003_3
Revision B, Date 2009/08/23
Page 1 of 1

BSC – Design Assurance Statement

Section:

	Subject	Statement	Reviewer	Date	Signature	References
1	Engineering Standards (ER Chap 8) and requirements stipulated in the Employer Requirements or Change Order Process have been met	fully / partly		dd.mm.yyyy		
2	Approval and consents requirements as defined in Sched. 14 Part C Cl.2.8.1 have been met					
3	Issues raised in Records of Review (refer to Sched 14 Part A Chap 7.2) have been transferred					
4	Requirements defined in CEC's Roads & Tram Design Manual have been met					
5	Requirements defined in the CDM have been met					
6	The status of design is consistent with the actual status of the required verification & validation					Please refer to detailed Requirement Management verification
7	Hazard mitigation measures influencing the design have been incorporated adequately					Please refer to detailed project Hazard verification
8	Requirements stipulated in the Detailed Design Assurance Plan have been met					Please refer to detailed project Assurance verification
9	Requirements for EMC and Earthing & Bonding have been met (BAA and NR considered seperately)					Please refer to detailed project EMC and Earthing & Bonding verification
10	An IDC has been performed adequately					

Appendix: References submissions including drawings and documents

Under "References" a derivation from the subject has to be documented only in case of a "partly" statement

App03_BSC_Design Assurance Statement_20090623.doc
Confidentiality: non confidential

APPENDIX 4: IDC CERTIFICATE

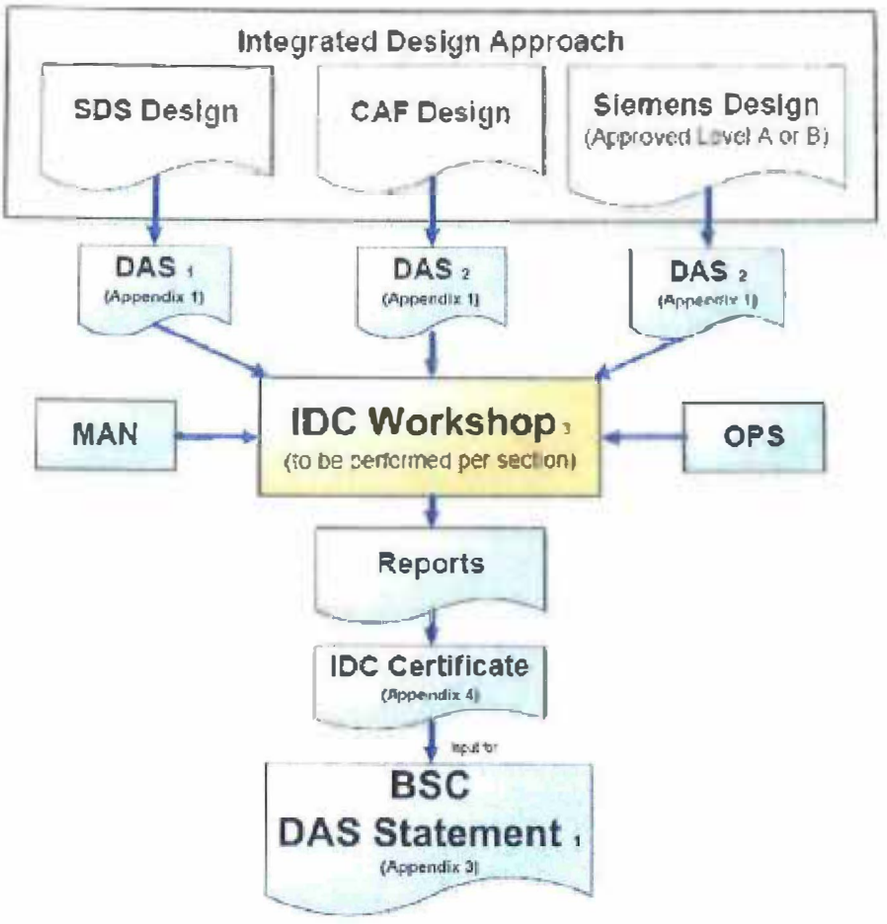
IDC Certificate

Workshop for Section: Date:

Drawing/Document	No.:		
	Title:		
Overall	Required for IDC	Lots / Discipline Representative	
		Name	Signature
Accommodation Work			
Ducting			
Drainage			
Depot			
Environment			
Geotechnical			
Substations			
Landscaping			
Street Lighting			
Utilities			
Tramstops			
Roads			
Track Superstructure			
Structures Bridges			
Structures Retaining Walls			
RST			
Traffic Light Control			
Trackwork			
Railway Electrification			
Signalling			
Communication			
SCADA			
Depot Workshop Equipment			
Maintenance Infrastructure			
Maintenance Rolling Stock			
OPS			
System Integration Manager			

APPENDIX 5: IDC PROCESS

Interdisciplinary Design Check (IDC) Process



Abbreviations:
DAS – Design Assurance Statement
IDC – Interdisciplinary Design Check
IDR – Integrated Design Review
MAN – Maintenance
OPS – Operator
SIM – System Integrator Manager

1 - Statement given per section
2 - Statement given per lot / discipline, sectionwise application to be evaluated in IDC Workshop
3 - Parties for IDC Workshop to be nominated by SIM, IE and the ICP invited to join the workshop

Edinburgh Tram System Design Services

Presentation to *tie May 2007*

PARSONS BRINCKERHOFF

Summary

- PB Quality Management System
- Suppliers & Subcontractors
- Design Production
- Design Assurance and Approval

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PB Quality Management System

- The PB Quality Management System
- Application to the SDS project
- Monitoring & Audit regime

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PB Quality Management System

- The objectives of our quality program are:
  - *Right First Time*
  - *Robustness*
  - *Continuous Improvement*

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PB Quality Management System

- Quality results begin with a common understanding of:
  - *Scope (what we're trying to achieve and the component parts of the delivery)*
  - *Execution plan (who, when, where, how)*
  - *The applicable standard (what is success and how do we know we've achieved it)*
  - *Legislative Requirements*
  - *Client inputs*
  - *3rd party inputs*

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PB Quality Management System

The process and proposals for assurance of quality:

- are part of PB's standard offering,
- Tailored and adapted for the SDS project
- were included in our original submission to tie,
- Provides a Design Assurance Statement (DAS)

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PB Quality Management System

PB's normal processes are based upon:

- documented generic and customised procedures and processes
- Focus on processes and procedures that "work"
- being managed in, monitored, audited and continually improved.

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PB Quality Management System

PB procedures and processes exist at:

- Corporate level
- Business Unit level
- Edinburgh Tram SDS Project level

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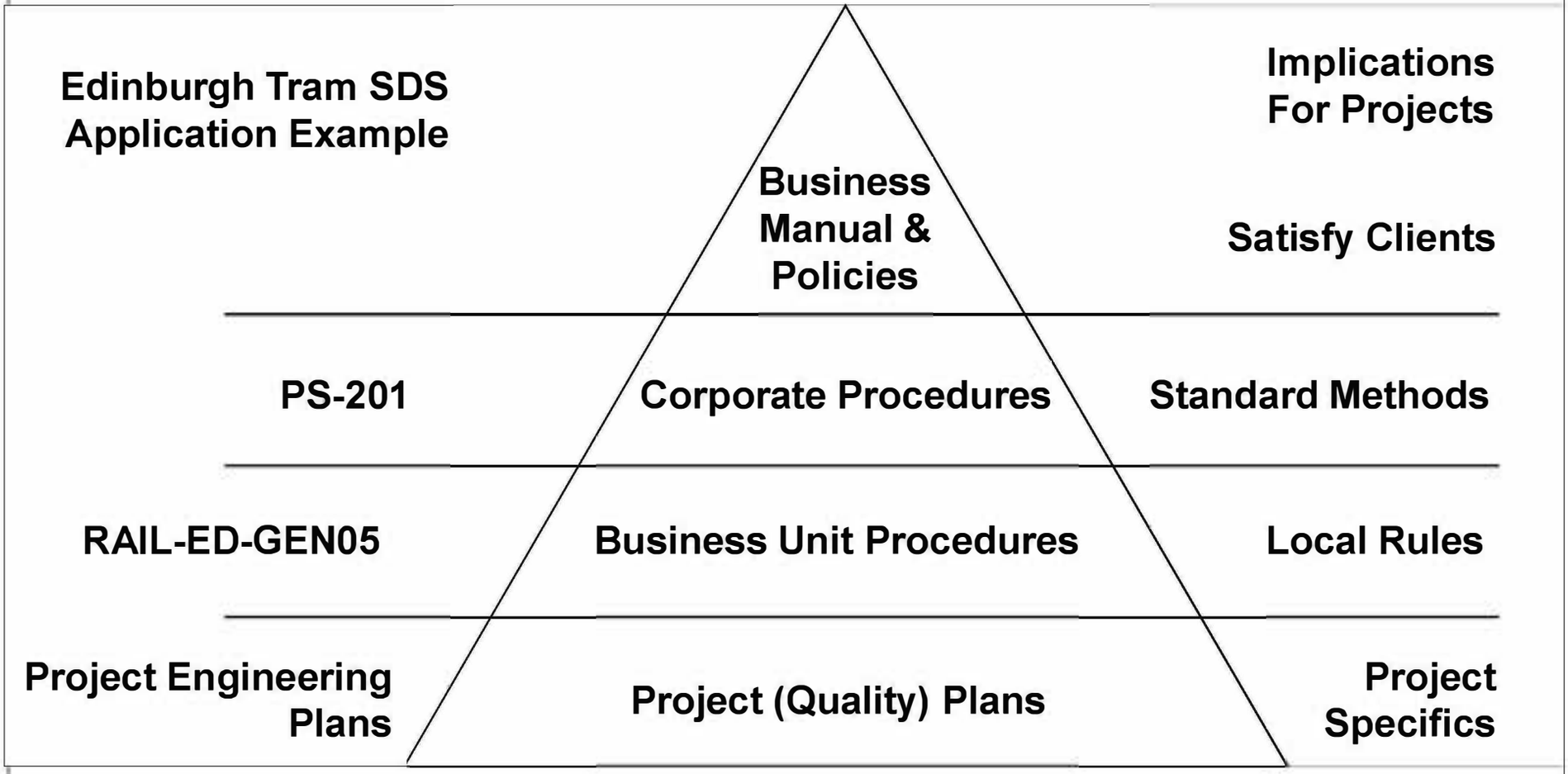
PB Quality Management System



