

THE EDINBURGH TRAM INQUIRY

Witness Statement of Axel Eickhorn

I, Axel Eickhorn, will say as follows:-

Background

1. I am employed by Siemens Sherkate Sahami (Khass) as Vice President Finance in its Mobility Division at an address known to the Inquiry. I was involved in the Edinburgh Tram Project (the "Project") from June 2008 until May 2015 having held the positions of Deputy Commercial Project Manager from October 2008 and Commercial Project Director from October 2011 [Question 1 (a)].
2. I have a Bachelor degree in Commercial Economics and a German degree in 'Betriebswirtschaft' (the German equivalent of a business management administration degree). I obtained an apprenticeship as an industrial clerk and began working in the Siemens Group in 1997. By the time I began working on the Edinburgh Tram Project (the "Project"), I had over 10 years' experience in the Siemens Group, working in various positions, including Commercial Administrator; Commercial Sales Manager; Performance Controller for Turnkey projects; Performance Controller at a Siemens Factory; and Commercial Sales Manager in Siemens Energy Systems division [Question 1 (d)].
3. In 2009, I had obtained a Project Management Certification that was held to Siemens' standards. This certification was acquired by attaining experience and knowledge in the field of project management and then undergoing an assessment. In 2016, I obtained a qualification as a Senior Commercial

Project Manager, which is a higher level of project management qualification in the Siemens Group, and which took into account my experience in Edinburgh on the Project. Out of approximately 350,000 people employed by the Siemens Group, there would be no more than number in the low hundreds people that hold this level of project management qualification.

4. Prior to my experience with this Project, most of my career had been spent based in Germany, working in Siemens project business. I had been involved in smaller projects managing groups of project managers and other major infrastructure projects in Germany and abroad at various phases from bid preparation through to implementation. These included turnkey tram and light rail schemes, such as Verona Light Rail, Ottawa Light Rail, Maglev Munich Airport (for which I was responsible for bid preparation) and HSL Zuid (Netherlands) (for which I was the Performance Controller for the Headquarters) [Question 1 (e)]. Generally speaking, the Maglev Munich Airport project was the most similar to the Edinburgh Tram Project. The Maglev Munich Airport project was similarly highly complex in terms of commercial partners, technology, volume and monetary value, although a very different technology.
5. Siemens has decades of experience of acting in projects in the metro and rail transportation market, having provided its services to countless schemes around the world [Question 2 (a)]. For example, the MST Lisbon scheme was a very similar scheme to the Project in terms of its length, the technology and scope of the project. I had some involvement in that project having being responsible for overseeing finances from Siemens headquarters in Germany. Another example is the more recent metro project Blue Line in Bangkok, Thailand which is currently in its implementation phase. Siemens' expertise is in integrating various technologies where there are various technical lots that are needed to be brought together as one project.
6. Siemens' involvement in the Project pre-dated my time working on the Project [Question 2 (b)]. In broad terms, I understand there had been a tender process and that a proposal had been put forward by Siemens and Bilfinger Berger UK Limited ("BB") together as a Consortium. How that co-

operation had come about, I do not know, save that Siemens had been active in the light rail market, and was trying to enter that market in the UK. BB must have also viewed it as an opportunity. Siemens had tried to enter the UK market previously, as there had been two other schemes proposed, but those opportunities had not materialised. I do not know what criteria Siemens had applied in choosing BB as its partner in the Project, but Siemens has a selection process for choosing its partners, based on a careful assessment of financial stability; reputation; and capabilities. I had no involvement in that process for the Project. The first I became aware of Siemens involvement in the procurement process for the Project, the Consortium had been appointed as Preferred Bidder.

7. I was invited to join the project by Alfred Brandenburger, who I had worked with previously. Alfred had a great deal of experience working on highly complex railway transportation projects which included the magnetic train. He was nearing the end of his career and was a certified Siemens Project Director, which is the highest level of project management bestowed by Siemens. He had worked on the whole life cycle of projects (including complex magnetic train projects) right through from bid stage and including on projects where disputes had arisen. It would have been difficult to have found someone more experienced than Alfred Brandenburger within Siemens. There are only around 100 individuals with Alfred's level of qualification.
8. I brought the project management experience that I had acquired from these projects to my role on this Project. This included project management methodologies; the approach of using milestones; the documentation that supports a project; and familiarity with change management which is key to a sizeable project as there are always changes in scope, timetable and requirements.