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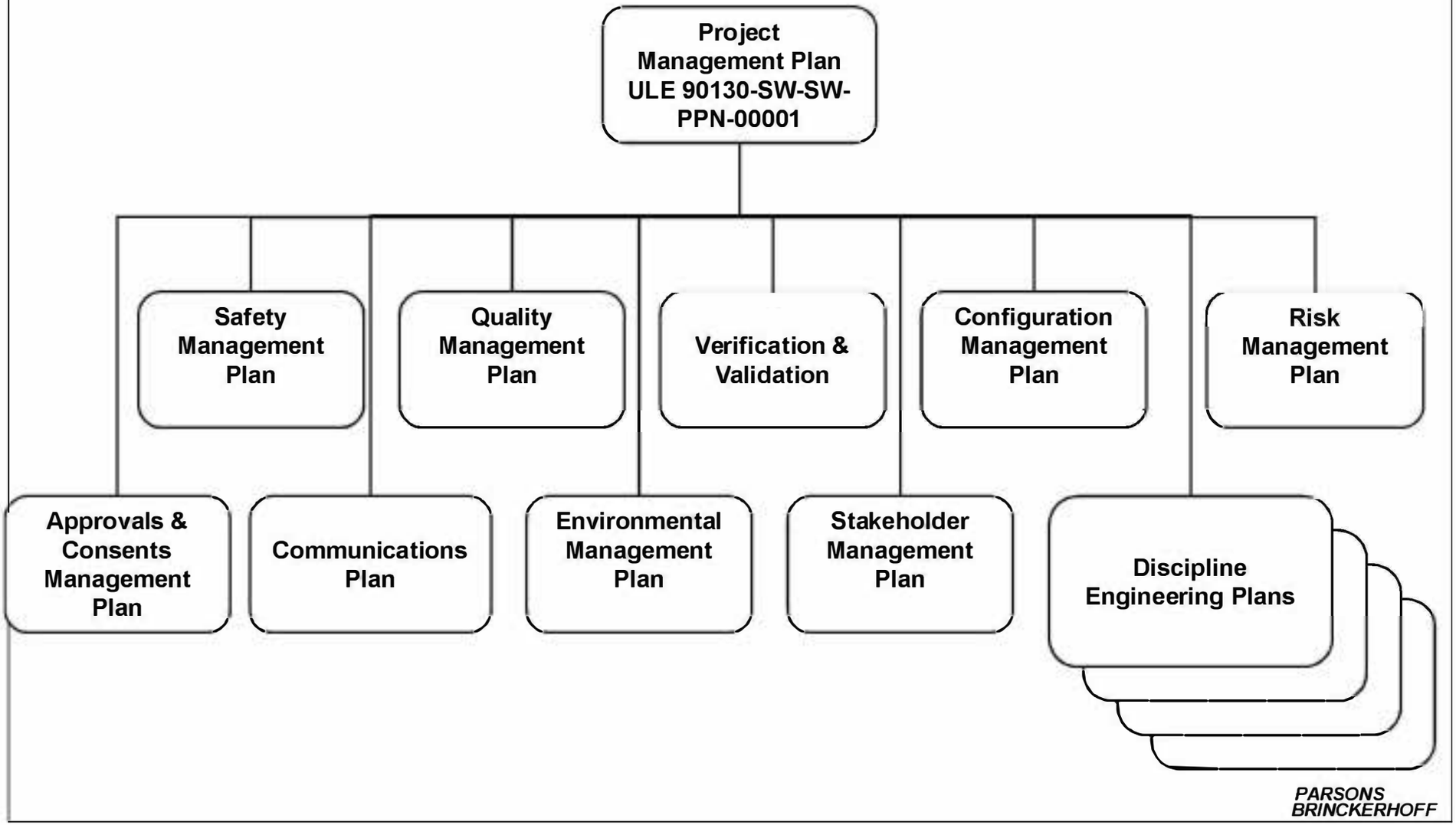
ETN Quality Management System



PB Quality Management System

- Change Control
  - *Project Change Control Procedure ULE 90130-SW-SW-PRE-00007*
    - Change Control Database
    - Right First Time
    - Robustness
    - Continuous Improvement

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PB Quality Management System

Our management/monitoring & auditing regime includes:

- Communication
- Implementation
- Involvement
- Auditing

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PB Quality Management System

- Monitoring & Audit regime
  - *Internal audit of design teams*
  - *System in place for tracking NCRs & CARs*
  - *PB Senior Management Team review*
  - *"local" management overview*
  - *audits of project office and regional design offices*
  - *Backed up by External (UL) audits of PB Quality Management System*
  - *Feedback and corrective action*
  - *Continual improvement*

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PB Quality Management System

SDS Project Process examples

- Interdisciplinary Check (IDC) *ULE90130-SW-PRE-00005*
- *Intermediate Design Review (IDR) ule90130-SW-PRE-00034*
- *Discipline Engineering Plans,*
- *Outline Project Specifications*
- *Exemplar submissions*
- *Preparation of monthly reports*
- *Programme updates*
- *Document Control Procedure ULE 90130-SW-SW-PRE -00001*

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PB Quality Management System

- Vendors/Sub-contractor Assessments
  - *Approved Suppliers Database*
  - *Pre qualification questionnaires*
  - *Performance records*
  - *Audits and inspections*
  - *PB Corporate Procedure (CP 202)*

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Design Assurance and Approval
Design Approval

- Planning approvals
- *tie* approval
- CEC approval

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Summary

- PB Quality Management System
- Suppliers & Subcontractors
- Design Production
- Design Assurance and Approval

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Design Assurance and Approval

- Design Lifecycle
- IDR process
- IDC process
- System Detailed Design Review (SDDR) Process
- Progressive Self Assurance
- Planning Approvals
- *tie* / CEC design Approval
- 3rd Party Approvals and Consents Tracker

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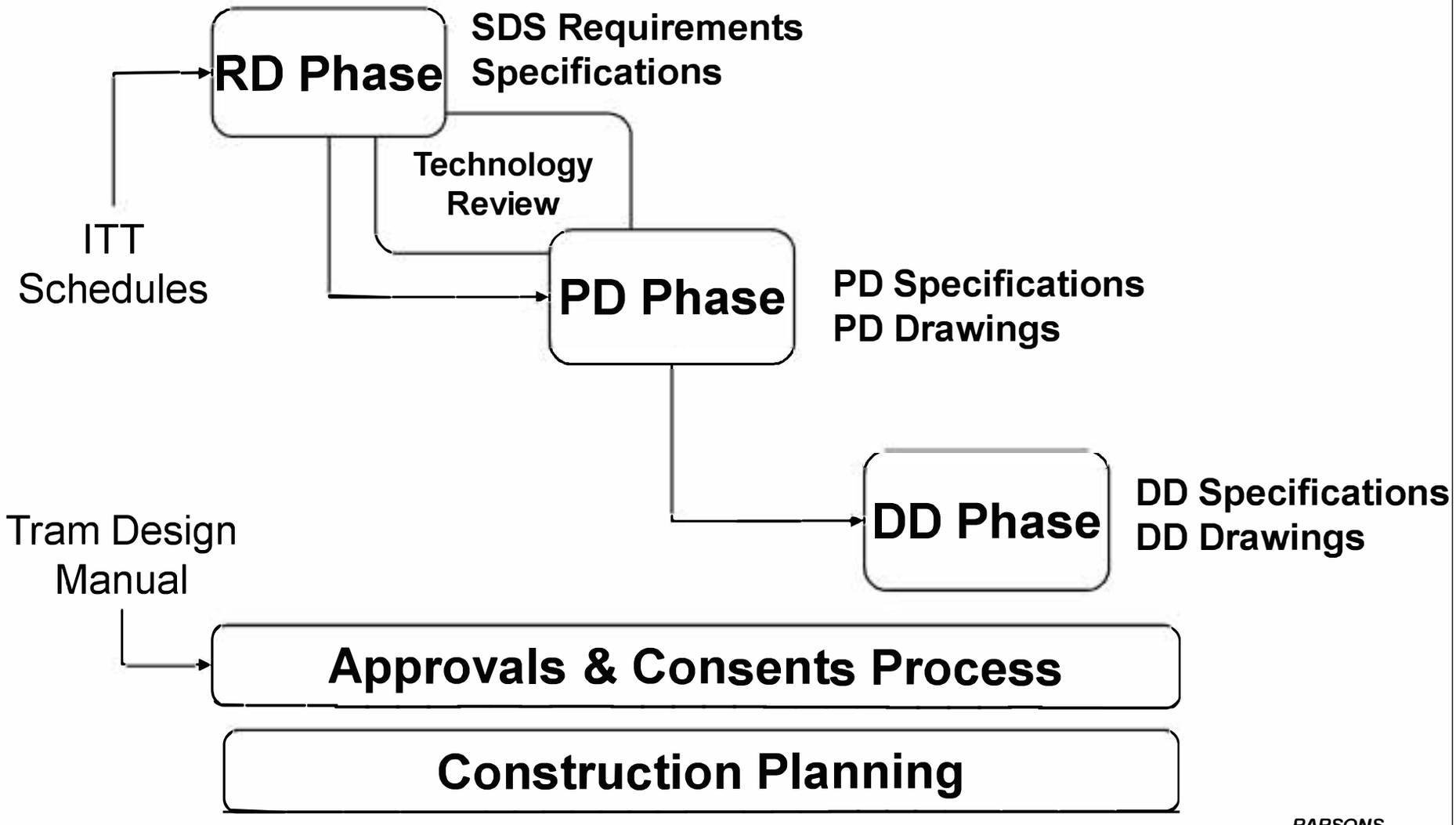
Design Assurance and Approval Design Lifecycle



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Design Assurance and Approval

- SDS Detail Design Phase Process
  - *Structured assurance evidence*
  - *Progressive self assurance*
  - *Assurance against the requirement specs*
  - *Assurance against relevant industry standards*
  - *Section Design approval*
  - *Overall Tram Network System design approval*
  - *Design Assurance Statement*
  - *Case for Safety*

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Design Assurance and Approval

- Design Delivery and WBS
  - *Elemental submissions*
  - *Subsection Submissions*
  - *Section Submissions*
  - *Scheme wide submissions*

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Design Assurance and Approval
Design Delivery and WBS

Section 1 Design

Subsection 1A Design

Subsection 1B Design

Subsection 1C Design

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Design Assurance and Approval
Design Delivery and WBS

Section 1 Design

Section 1A Design

Tramstop Element Design

Structures Element Design

Substructures Element Design

Subsection 1B Design

Subsection 1C Design

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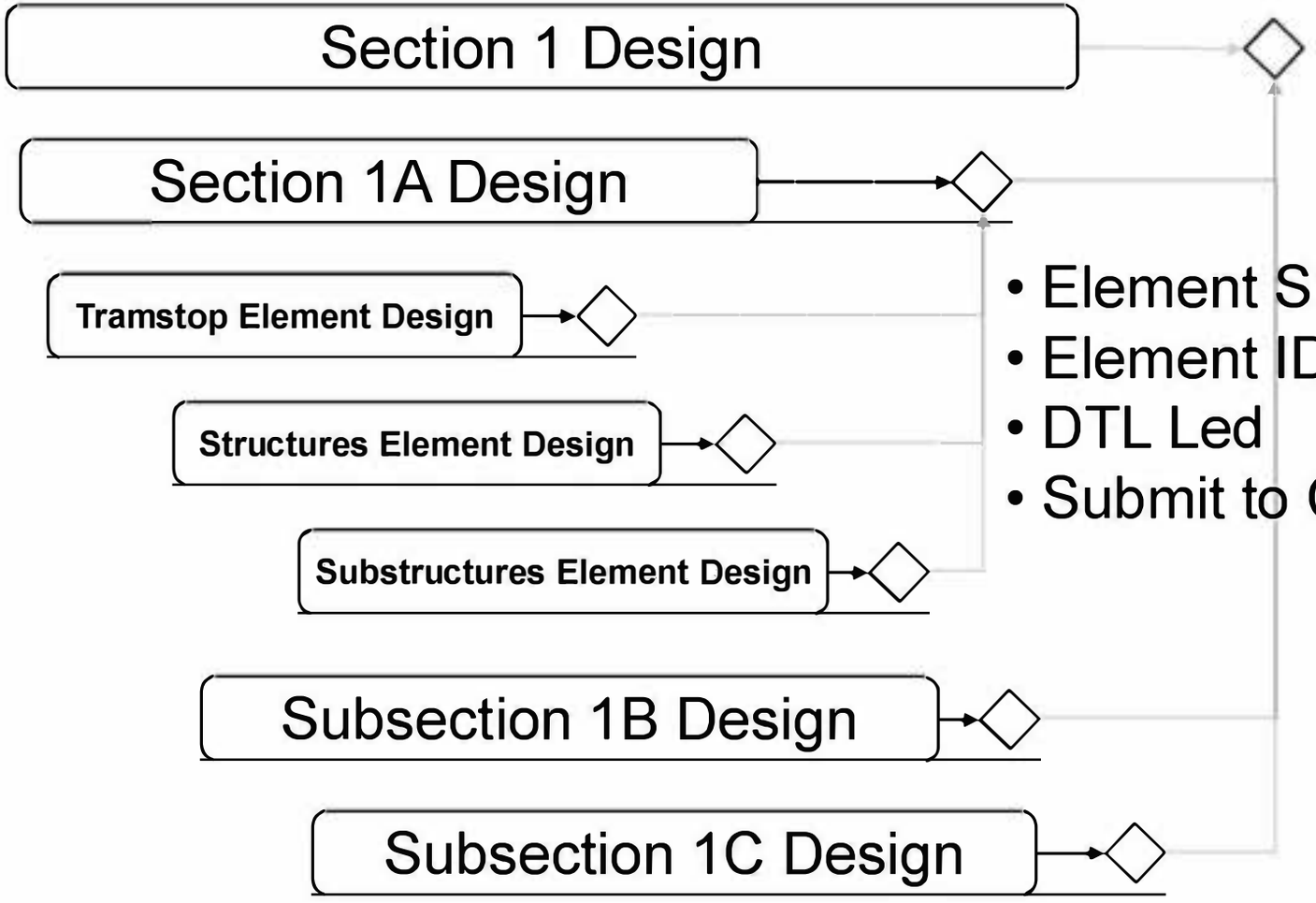
Design Assurance and Approval
Design Delivery and WBS



- Element Submissions
- Element IDCs Completed
- DTL Led
- Submit to CEC / *tie*

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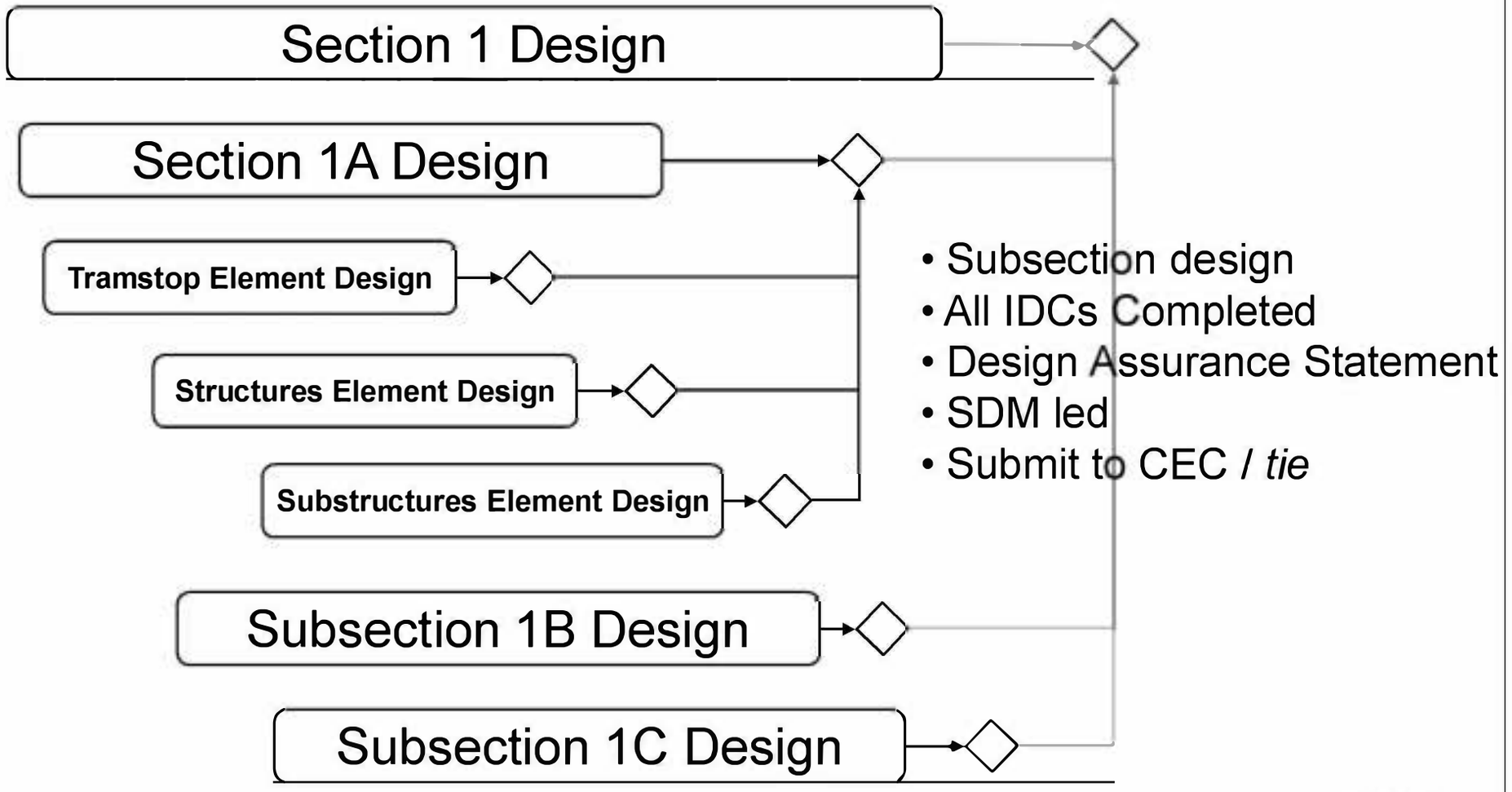
Design Assurance and Approval
Design Delivery and WBS



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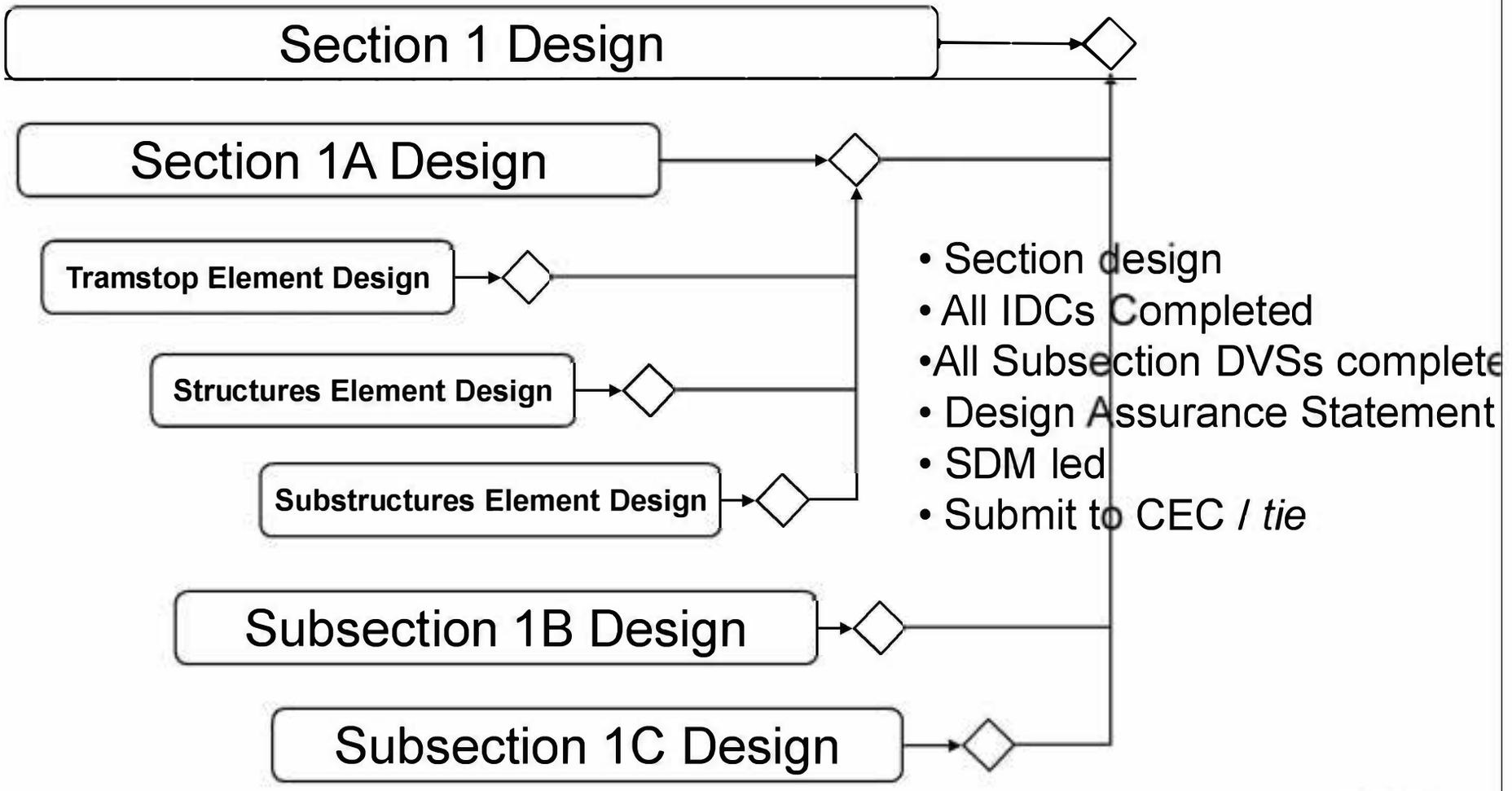
Design Assurance and Approval
Design Delivery and WBS