Overview

Role and responsibilities

9. From June to September 2008, I was employed by Siemens AG, primarily working from Germany. I joined the Project team on 7 July 2008 and this

was the first occasion that I had visited Edinburgh. Two to three weeks prior to that, I had been in a transition phase from my previous role and had used that time to become familiar with documents pertaining to the Project. From October 2008, I was employed by Siemens plc, working in Edinburgh. I do not recall receiving a briefing as part of a team building exercise in a workshop relating to project acceleration. This covered managing the project in a professional manner in accordance with Siemens project management methodologies; and in a spirit of teamwork and co-operation, both within the Consortium and with the client. BB was present at this workshop, but the client was not. I am aware that there had been a preceding workshop with the client as well, but I was not present.

10. From 2008, I reported to Mr Alfred Brandenburger, and worked very closely with him. This continued until I took up the position of Commercial Project Director in October 2011, after which the Siemens commercial project team for the Project reported to me, and I reported to Ms Julie Owen [Question 1 (c)].
11. My main responsibilities were the overall management of the project, together with the Siemens Project Director, with a focus on finances. [Question 1 (b)] This included financial reporting in accordance with Accounting Standards; financial controlling; evaluation of claims and changes; and project logistics [Question 1 (b)]. I was also subsequently involved in managing the workshop equipment that Siemens was responsible for and preparing Estimates for changes from a purely financial point of view. Overall, I was responsible for the accounting structure of the project on behalf of Siemens. I had a job description which would have been formulated with Alfred Brandenburger as part of the project specification.
12. At its maximum size, the Commercial Project team had 15 members. At its lightest, this team had 4 members (which was the figure when I initially started in the team). The primary function of the Commercial Project team was initially to review project structures, manuals; implement a system for change management matters; and negotiate sub-contracts etc. As the Project evolved, the roles and responsibilities within the Commercial Project

team also evolved so that it was responsible for the commercial elements of project logistics, for example handling elements of warehouse management concerning the inventory of stock and materials. There was a project management team that managed Siemens' sub-contract with BAM, and this reported into me. I had direct responsibility for running some smaller contracts myself.

13. There was regular interface with Siemens' Technical team. The Commercial Project team and the Technical team worked together on a daily basis. For example, progress on the construction side would determine Siemens' entitlement to payments. The interface between the teams was necessary to understand what needed to be delivered; when, and what requirements there were for storage space. The same applied to the management of the sub-contracts – what progress the sub-contractor had made determined the payments to which the sub-contractor was entitled. With regard to change management, if an element changed on the technical or programme side, it was necessary to evaluate the impact on the financial side. I would therefore need to review any Infracore Notice of Tie Changes ("INTC") drafted by Frank Wenzel (the Change Manager) to cost the change and provide approval for it to be sent.
14. Broadly, with respect to work allocation within the Consortium and between BB and Siemens in relation to the Project, BB was responsible for the Civil Construction and Building Works and Siemens was responsible for the Systems and Track Works. Detail of the scope split between Siemens and BB was contained at Annex 1 to the Consortium Agreement [Question 3]. BB was the Consortium Lead. It is usual in projects where the Civil Construction and Building Works form the larger proportion of the scope of the works, and has the greater value, for the consortium partner responsible for those works to be appointed as Consortium Lead. Only in exceptional circumstances for a project such as this would Siemens be project lead. The Civil Construction and Building Works for which BB was responsible encompassed all construction, save for track laying which fell within Siemens' scope. The Electrical and Mechanical Systems for which Siemens was responsible encompassed the traction power supply; overhead line; signals;

communications systems; tram stops equipment; passenger information systems; depot and workshop equipment; and traffic light control equivalents etc.

15. The Consortium became responsible for the design of the Infraco Works after Contract Close when the SDS provider became a sub-contractor of the Consortium . As between Siemens and BB, the share of input into the design responsibility was set out in Annex 1 to the Consortium Agreement. In general terms, within the Consortium, Siemens was responsible for input in respect of the design of systems and trackwork (i.e. designing the scope and equipment to be manufactured, procured and delivered in accordance with the client's requirements and to manage the process of integration of the design within the consortium) [Question 4 (a)]. BB on the other hand did not do any design work; themselves, and implemented the designs drawn up by the SDS provider (Parsons Brinckerhoff). Whilst Siemens was responsible for the management of the system integration process, it was not responsible for the systems integration itself. Siemens' role was to identify the interfaces between various elements of the works and then to manage the process as to how those interfaces could be resolved so that the elements work together. Consortium partners would subsequently implement Siemens' solution. Siemens had a facilitative role mostly between BB, Siemens and CAF in respect of design and integration management.