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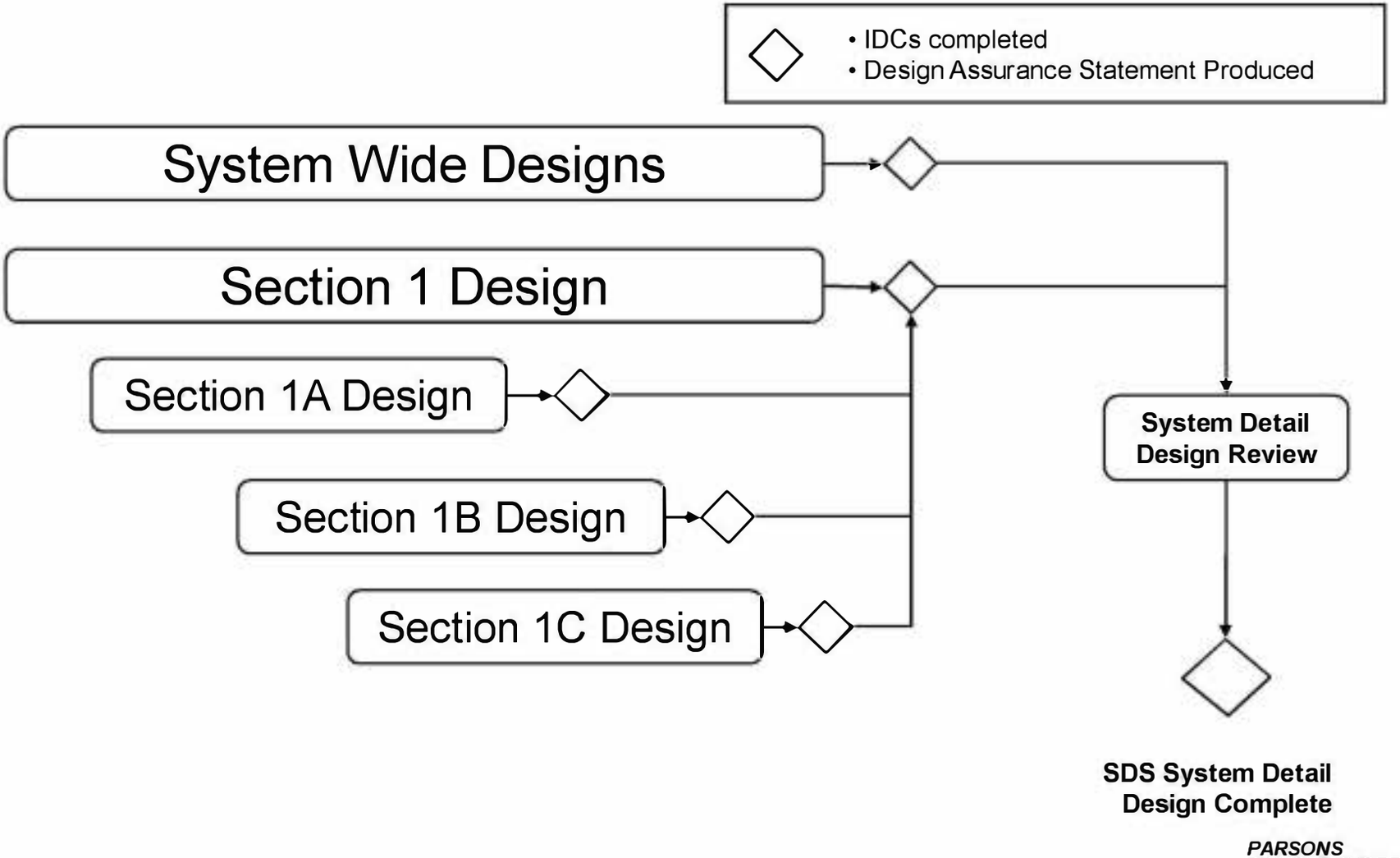
Design Assurance and Approval
SDS Detail Design Phase Process



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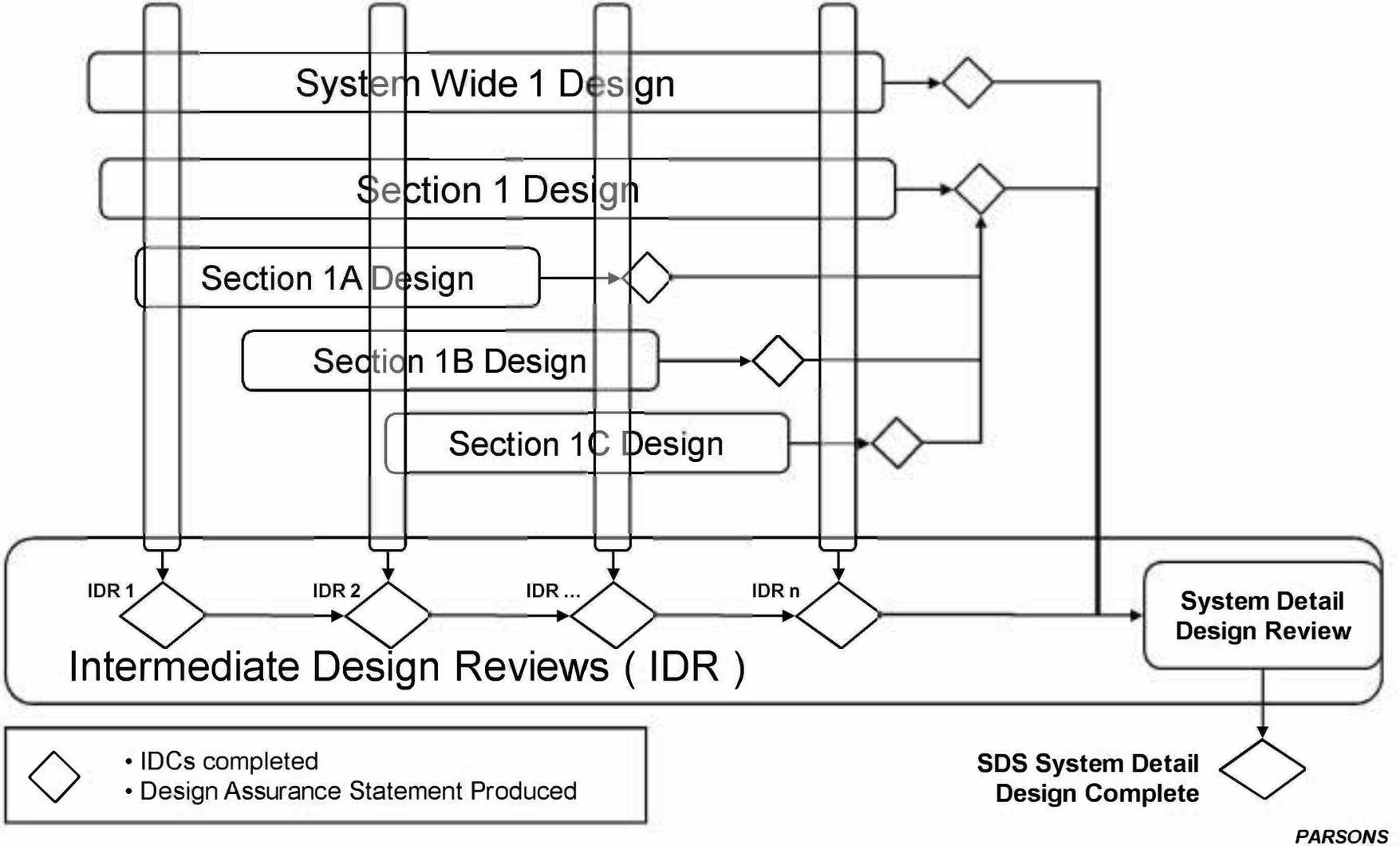
Design Assurance and Approval
SDS Detail Design Phase Process



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Design Assurance and Approval Key Assurance activities

- Intermediate Design Reviews
- Drawing reviews and sign off
- Document reviews and sign off
- Interdisciplinary Checks
- Design Assurance Statements
- System Detail Design Review

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Design Assurance and Approval Trackers

- Approvals & Consents Tracker ULE90130-SW-SW-PPN-00007
- Design Issues Tracker
  - *ULE90130-SW-RRR-00005*
  - *ULE-90130-SW-SCH-00029*
  - *ULE90130-03-SCH-00002*

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Design Assurance and Approval IDC Process

- Procedure ULE90130-SW-PRE-00005
- DTL ownership
- Completion of discipline design
- DTL confirms IDC review team
- Issue IDC formally through DMS
- Review period
- Notification of issues received from review team
- Meeting / conference call to review
- Amendment of design
- Re-issue
- Sign off IDC form, place in DMS.

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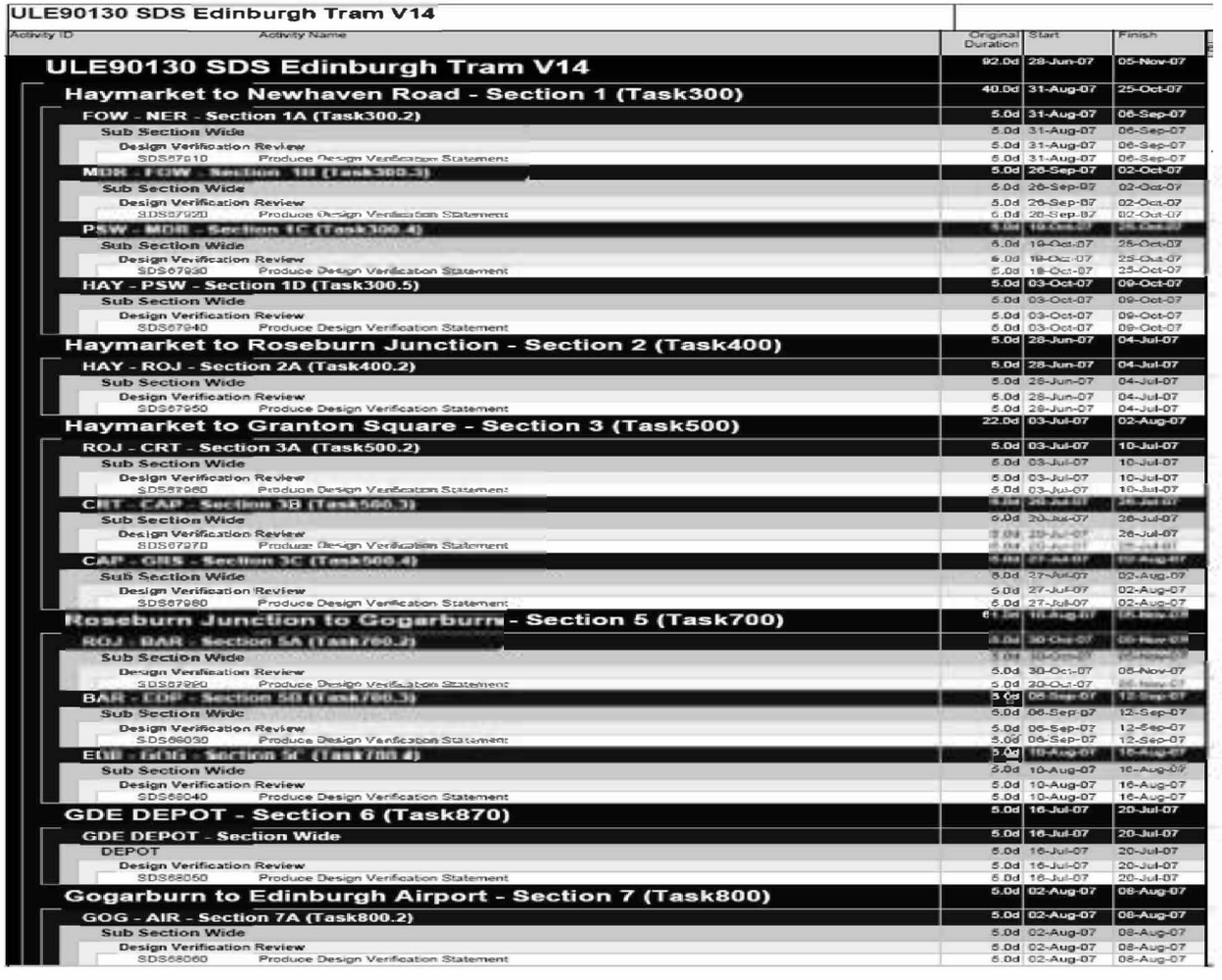
DAS Submission Programme



ULE90130 SDS Edinburgh Tram V14

Activity ID	Activity Name	Original Duration	Start	Finish
ULE90130 SDS Edinburgh Tram V14		92.0d	28-Jun-07	05-Nov-07
Haymarket to Newhaven Road - Section 1 (Task300)		40.0d	31-Aug-07	25-Oct-07
FOW - NER - Section 1A (Task300.2)		5.0d	31-Aug-07	06-Sep-07
Sub Section Wide		5.0d	31-Aug-07	06-Sep-07
Design Verification Review		5.0d	31-Aug-07	06-Sep-07
SDS67910	Produce Design Verification Statement	5.0d	31-Aug-07	06-Sep-07
MDR - FOW - Section 1B (Task300.3)		5.0d	26-Sep-07	02-Oct-07
Sub Section Wide		5.0d	26-Sep-07	02-Oct-07
Design Verification Review		5.0d	26-Sep-07	02-Oct-07
SDS67920	Produce Design Verification Statement	5.0d	26-Sep-07	02-Oct-07
PSW - MDR - Section 1C (Task300.4)		5.0d	19-Oct-07	25-Oct-07
Sub Section Wide		5.0d	19-Oct-07	25-Oct-07
Design Verification Review		5.0d	19-Oct-07	25-Oct-07
SDS67930	Produce Design Verification Statement	5.0d	19-Oct-07	25-Oct-07
HAY - PSW - Section 1D (Task300.5)		5.0d	03-Oct-07	09-Oct-07
Sub Section Wide		5.0d	03-Oct-07	09-Oct-07
Design Verification Review		5.0d	03-Oct-07	09-Oct-07
SDS67940	Produce Design Verification Statement	5.0d	03-Oct-07	09-Oct-07
Haymarket to Roseburn Junction - Section 2 (Task400)		5.0d	28-Jun-07	04-Jul-07
HAY - ROJ - Section 2A (Task400.2)		5.0d	28-Jun-07	04-Jul-07
Sub Section Wide		5.0d	28-Jun-07	04-Jul-07
Design Verification Review		5.0d	28-Jun-07	04-Jul-07
SDS67950	Produce Design Verification Statement	5.0d	28-Jun-07	04-Jul-07
Haymarket to Granton Square - Section 3 (Task500)		22.0d	03-Jul-07	02-Aug-07
ROJ - CRT - Section 3A (Task500.2)		5.0d	03-Jul-07	10-Jul-07
Sub Section Wide		5.0d	03-Jul-07	10-Jul-07
Design Verification Review		5.0d	03-Jul-07	10-Jul-07
SDS67960	Produce Design Verification Statement	5.0d	03-Jul-07	10-Jul-07
CRT - CAP - Section 3B (Task500.3)		5.0d	20-Jul-07	26-Jul-07
Sub Section Wide		5.0d	20-Jul-07	26-Jul-07
Design Verification Review		5.0d	20-Jul-07	26-Jul-07
SDS67970	Produce Design Verification Statement	5.0d	20-Jul-07	26-Jul-07
CAP - GRS - Section 3C (Task500.4)		5.0d	27-Jul-07	02-Aug-07
Sub Section Wide		5.0d	27-Jul-07	02-Aug-07
Design Verification Review		5.0d	27-Jul-07	02-Aug-07
SDS67980	Produce Design Verification Statement	5.0d	27-Jul-07	02-Aug-07
Roseburn Junction to Gogarburn - Section 5 (Task700)		61.0d	10-Aug-07	05-Nov-07
ROJ - BAR - Section 5A (Task700.2)		5.0d	30-Oct-07	05-Nov-07
Sub Section Wide		5.0d	30-Oct-07	05-Nov-07
Design Verification Review		5.0d	30-Oct-07	05-Nov-07
SDS67990	Produce Design Verification Statement	5.0d	30-Oct-07	05-Nov-07
BAR - EDF - Section 5B (Task700.3)		5.0d	06-Sep-07	12-Sep-07
Sub Section Wide		5.0d	06-Sep-07	12-Sep-07
Design Verification Review		5.0d	06-Sep-07	12-Sep-07
SDS68030	Produce Design Verification Statement	5.0d	06-Sep-07	12-Sep-07
EDF - DRS - Section 5C (Task700.4)		5.0d	10-Aug-07	16-Aug-07
Sub Section Wide		5.0d	10-Aug-07	16-Aug-07
Design Verification Review		5.0d	10-Aug-07	16-Aug-07
SDS68040	Produce Design Verification Statement	5.0d	10-Aug-07	16-Aug-07
GDE DEPOT - Section 6 (Task870)		5.0d	16-Jul-07	20-Jul-07
GDE DEPOT - Section Wide		5.0d	16-Jul-07	20-Jul-07
DEPOT		5.0d	16-Jul-07	20-Jul-07
Design Verification Review		5.0d	16-Jul-07	20-Jul-07
SDS68050	Produce Design Verification Statement	5.0d	16-Jul-07	20-Jul-07
Gogarburn to Edinburgh Airport - Section 7 (Task800)		5.0d	02-Aug-07	08-Aug-07
GOG - AIR - Section 7A (Task800.2)		5.0d	02-Aug-07	08-Aug-07
Sub Section Wide		5.0d	02-Aug-07	08-Aug-07
Design Verification Review		5.0d	02-Aug-07	08-Aug-07
SDS68060	Produce Design Verification Statement	5.0d	02-Aug-07	08-Aug-07

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DESIGN ASSURANCE STATEMENT PURPOSE

- Provide a summary of the submission
- Statement that design is fit for purpose
- Exceptions are declared in an easily retrievable manner
- Facilitates Review Process
- Provides confidence of self assurance management

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DAS Process

- Managed by SDM's
- Disseminated to DTL's et al for input
- Provided with each subsection design submission
- Where applicable references required for each statement
    - Drawing/document references
    - System Wide impact references
    - CDM information
- Exceptions/Deviations detailed in appropriate section of DAS
- References where risks/hazards remain open
- Guidance notes included
- Signed off by SDM, Design Manager and Project Manager

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DAS Example

APPENDIX 1 - EDINBURGH TRAM NETWORK
DESIGN ASSURANCE STATEMENT

(For clarification refer to guidance notes attached)

a) SUBMISSION DETAILS / TITLE: **Section / Sub-Section to which this Certificate Relates:** (7) **Date of Issue:** (8)
b) Summary of Section / Sub-Section Submission: (9)
c) Submission Specific Design Documents: (10) Have all Submission Specific Design Documents been reviewed, approved and under version control (in Hummingbird)? Yes ☐ **No** ☐ **Comments**
d) Submission Specific Drawings: (11) Have all Submission Specific Design Documents been reviewed, approved and under version control (in Hummingbird)? Yes ☐ **No** ☐ **Comments**
e) Applicable System-Wide Drawings and Documents: (12) Have all applicable System-Wide Drawings and Documents been reviewed, approved and under version control (in Hummingbird)? Yes ☐ **No** ☐

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DAS Completed Example

APPENDIX 1 - EDINBURGH TRAM NETWORK
DESIGN ASSURANCE STATEMENT

a) SUBMISSION DETAILS / TITLE: Sub-Section 5C design Assurance Statement v1

Section / Sub-Section to which this Certificate Relates: (7) 5C

Date of Issue: (8) 09th May 2007

b) Summary of Section / Sub-Section Submission: (9)

Section 5C is 1.9km long and runs from Edinburgh Park Stop (exclusive) to Gogarburn Stop (inclusive). The track is segregated through the Edinburgh Park Development area with one signalised Road crossing at Lochside Avenue. The track is then segregated, until another signalised roads crossing at South Gyle Broadway, heading towards the Gyle centre. The tram is segregated for the remainder of the section, running parallel to the Gyle shopping centre where there is a tram stop, before running underneath the A8 road. The tram route then branches off into the Depot (Section 6 – a separate submission) and Section 5C alignment continues west along a retaining structure and then at grade through existing farmland until it reaches the Gogarburn tram stop.

There are two tramstops in the section, Gyle and Gogarburn. There are no substations. There are two structures, Gyle Tramstop retaining wall (W19) and A8 Underpass (S28) in the subsection.

Drainage, Landscaping and Utilities design form part of this technical submission.

TRO - It is planned to produce a draft TRO for the whole LOD following completion of the PD2 design. This is a separate submission to this one.

TTRO - There are 2 TTROs one to cover the MUDFA works and a second to cover the INFRACO works, the MUDFA TTRO has been completed. This is a separate submission to this one.

c) Submission Specific Design Documents: (10)

Roads

- Section 5C (Edinburgh Park to Gogarburn) Roads Technical Design Statement – Detailed Design (ULE90130-05-REP-00201 V1). [*Issued to tie 19 February 2007 in Transmittal No. ULE90130-SW-DTF-01425*].
- Roads Design Specification Department of Transport Manual of Contract Documents for Highways Works: Appendix 11/1: Kerbs, Footways, Cycleways, Laybys, Busbays and Paved Areas (ULE90130-SW-SPN-00087 V2). [*Issued to tie 19 February 2007 in Transmittal No. ULE90130-SW-DTF-01425*].
- Roads Design Specification Department of Transport Manual of Contract Documents for Highways Works: Appendix 12/1: Traffic Signs: General (ULE90130-SW-SPN-00088 V2). [*Issued to tie 19 February 2007 in Transmittal No. ULE90130-SW-DTF-01425*].
- Section 5C - Temporary Traffic Management Plan (ULE90130-SW-REP-00256 V1). [*Issued to tie 9 October 2006 in Transmittal No. ULE90130-SW-DTF-00887*].
- Roads Safety Audit Brief – Stage 1 Sections 2, 3, 4, 5, 6 & 7 (ULE90130-SW-REP-00159). [*Issued to tie 15 September 2006 in Transmittal No. ULE90130-SW-DTF-00772*].