Initial Impressions [Question 5 (a)]

16. When I joined the Project team, I familiarised myself by studying the contract which I found to be unusually complex. It seemed to me that there was a lack of flexibility within the contract, that there were lengthy tightly defined processes in terms of deadlines to be met and a lot of control for the client. By way of example, it was apparent that under the change mechanism, work could not commence until the Estimate for the change was agreed by the client. This change mechanism was much more complex than is usual for projects of this nature. There were also novation systems for the tram provider (CAF) and the SDS provider to become part of the Consortium, with CAF as a Consortium Partner, and Parsons Brinckerhoff as a sub-contractor

to the Consortium. This was a concept that I had not encountered before. I suspect that the concept was designed in an attempt to minimise risk on the part of the client but it brought additional complexities. CAF had to be integrated into the Consortium in terms of working out what their obligations were and were not. They had been providing their services directly to tie for a large period before, and fitting their delivery Programme with the Infraco Programme was a challenge. This was because CAF continued its production line for the trams, which resulted in trams being ready but there was nowhere to put them as the network was not. It may have been simpler for CAF to resolve such issues directly with tie, rather than the Consortium being involved, especially since as a partner of the Consortium, CAF was not subject to the management of BB or Siemens.

17. Although I was not closely involved in the process, I understand from the outset that there were delays to the design Programme which had an impact on the Infraco Programme [Question 4 (b)] and 5 (c)]. I was involved in pricing this delay in formulating the first Extension of Time Claim (EOT#1) [Question 5 (c)]. In my opinion, the risk of cost and delay associated with those matters constituted a requirement for a tie change, the mechanism for which was provided for in the Infraco Contract (Clause 80) [Question 5 (c)]. It was apparent that, at the time the Infraco Contract had been signed, there were delays in the design progress, the cost of which were not included in the contract price. The design as at the Base Date of 25 November 2007 (“the Base Date”) upon which the price had been based was incomplete: a significant proportion of drawings did not have “Issued for Construction” or “Approved for Construction” status which was necessary for construction work to begin based on those drawings. At the point the Infraco contract was signed, as referred to above, the design work had been provided by the SDS provider, Parsons Brinckerhoff. From commencement of the Infraco contract, Parsons Brinckerhoff became a sub-contractor of the Infraco Consortium with payments due to them managed by BB and forming part of BB’s costs. I am unable to comment upon the state of completion of the design for the Siemens’ works as at the Base Date and at Infraco Contract Close as this

pre-dated my time on the project, save that the drawings were constantly changing thereafter [Question 4 (d)].

18. Siemens required a working draft of a drawing from Parsons Brinckerhoff. Siemens could then provide its design input. For example, if it was apparent from the first iteration of the drawing that a cable duct was required, Siemens would specify the type, length and thickness of the cable and Parsons Brinckerhoff would incorporate that detail into the drawing. The difficulty that was apparent however, was that the drawings provided by Parsons Brinckerhoff were based on assumptions which transpired to not accord with the conditions on site. For example, the position of an overhead pole may need to be changed from that specified in the drawing if there transpired to be no space to put the pole on site. This could have an impact on the load calculations and the length of cable required. Similarly, the dimensions of a retaining wall may need to be different from that set out in the drawings due to the conditions on site. Each time this happened, it necessitated a further iteration of the drawing by Parsons Brinckerhoff, which had to be checked by Siemens to see if any further design input was required by Siemens. If it did, then Parsons Brinckerhoff would have to incorporate that into the drawing as well. Some drawings had considerable iterations and the drawings were in a state of frequent change for a number of years. Until around 2010/2011, the drawings were a moving target.
19. The changing nature of the design would have impacted upon the consents and approvals required, but I was not involved in that process. Michael Wilken, the Systems Design Manager in the Siemens Technical team had the interface with Parsons Brinckerhoff in respect of the management of the design. Regular meetings took place with Parsons Brinckerhoff in order for Siemens to provide its design input. There was a process for Siemens to provide its input, had this worked, but the process was overwhelmed by the need for so many iterations of the drawings. This was because of the unexpectedly high workload that stemmed from the process. Any potential design change needed to be identified, an estimate prepared and agreed and subsequently implemented in the design. However, this in turn would mean that any work required to implement the design change would also need to

be changed (e.g the dimensions would not be the same; different equipment may be required etc). As a result, the process was slowed down and was severely hampered.

20. In respect of Siemens' work, the changing designs did not have a significant impact on its scope of work, but had a daily effect in terms of the delay caused. Whilst it awaited finalised drawings, the resources Siemens had procured remained idle, or some of the work it could undertake could not be conducted in an efficient manner. The time it took to check each iteration of the drawings and provide any design input needed placed demands on Siemens's staff. For BB, the changing drawings had more of an impact upon its scope of work. For example, if the size of a retaining wall was changed, that would impact on BB's construction costs. If BB would not then agree BB's Estimate for the INTC, this caused a delay to the works getting under way. Siemens' work followed on from the construction works. Siemens endeavoured to work in smaller sections than originally envisaged, in order to make some progress. For example, the work of track laying was broken down into smaller sections. This was not efficient since it is easier to ensure the build quality on longer stretches of track.
21. When I joined the project, in terms of the intended approach to utility diversion works, it was well known that there were complications to be expected due to the fact that the utility works not been completed. However, I cannot recall that there was an analysis of the Infraco Programme impact at that time. The utility diversion works had a massive impact on the Programme [Question 4 (b)]. There was an assumption under the Infraco Contract that the sites would be handed over to BB utility free, but on arrival on the majority of sites, BB was discovering further utilities. This had a consequent impact on Siemens' ability to commence its works. For example, if an overhead pole was required, BB would first have to lay the foundations for that pole before Siemens could erect the pole. If BB dug into the site and found a utility, work would have to stop until that utility was diverted. This could not be done by BB itself for various reasons, including that the utilities were the property of a third party, and that there were safety risks to BB's employees.

Allegations made by TIE

22. I have been asked by the Inquiry to confirm my view in respect of the following allegations made against the BSC Consortium:

22.1 Allegation: The Consortium failed to mobilise timeously (see DLA00001673 and DLA00001672) [Question 6 (a)]:

22.1.1 Siemens mobilised all required key personnel without delay. There were Siemens employees who had been working on the Project from before contract signature and a number of employees, including myself, were made available quickly. This also included Siemens' sub-contractors who were mobilised and on site without delay. As a matter of record, Siemens issued an Instruction to Commence to its sub-contractor, BAM Rail, on 22 May 2008, 14 days after contract signature. Siemens were, in fact, required to mobilise too early. In particular, the insistence that Siemens mobilise its Key-subcontractor, BAM, was misguided, but Siemens had to instigate this as it could not risk failing to be ready, and had to work according to the Programme. Siemens could have mobilised BAM a lot later, with savings in costs. A significant part of the additional monies paid to Siemens as part of the Settlement Agreement were in respect of BAM Rail. Siemens also started our manufacturing programme in a timely manner which caused us problems later because we had to find suitable long term storage space for all the equipment that was delivered to the site in accordance with the original Programme, but which could not be installed on site. Another example, was a Site Manager who had to be stood down, as there was nothing that could be done on site.

22.2 Allegation: The Consortium refused to start work involving a change until an Estimate had been agreed [Question 6 (b)]:

22.2.1 As per the contract (Clause 80.13), the Consortium was not allowed to commence work in respect of a tie change until an Estimate was agreed and a tie Change Order was issued. This gave tie strong

control as it had control of the budget. Commencing work without a Tie Change Order would have been allowed only insofar as tie had referred the matter to dispute and an instruction issued to proceed in the absence of an agreed Estimate.

22.2.2 This interpretation was upheld in the Murrayfield Underpass adjudication, albeit this related to BB's scope of work.

22.2.3 This was an unusual feature of the contractual provisions in this Project. Usually a client can provide instructions to proceed in the absence of an agreed Estimate without referring the matter through the dispute procedure, as this gives more flexibility.

22.3 Allegation: The Consortium refused to work in a section if utility diversion works had not been completed there [Question 6 (c)].

22.3.1 Siemens was not directly affected by this in the same manner as BB because of our scope and because of our planned activity sequence. We did not follow on directly after completion of utility diversion (MUDFA) work. Instead, we followed on after the construction works by BB.

22.3.2 Regardless of whether the utility works had been completed, there was still work for Siemens to progress since it was necessary that Siemens started its manufacturing Programme to produce items such as switch gears, transformers, tracks and signals in accordance with the planned works. Most of the equipment was standard but had to be customised to the client's requirements, and software had to be adjusted. This had to be commenced in a timely way, so that it was available when the site became available to Siemens. I am not aware of a single occasion when Siemens could not complete its installation works because equipment or software was not ready or had not been ordered in time.