Street Lighting

- Roads Design Specification Department of Transport Manual of Contract Documents for Highways Works: Appendix 14/1: Street Lighting (ULE90130-02-SCH-00002 V2). [*Issued to tie 19 February 2007 in Transmittal No. ULE90130-SW-DTF-01425*].

Site Clearance

- Department of Transport Manual of Contract Documents for Highways Works: Appendix 2: Site Clearance (ULE90130-SW-SPN-00090 V3). [*Issued to tie 13 March 2007 in Transmittal No. ULE90130-SW-DTF-01538*].

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DAS Completed Example

g) Requirements Test Specification: Compliance of technical specification with Client needs/defined requirements (14)

Compliance of technical specification with Client needs/defined requirements. Are the relevant Requirements Test Specification entries populated with the required compliance entries?

Yes ☐ **No** ☒

Comments

The Requirements Test Specification will not be completed for this early submission as the demonstration of compliance against the requirements is an ongoing, progressive assurance that cannot be completed until all designs are completed. The Requirements Test Specification will be completed and submitted with the final design assurance statement.

h) Deviations and Non-Conformances including SDS requirements documentation: (15)

Detail relevant deviations' and non conformances

None identified to date

Have all Deviations and Non-Conformances been approved and logged?

Yes ☐ **No** ☐

N/A

Comments

i) Applicable IDC Forms: (16)

Track

- 'IDC - Track Section 5C Alignment Detailed Design'

Street Lighting

- 'IDC Form Section 5C Street Lighting'

[Note: Sub Section IDC for 5C will be complete for the 'real' submission]

Do all IDC Forms contain no issues and have been correctly signed off?

Yes ☐ **No** ☒

Track – No

Comments

Track - Recording of the resolution (or otherwise) of several IDC comments returned for the alignment design ('IDC - Track Section 5C Alignment Detailed Design') has not been completed on the IDC Form and its accompanying Document Review Report.

[Note: This will be completed for the formal Design Assurance Submission for Section 5C]

Summary

- PB Quality Management System
- Suppliers & Subcontractors
- Design Production
- Design Assurance and Approval

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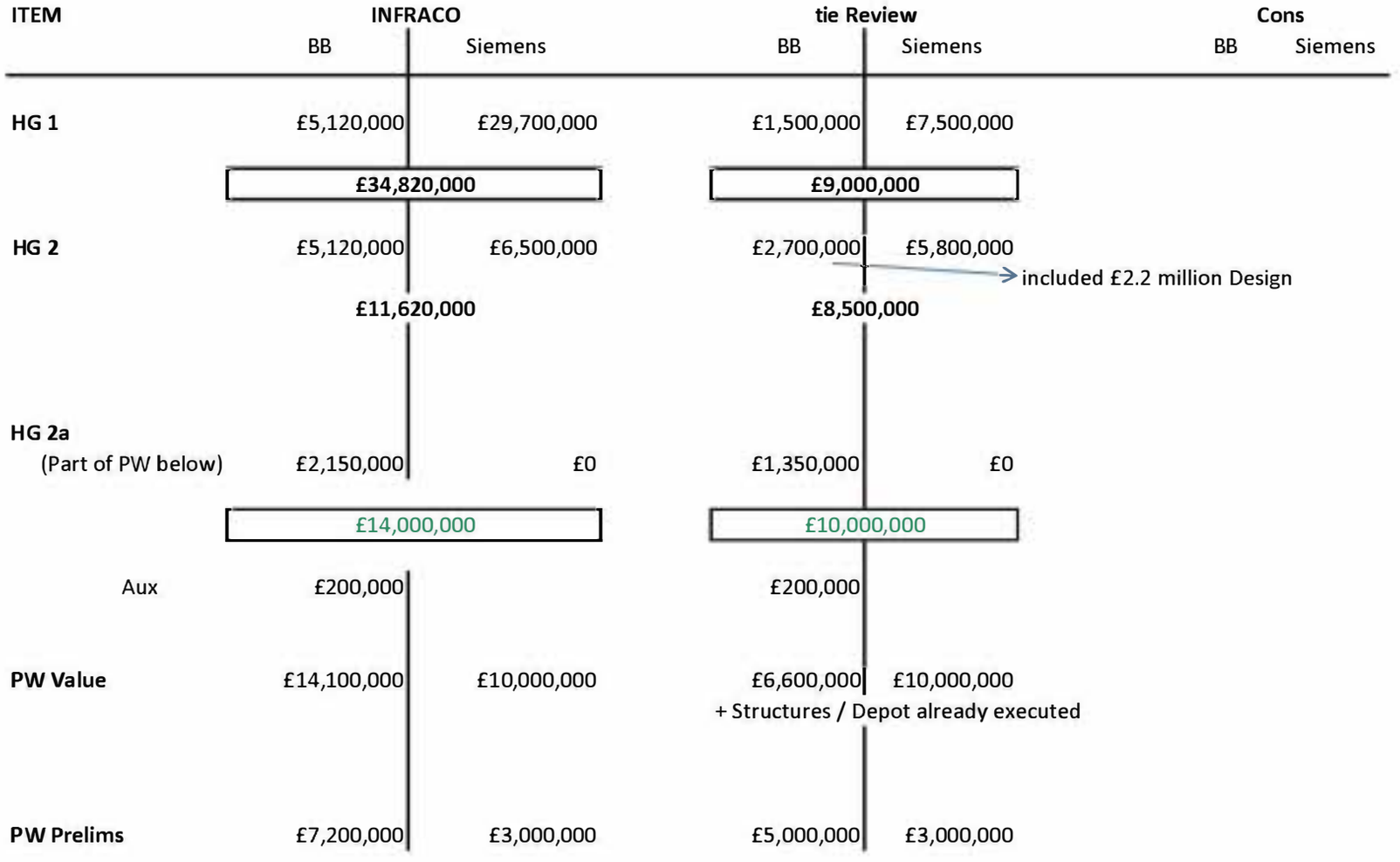
Appendix 16
Notes from Commercial Workshop – 31st March