22.4 Allegation: The Consortium delayed in carrying out the Off-Street works [Question 6 (d)]:

- 22.4.1 The Off-Street works were also affected by the utility diversions; and the design changes. Our understanding is that because of the non-agreement of Estimates, the Consortium could not proceed with the Works in a number of locations. These Estimates largely related to BB's civil and building scope. However, our understanding of Clause 80.13 was that works in question could not proceed unless Estimates were agreed or, alternatively, tie elected to refer Estimates to Dispute Resolution.
- 22.4.2 Siemens did not delay in carrying out its scope and was, in fact, very keen to make work sites available for its Key-Subcontractor BAM, who had been mobilised from the start of the project. Siemens always tried to work in sections made available to us (e.g. Guided Busway as an early example, which cost Siemens a lot of money only to expedite some works). Also, the Consortium undertook some of these works at risk on a goodwill basis.
- 22.5 Allegation: The Consortium failed in its duty to take all reasonable steps to mitigate delay to the Infraco works, and in relation to the acceleration of those works [Question 6 (e)]:
- 22.5.1 I am only able to comment on the Siemens scope. It is not true to say that we failed to mitigate. Siemens was largely dependent upon completion of preceding works by others prior to commencement of our works. Siemens did a lot to mitigate and did so where possible including endeavouring to not have machinery on site when it was not needed. Another example was the effort that BAM went to in order to rent Tamping Machines which are in high demand in the UK and in Europe and it would be normal practice for there to be a long lead time to hire the machines and to make sure they can be taken when the hire period begins, due to the difficulties in securing them again. BAM did a good job in securing the machines for Siemens despite all of the delays incurred. Failure to obtain these machines would have resulted in even lengthier delays to the Infraco works. However, the possibilities to mitigate were limited,

except in isolated smaller locations. An example of this was the Guided Busway, in respect of which Siemens incurred significant unrecovered expense in trying to find work for BAM. Siemens was undertaking its planned procurement Programme to ensure everything was available when needed.

22.5.2 I am aware that tie was asking on an informal basis for the Consortium to accelerate the Programme, although this was more relevant to BB than Siemens. However, there was no contractual obligation to complete an activity of a defined duration within a shorter time frame than provided for in the Programme. This would have been an acceleration of the Programme which would have required a tie change, since it generally entailed additional costs for the Consortium. A dispute over this was referred to adjudication and the adjudication decision confirmed that there was no obligation on the Consortium to accelerate the works.

22.6 Allegation: The Consortium failed to properly manage and progress the design process after SDS novation [Question 6 (f)]:

22.6.1 Although design and design management was not my area of responsibility, I do not believe there was a failure in the management of that process after SDS novation. It was for Parsons Brinkerhoff to complete the system design, and the contractual change mechanism which had to be invoked to change the design was a very cumbersome process. Changes required a design change to be made first before an Estimate could be produced assessing the impact of the changed design to be put to tie. There were therefore a lot of interfaces and dependencies built into the process before a design could be completed. The only way that this could have been shortened was to agree a contractual variation of the change mechanism.

22.6.2 As the lead to the other partners within the Consortium, BB was responsible for compiling payment requests and providing some

project procedures. However, each individual Consortium partner was responsible for the delivery of their own respective work scopes, and BB did not have any performance management function in respect of the other Consortium partners. Parsons Brinkerhoff was a sub-contractor to the Consortium, rather than a partner and there would have been rights and obligations built into that sub-contract. Oversight of Parsons Brinkerhoff was a shared Consortium responsibility and was not assigned to any particular Consortium partner. Each Consortium partner would have wanted to be sure that the design for their scope of works was correct. In practical terms, BB would have reviewed Parsons Brinkerhoff's payment applications and their entitlement to payment. However, I only had limited visibility of this as this was not one of my key responsibilities.

22.7 Allegation: The Consortium intimated an unreasonably high number of INTCs [Question 6 (g)]:

22.7.1 The vast majority of INTCs related to civil construction. In my view, it was not the case that changes were being notified without good reason. It is true that some of the changes were minor in terms of value, but I question why these would not be notified. The purpose of the INTCs was twofold: to assess the financial entitlement that resulted from the change; and also to ensure the functionality and safety of the change. When an element is changed, if the change is notified, it undergoes a proper design review and vetting process to make sure it is safe to make the change and that it is line with the Employers' Requirements. In comparison to previous comparable projects I have been involved with, I believe that there were more notifications for this Project. However, this was primarily due to the design drawings having not been completed. Therefore, there needed to be deviations from the base date design which provided the scope by which the lump sum price had been calculated.

22.8 Allegation: The Consortium delayed in providing Estimates [Question 6 (h)]:

22.8.1 I do not believe there was any deliberate delay in preparing and submitting Estimates and certainly there were no intention to delay. Some of the Estimates were highly complex and it was necessary to collate together the cost of the impact of the proposed changes from various Consortium partners, which could also mean obtaining information from third parties such as sub-contractors or utility providers. The contractual time limit of 18 days was not very long, albeit there was a mechanism for this to be extended, and this was sometimes the case, although I cannot recall if extensions were generally granted or not. Therefore, there were occasions when the 18 day timeline set in the contract was exceeded, but for valid reasons, particularly given the number of changes for which Estimates were having to be provided and the difficulty in agreeing with the Estimates that were provided which was also a long process.

22.8.2 I am unaware of specific instances when the timelines for provision of Estimates were exceeded in respect of a change affecting Siemens. However, I am not aware of any particular problem in providing Siemens' input.

22.8.3 In order to address the significant number of changes initiated, BB increased the size of its changes team significantly since the majority of changes affected BB's scope. Over time, Siemens also had to increase the size of its changes team, as required by the Project, but to a lesser extent than BB and my impression was that Siemens were able to manage the changes that affected its work, and that it had a good grip on keeping the process under control. My impression was that on the Consortium side the change process was under control.

22.9 Allegation: When Estimates were provided, they were lacking in specification and/or failed to demonstrate how Infracore would minimise any increase in costs and ensure that the change would be implemented in the most cost

effective manner (per clause 80.7 of the Infraco contract, found at CEC00036952) [Question 6 (i)]:

- 22.9.1 I am unable to comment on Estimates provided by BB, but generally, the Siemens elements of Estimates were provided in a transparent manner and in most cases discussed with tie/CEC representatives in order to fulfil the obligations set out in paragraph 22.2.1 above.
- 22.9.2 Siemens always remained open to discussing with tie the most cost-efficient solutions and would not propose an expensive option. There was a good dialogue but often following those discussions, no Change Order would be received and no specific reasons were given (most of the time). My personal impression was that there just was not the budget available to approve the change.
- 22.9.3 A very detailed breakdown of costs would always be provided in an Estimate. Breakdowns always detailed the equipment and design resources that would be required. For all of Siemens' work, there were no rates within the contract, until some were included after Mar Hall. This is commonly the case as it is more difficult to include a schedule of rates. For example, a contract may be require 600 overhead poles, but there may be 200 types of those poles with varying numbers of fusings and hatches. As such, it would not be possible to include that for systems items that have to be tailored, than it is for construction work specific item in a schedule of rates as each type might differ in length, measurement, cost etc. In the absence of a schedule of rates, it was necessary for Siemens to demonstrate the actual cost of a change and Siemens agreed with tie to have its rates audited by a third party to verify this. This would lead to greater clarity and would reduce the possibility of a dispute arising.
- 22.9.4 These allegations were not being raised in the meetings I attended with tie. I was never personally confronted by tie with any allegation

that the Estimates were lacking in specification or failed to minimise cost increases and I was not aware at the time of any discussions around this at a more senior level. However, I was aware of constant exchanges between our Contact Manager and our staff discussing how Estimates should be tailored in accordance with the client's needs. Our Estimates underwent many revisions (sometimes more than 10) to change the detail to accommodate the specific wishes of the client. For example, the client sometimes wanted to change the configuration details; it sometimes wanted to scale back its costs to make the solution more affordable and to protect its budget; it sometimes just wanted to change the colour; or it could want a different solution. There was room for interpretation in the Employer's Requirements so agreement had to be found as to how those Requirements would be delivered. This in turn would mean that we would need to revise our Estimates.

22.10 Allegation: The amounts in the Estimates were often excessive [Question 6 (j)]:

22.10.1 On Siemens side all Estimates were calculated in accordance with the contract (actual or Estimated cost in the absence of rates). To add transparency to the Siemens pricing, rates were audited by external auditors in order to establish the actual costs.

Tender Phase, Preferred Bidder

22.11 I was deployed to the Edinburgh Tram Project in June 2008 so I am not in a position to provide evidence relating to the procurement and its timetable, the formation of the Consortium, the bid submitted, any meetings, discussions or correspondence that took place during that procurement process, the selection of the Consortium as Preferred Bidder or the period leading up to and including contract close [Question 7 – 21].