EDINBURGH TRAM NETWORK
BBUK POSITION WITH TIE REVIEW COMMENTS
SUMMARY OF RESPECTIVE POSTIONS

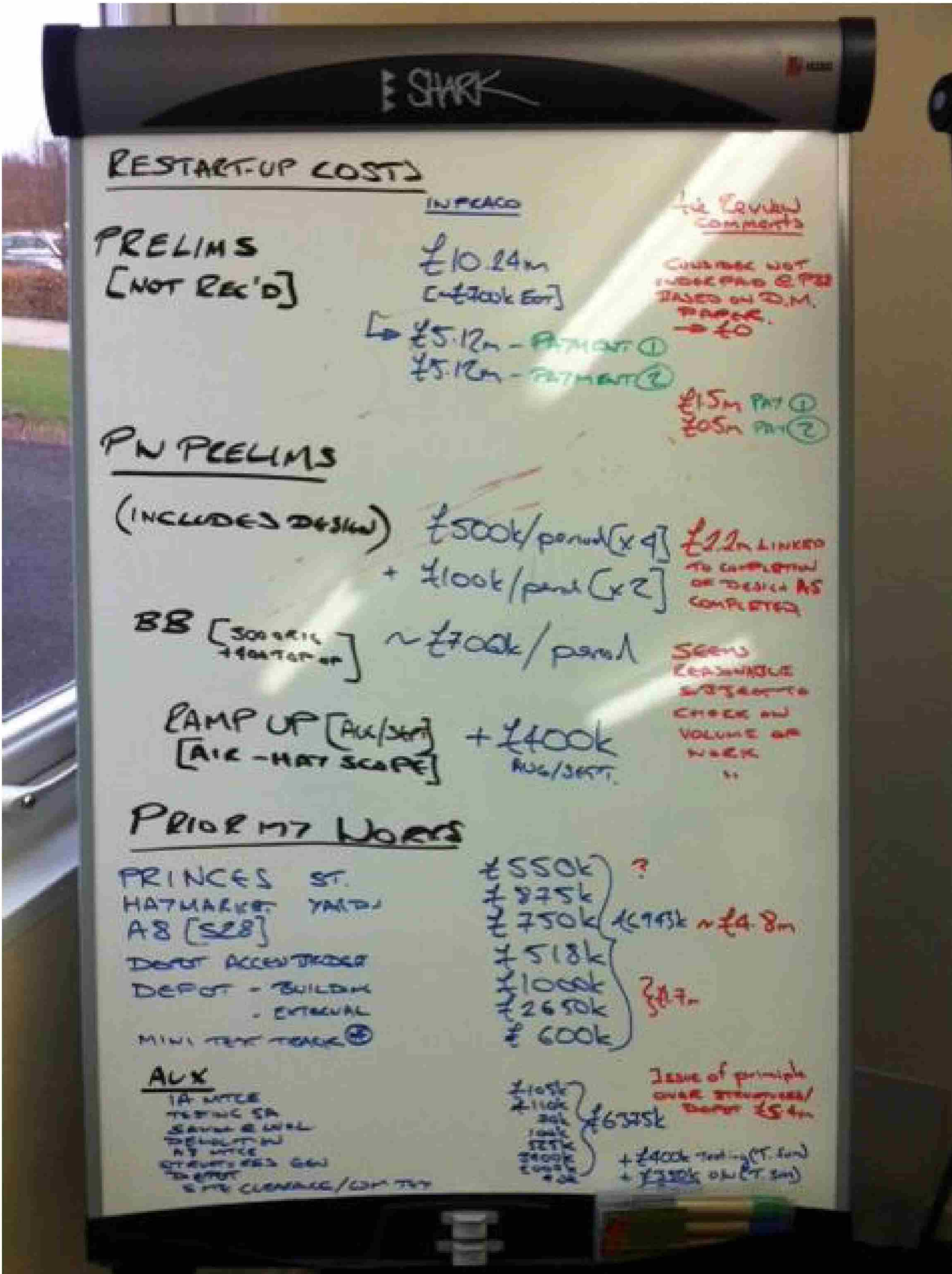


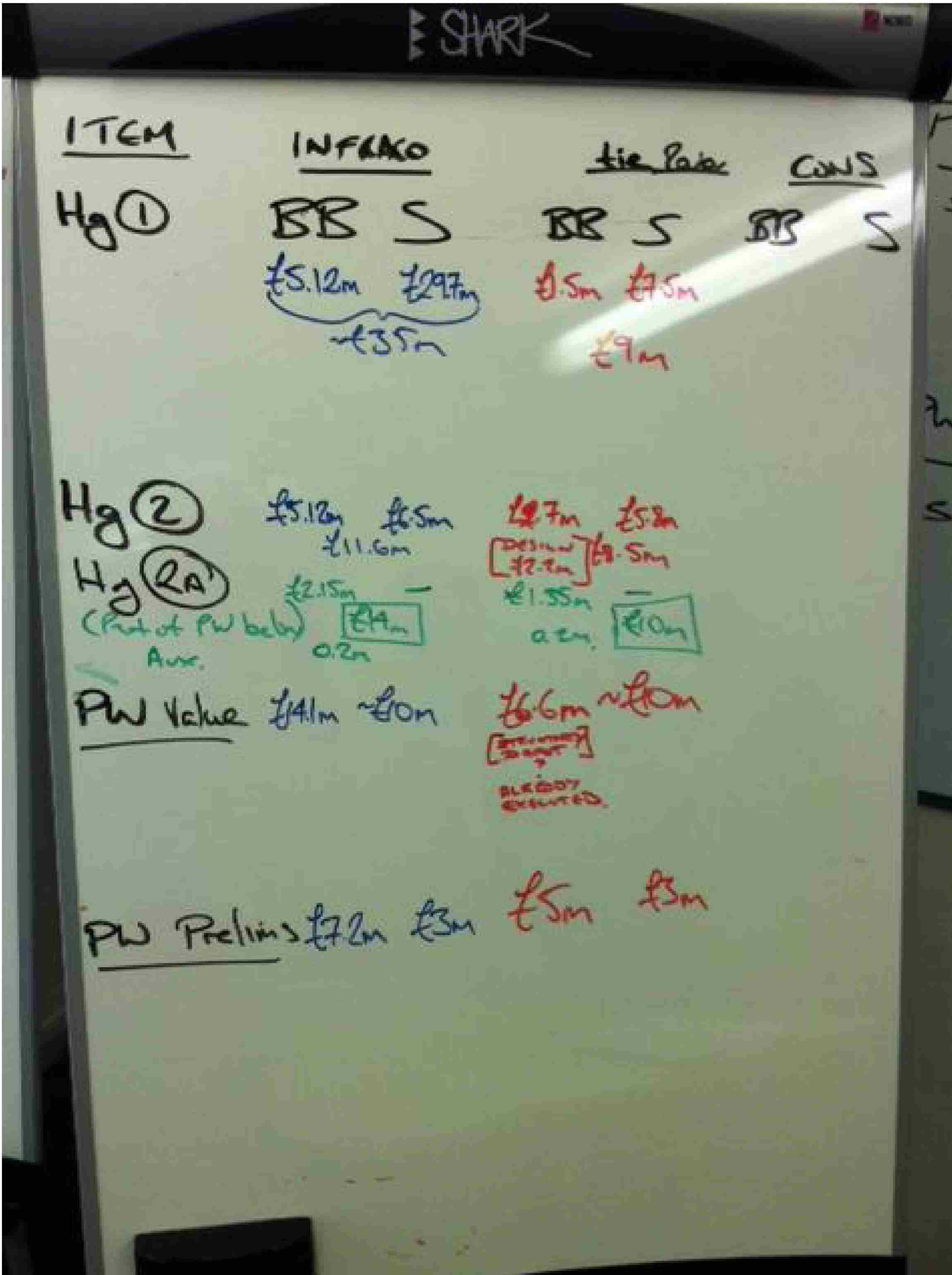
EDINBURGH TRAM NETWORK
COMMERCIAL MEETING : INFRACO / TIE / CEC : 31 March 2011
SIEMENS

RE START UP COSTS	INFRACO PICTURE		TIE REVIEW COMMENTS			
Material Assets	39,000,000	Headline	Supply & Instal from Original CPA	25,000,000	£7,000,000	Payment 1
(includes Engineering Input)	(11,000,000)	BAM T/W	(Excluding 'Engineering Input')	17,500,000	£3,750,000	Payment 2
	(3,000,000)	Other Materials	70% is materials	10,250,000		
	25,000,000	Payment 1		27,750,000		
				(14,000,000)		
				(3,000,000)		
				10,750,000		
Prelims (Not Received)	4,500,000	Payment 1	Prelims (Not Received)	£0		
Prelims (Under Recovery)	6,500,000	Payment 2	Prelims (Under Recovery)	£0		
			Restart Costs	£500,000		Payment 1
			If Design Assurance Complete	£2,000,000		Payment 2
Priority Works						
Systems	£25,000,000	less relevant materials allowance above	Period Valuation as works executed	Process and Principles likely to be agreed. Values to be applied		
Priority Works Prelims						
Siemens	£494,000	per period	Seems reasonable			

EDINBURGH TRAM NETWORK
BBUK POSITION WITH TIE REVIEW COMMENTS
BBCUK

RE START UP COSTS	INFRACO PICTURE		TIE REVIEW COMMENTS	
			Consider not underpaid at Period 38	
Prelims (Not Received)	£10,240,000		based on D Murray Paper - £0	
	£700,000	EOT included		
	£5,120,000	Payment 1	£1,500,000	Payment 1
	£5,120,000	Payment 2	£500,000	Payment 2
Priority Works Prelims- Design	£500,000	per period (x4)	£2,200,000	linked to completion of Design as completed
- Ext CS	£100,000	per period (x2)		
BBCUK (£300K original + £400K top up)	£700,000	per period		Seems reasonable Subject to check on volume of
Ramp Up (Aug / Sept)	£400,000	Aug / Sept		ditto
(Airport to Haymarket Scope)				
Priority Works				
Princes Street TM/Enabling Works	£550,000			? - relates to P St TM Works
Haymarket Yards	£875,000			
A8 (S28)	£750,000			
Depot Access Bridge	£518,000	£6,943,000	£4,800,000	
Depot - Building	£1,000,000			£1.7m relating to Depot
Depot - External	£2,650,000			
Mini Test Track*	£600,000			
Auxiliary Works				
1A Maintenance	£105,000			
Testing 5A	£110,000			
Sewer Lining at Water of Leith	£70,000			
Demolition Plots 97/102	£100,000			
A8 Maintenance	£525,000			
Structures General	£3,540,000			Issue of principle over Structures / Depot
Depot	£2,000,000			£5,400,000
Site Clearance / Contamination Testing	£40,000			
Target Price On Street Works				
Testing of Subformation	£400,000.00			
Princes Street Outstanding Works	£350,000.00			


SHARK
RESTART-UP COSTS
INFRACO
TIE REVIEW COMMENTS
PRELIMS
[NOT REC'D]
£10.24m
£5.12m - PAYMENT ①
£5.12m - PAYMENT ②
→ £0
£1.5m PAY ①
£0.5m PAY ②
PW PRELIMS
(INCLUDES DESIGN)
£500k/period (x 4)
+ £100k/period (x 2)
£1.2m LINKED TO COMPLETION OF DESIGN AS COMPLETED
B8
~ £700k/period
SEEMS REASONABLE
VOLUME OF WORK
RAMP UP [AUG/SEPT]
+ £400k
AUG/SEPT.
PRIOR MTY WORKS
PRINCES ST.
HAYMARKET YARDS
A8 [S28]
DEPOT - BUILDING
- EXTERNAL
£550k ?
£875k
£750k
£518k
£1000k
£2650k
£600k
~£4.8m
AUX
£6375k
Issue of principle
+ £400k testing



CEC02083973_0198

TIE REVIEW
COMMENTS

SUPPLY & INSTALL FROM ORIG C.P.A. £25m
[EXCLUDING 'ENG INPUT']

70% is materials
17.5
+ 10.25
27.75
-14.00
-3.00

£10.75m

£7m PAYMENT (1)
£375m PAYMENT (2)

PRELIMS [NOT ENG] £0
PRELIMS [UNDER RECOVERY] £0

RESTART COSTS £500k PAY (1)
IF DESIGN ASSURANCE COMPLETE £2000k PAY (2)

PERIOD VALUATION AS WORKS EXECUTED

PROCESS + PRINCIPLES LIKELY TO BE AGREED
VALUES TO BE APPLIED

SEEMS REASONABLE.

INFRACO PICTURE

£39m Headline
- £11m BAM T/N
- £3m OTHER MATERIALS
£25m - PAYMENT (1)
£4.5m - PAYMENT (1)
£6.5m - PAYMENT (2)

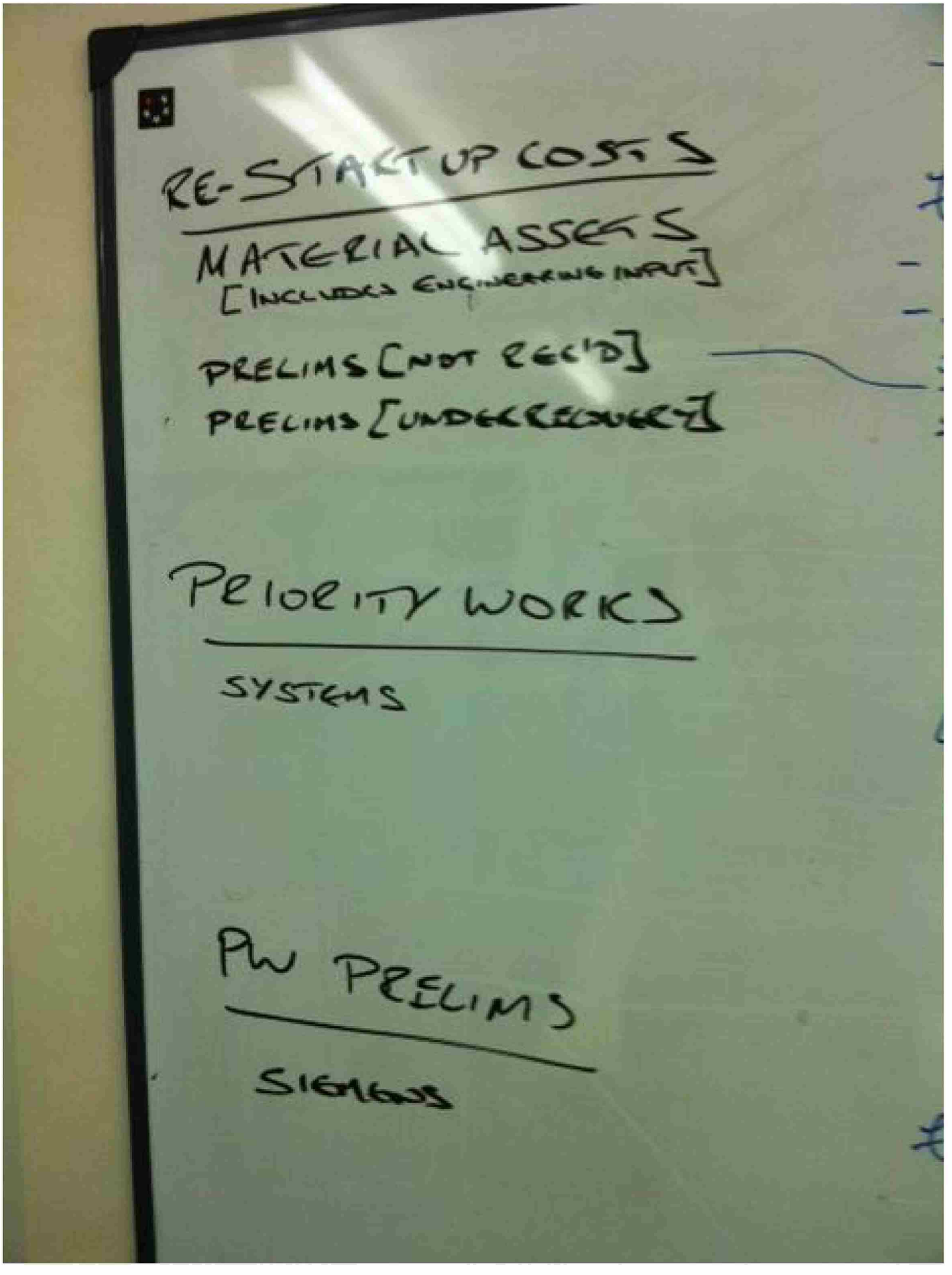
SUPPLY & IN
FROM
EXCLUDIN

PREL
PREL
RE
IF

[£25m - RELEVANT MATERIALS ALLOWANCE ABOVE]