22.12 I am however, able to assist with regard to explaining the purpose of designating a design as the "Base Date Design Information". The understanding I acquired when I joined the Project was that it was clear when

the Contract was being negotiated that the design was not finished, but at the same time, the Consortium was being required to fix a price. Without a base design, the price had to be connected to a specific scope. The Consortium would not have been able or willing to commit to a price which would remain fixed, knowing that the scope was going to change.

- 22.13 The Base Date Design Information referred to in the Infraco Contract was partly based on assumptions, some of which did not transpire to be true. This had a greater impact upon BB's scope for the Project than Siemens' scope. By way of an example, if it transpired that a larger retaining wall was required than had been envisaged in the Base Date Design Information, this would have impacted upon the cost for BB which would need additional materials and resource to build the larger wall. However, such a change would have been unlikely to impact upon Siemens' scope as it would not affect, for example the track length that Siemens was required to lay. Siemens' scope depended primarily upon the Employer's Requirements, rather than the design.
- 22.14 By the time of Contract Close, the design development would have moved on from the design that was designated as the Base Date Design Information. However, the changes brought about by those developments were not included in the fixed price, as time would have been needed to agree the impact of those changes. It was a constantly moving target. I understand that tie was keen to move to Contract Close in May 2008 and that there was some time pressure to fix the price. Incorporating further changes into the calculation of the fixed price in detail was, I assume, not feasible in that time.
- 22.15 In respect of the drafting of the change mechanism, whilst I had not begun working on the Project at the time this was agreed, I am familiar with its provisions. An Infraco notification of Tie Change was one that was instigated by the Consortium, and a tie Notice of Change was one instigated by tie. The mechanism included provisions for the changes to be agreed by tie which I believe to be a mechanism to seek to protect the public purse. A tie Notice of Change could be referred to dispute resolution if not agreed, and in

such circumstances, tie had the option to issue an instruction to proceed with the change pending resolution of the price.

Wiesbaden

23. I understand that a meeting took place between the Consortium and tie at BB's headquarters at Wiesbaden, Germany, in December 2007, following which I understand that an agreement ('the Wiesbaden agreement') (CEC01502881) was signed. However, I am not able to comment about that meeting or the agreement as it was before the time that I commenced working on the Project [Question 22].

Advanced Works contract

- 23.1 I have been asked by the Inquiry to confirm my view and understanding on various aspects relating to an Infracore mobilisation and advance works contract that was entered into in late December 2007 (CEC00833760) [Question 23 (a)]. Although this was before the time that I commenced working on the Project, I understand that this agreement was a means of commencing some works before Contract Close. It enabled design development and project management resources to be deployed with an independent entitlement for payment being drawn down early from the Contract Price, so tie would have begun to use some of its budget for the Project. This had no impact on tie's negotiating position with any other bidder as those negotiations had concluded when the Consortium was appointed Preferred Bidder.

December 2007 to May 2008

24. This period pre-dated the time when I began working on the Project. I am not therefore able to assist the Inquiry in relation to any discussions or communications in that period. I have no knowledge of any misalignment issue in late 2007 and early 2008; the Rutland Square Agreement, any SDS incentivisation agreement; any Design Due Diligence Summary Report; nor the Kingdom Agreement [Questions 35 – 56].

Contract Close – May 2008

25. I have been referred to Schedule Part 4 of the Infraco Contract (USB00000032), which specifies a Construction Works Price of £238,607,664. The Construction Works Price was fixed in relation to the scope as defined (in the Base Date Design Information and Employer's Requirements) but was subject to the various exclusions, provisional sums, any value engineering and any departures from the assumptions and conditions which would require variations to the fixed price (up or down as the case may be) [Question 57 (a)]. It was already out of date when the Contract was closed. It was known there would be changes in scope from the Base Date Design Information and in time so the changing mechanism allowed the Consortium to examine those changes to assess the effect on the price.
26. It was unclear to me what the purpose was in the Contract having different definitions for Contract Price. These variations could be misleading. For example, the Capital Expenditure Figure is almost 30% higher than the Construction Works Price, with the difference largely accounted for by the price of the trams. However, this meant that there were different ways that the price of the Project could be presented, which could be confusing. There were many entitlements under the Contract to adjust the price, which undermines the concept of a truly fixed price. This was never a fixed price contract in the sense that there could not be any variations in the price.
27. The figure set out in SIE00000106 was the final fixed Siemens' share of the Lump Sum firm and Fixed Price without considering value engineering and provisional sums [Question 57 (b)]. The figure set out in SIE00000227 at page 2 additionally took into account the expected share for Siemens after Estimated value engineering and provisional sums were taken into account. [Question 57 (b)]
28. The value engineering and provisional sums were estimated numbers subject to amendment based on the actual work to be carried out [Question 57 (c)]. In respect of why the Construction Works Price took account of value engineering and provisional elements in that way, it is my understanding that the underlying scope had not been finally defined at that time but the figures