PERIOD VALUATION AS WORKS EXECUTED

£494k / Period


RE-START UP COSTS
MATERIAL ASSETS
[INCLUDES ENGINEERING INPUT]
PRELIMS [NOT REC'D]
PRELIMS [UNDERRECOVERY]
PRIORITY WORKS
SYSTEMS
PW PRELIMS
SIGNS

Suzanne Smith

From: Gregor Roberts [Gregor.Roberts@tie.ltd.uk]
Sent: 04 April 2011 15:46
To: csmith@hg-group.co.uk
Cc: Richard Jeffrey
Subject: FW: Hg Report attachments

Colin,

Richard asked that in Dennis's absence that I commented on the figures which you sent earlier on today. The PDF sheet collated and circulated materially reflects what was discussed in the meeting on Friday. Some comments which I would add are:

Siemens sheet
* Although not on the whiteboard (Infraco picture), it was noted by Axel that an estimated -£18m would come out of the systems priority works which relates to the materials payment which Siemens included in their proposed 'Payment 1'
* Although not on the whiteboard (tie review comments), but for context a comment should be added "less BAM T/W & Other materials" against the -£14m. Likewise a comment "Already installed/Certified" should be noted against the -£3m at the top of the page.
* For clarity, the £7m and £3.75m payments 1 & 2 should move down in-line with the £10.75m sub-total

BBCUK Sheet
* (Infraco picture) Against the Auxiliary works the Structures General number should be £3,400,000. The figure included on the sheet was incorrectly noted as £3,540,000 in the notes.
* The (Infraco picture) Auxiliary notes on the whiteboard had a sub-total of £6,375,000. This sub-total should be £6,350,000 with the amended £3.4m figure (there was a previous addition error of +£25k on the whiteboard)
* All of the tie comments noted look in-line with my expectations

Summary of Respective positions
* The summary picture reflects what was on the whiteboard. For accuracy, the HG2 Siemens number (tie review) section should read £5,750,000. This matches the back-up on the previous sheet and was only noted as £5.8m as a summary view on the whiteboard, this should be amended for clarity of the build-up, and the totals amended below.

Other than that I believe the summary to be a fair reflection of what was noted on the whiteboard at the meeting.

Regards,
Gregor

Gregor Roberts
Finance Director

Edinburgh Trams
Citypoint
65 Haymarket Terrace
Edinburgh
EH12 5HD

Appendix 17
Re-Mobilisation Payments – Bilfinger Berger/Siemens Split

Edinburgh Tram Network

SIEMENS

BILFINGER BERGER Civil

Re-Mobilisation Payments

Breakdown of amounts for mobilisation, materials and equipment in relation to the Minute of Variation regarding the 'Promoted Works' Bilfinger Berger and Siemens are intending to enter into with CEC/tie

(all values in GBP)

Entity	Re-Mobilisation Payments Split between Bilfinger Berger and Siemens			TOTALS
	CERTIFICATE 1	CERTIFICATE 2	CERTIFICATE 3[1]	
Bilfinger Berger	7,500,000	5,000,000	-	12,500,000
Siemens	19,500,000	4,000,000	13,000,000	36,500,000
TOTALS	27,000,000	9,000,000	13,000,000	49,000,000

Notes:

1) Payable in three tranches (A, B and C)

[redacted]

Edinburgh, 01/04/2011

Martin Földer on Behalf of Bilfinger Berger Civil UK Ltd

[redacted]

Alfred Brandenburger on Behalf of Siemens plc

Appendix 18 - Vesting of Materials stored at Broxburn

BILFINGER BERGER Civil

SIEMENS

CAF

Bilfinger Berger–Siemens– CAF Consortium

BSC Consortium Office
9 Lochside Avenue
Edinburgh Park
Edinburgh
EH12 9DJ
United Kingdom

Phone [redacted]
Fax

Our ref: **ETN(BSC)TIE$C&ABC#050966**

10 May 2010

Bilfinger Berger Civil EDI
Date Sent 12 MAY 2010 BW
File Number
Action
Distribution

tie limited
CityPoint
65 Haymarket Terrace
Edinburgh
EH12 5HD

For the attention of Steven Bell – Project Tram Director

Dear Sirs,

Edinburgh Tram Network Infraco
Vesting of Materials Stored at Broxburn

On 19 April 2010 Siemens provided by e-mail its proposed Certificate of Vesting to **tie** in respect of Materials and Parts in respect of traction power supply equipment stored by Siemens at its warehouse in Broxburn. Pursuant to the Certificate of Vesting Siemens shall transfer title in the Materials and Parts listed in Schedule 1 of the Certificate and property therein shall pass and vest absolutely with CEC.

Siemens consider that the execution of the aforesaid Certificate of Vesting will afford the following benefits:-

- Immediate vesting of title in favour of CEC in the aforesaid Materials and Parts absolutely and free from all security interests, encumbrances, charges or other third party rights,
- Avoidance in full of any possible entitlement or liability for future increased costs or finance costs whether by way of escalation or otherwise in respect of the value of such Materials and Parts, including but not limited to increased procurement costs, shipment and third party storage costs;
- Protection for CEC from third party rights;
- Increased control and flexibility over use, storage and inspection of Materials and Parts;
- Facilitation of future acceleration or mitigation measures;
- Evidence of discharge of obligations of **tie** in respect of 'best value'.

Siemens trust that the attached Certificate of Vesting meets with your approval and trust that **tie** will be a position to confirm its acceptance of the same in the near future. We propose to make appropriate deduction of the amount of the proposed interim payment from the Construction Milestones Payments identified as 'OLE' in Schedule Part 5 of the Infraco Agreement.

Yours faithfully,

[redacted]

M Forder
Project Director
Bilfinger Berger Siemens CAF Consortium
MFO/FWA/TWR

Attachments: ETN(SPM)TIE=IPAB$CF&ABD#054022 TPS material values (on CD)
Draft Certificate of Vesting of Materials

cc: Alejandro Urriza, CAF
Kevin Russell, Bilfinger Berger
Axel Eickhorn, Siemens
Susanne Fersch, Siemens
Patrick Scully, Siemens
Alfred Brandenburger, Siemens

CERTIFICATE OF VESTING OF MATERIALS

This Certificate is for the benefit of tie Limited (company number SC230949) for and on behalf as of the City of Edinburgh Council ("CEC"), whose registered office is at City Chambers, High Street, Edinburgh, Midlothian, EH1 1YJ ("tie") and relates to the vesting of the Materials and Parts described in Schedule 1 hereto attached and intended to form part of the Infraco Works in respect of the Edinburgh Tram Network.

We Siemens plc of Faraday House, Sir William Siemens Square, Frimley, Camberley, GU16 8QD, England, in consideration of tie's agreement to make payment under the Infraco Contract to Siemens of the sum of Five Million, Seventeen Thousand, Two Hundred and Ninety Seven Pounds and Seventy Two Pence (£5,017,297.72 (exclusive of VAT) on or before [INSERT DATE] in respect of the Materials and Parts, hereby warrant and undertake to tie that:-

1 the Materials and Parts listed in Schedule 1 are intended for incorporation in the Edinburgh Trams Network (the "Infraco Works");

2 nothing remains to be done to the Materials or Parts to complete the same up to the point of their incorporation in the Infraco Works;

3 the Materials and Parts have been set apart from any third party property and stored at the Siemens warehouse situate at Unit 9B, Simpson Road, Broxburn, EH52 5NP (the "Premises") and have been clearly and visibly marked, so far as practicable, in order to indentify such Materials and Parts as belonging to CEC and have been identified for use in the Infraco Works.

4 property in the Materials and Parts (including but not limited to supplies received by us from a third party for incorporation in the Materials and Parts) is vested absolutely in us and the Materials and Parts are free from all Security Interests, encumbrances, charges or third party rights of any kind and we are able to pass title to CEC in the Materials and Parts absolutely.

5 the Materials and Parts are in every respect in accordance with the requirements of the Infraco Contract;

6 the Materials and Parts shall at all times after the date of this Certificate be insured by tie by way of the OCIP Insurances taken out and maintained in full force and effect by tie for the required term;

7 the Materials and Parts can be inspected at the Premises at any time upon reasonable notice by tie and/or tie's Representative or by its duly authorised agents; and

8 we shall not, except for use on the Infraco Works, remove or cause or permit the Materials or Parts to be moved or removed from the Premises.

We declare that property in the Materials and Parts shall unconditionally vest in CEC in accordance with Clause 9 of the Infraco Contract upon receipt of the interim payment referred to above.

Nothing contained in this Certificate or the Infraco Contract or any payment that may be made to us in respect of the Materials or Parts shall be taken as any approval by **tie** and/or **tie's** Representative that the Materials or Parts are in accordance with the Infraco Contract.

We shall indemnify and save harmless **tie** from all costs, claims, demands, losses and expenses of whatsoever nature arising from any loss or damage to the Materials or Parts howsoever arising and any breach or non-observance of any of the terms contained in this Certificate save to the extent that such loss or damage in insured by **tie** in the matter described herein.

Executed for and on behalf of tie Limited

Dated .....

Signed by .....

We Siemens plc of Faraday House, Sir William Siemens Square, Frimley, Camberley, GUI16 8QD, England engaged under a contract ("Infraco Contract") dated 08 May 2008 by tie Limited for and on behalf as an operating company of City of Edinburgh Council warrant that the statements made in provisions 1 to 8 above are true and correct and that all the actions referred to have been taken.

Executed for and on behalf of Siemens PLC

Authorised Signatory .....

Full Name .....

Dated .....

Authorised Signatory .....

Full Name .....

Dated .....

SCHEDULE 1

SCHEDULE OF MATERIALS AND PARTS

The Material and Parts are detailed herein in sheet reference ETN(SPM)TIE!PAB$CF+GABD#054022- entitled 'TPS material values'.