represented the best estimation available at that time and were stated for completeness [Question 57 (d)].

29. Value engineering refers to cost-efficient engineering solutions that the parties should seek to reduce the price. The value engineering figures mainly related to BB's works (£12.6m) in contrast to Siemens' works (£0.8m) [Question 57 (e)]. The extent to which the anticipated value engineering savings were achieved would be best answered by BB since the value engineering did not relate so much to Siemens' work. I do recall some disappointment on the part of tie that the value engineering savings that were achieved was not as much as they had hoped. As far as Siemens was concerned, I do not believe the value engineering savings targets were achieved and I believe that was because they transpired not to be technically feasible. The process for implementing identified value engineering opportunities is contained in paragraph 5.3 of Schedule Part 4. There would have been a technical discussion as to whether or not to implement the value engineering saving, and if so, this would have been implemented as a tie change.
30. Provisional sums are estimates provided for items that it is known would be required but which could not be priced with certainty at the time of Contract close. £19.4m of the Provisional Sums related to BB's works and £5.7 related to Siemens' works. For Siemens' works the final amounts did not differ significantly from the provisional sums. There were good methods of working with tie to agree these amounts, which were largely paid, albeit finalising the price sometimes became stuck in the process together with the matters proceeding through the change mechanism. Tie was well aware that the provisional sums are not fixed initially and that there would be an adjustment once the price was known.
31. The pricing assumptions listed in Schedule Part 4 of the Infracore contract described instances to enable a variation to the Contract Price if the assumptions transpired to be incorrect [Question 58 (a)]. There may have been a benefit or additional cost for tie from this, subject to the change being approved through the change mechanism and depending on the actual

scope of work [Question 58 (a)]. Pricing assumptions were required because the design was not complete. Schedule Part 4 was a key provision in the Contract [Question 58 (b)].

32. The extent to which the pricing assumptions were needed on behalf of Siemens to fix its part of the Construction Works Price was assessed before I joined the Project [Question 58 (b)]. It is my view that Siemens expected there to be more of an impact from changes in the Employer's Requirements (should they occur), than from changes to the Base Date Design Information, and that there would be more changes to BB's scope as a result of changes to the construction works design.
33. With reference to the list of Pricing Assumptions at clause 3.4 of Schedule Part 4 of the Infracore contract, the following pricing assumptions were the most significant to Siemens as they directly related to Siemens' scope: 6, 7, 8, 9, 10 and 29 [Question 58 (c)]. I do not, however, recall that these pricing assumptions had a significant impact in the end [Question 58 (c)]. Pricing assumptions 1, 3 and 4 were also significant but the risk lay largely with tie.
34. The Pricing Assumptions which had the greatest impact on the cost of the project were 1, with regard to the Design and 24 with regard to completion of utility diversion. Those that related to Siemens' scope did not significantly impact on the scope of the project [Question 58 (d)].
35. Pricing Assumption 1 was less relevant directly to Siemens with hindsight in that I am not sure there was ever any Notified Departure raised by Siemens based upon this Pricing Assumption. However, Pricing Assumption 1 gave rise to a significant number of changes in the civil and building scope of the Works, which impacted, in varying degrees, on the Programme and therefore had a time impact on our share of the Works. Siemens' design was mainly driven by Employer's Requirements and to a lesser extent by the final design of construction elements.
36. In my opinion, 'normal development and completion of designs' encompasses final adjustments of details largely without drastic change in shape, form, size, quantities, quality, requirements typically leading to a

significant cost, time and price impact. [Question 58 (f)] The risk of any other change to the design was retained by tie, so only changes beyond the normal development and completion of the design had an impact on programme and cost following a Notice of Change. The change mechanism worked both ways so it could be the case that the price drops as a result of reduced scope, although typically the structures became larger and more complicated. There were cases where the track form was changed to a more economic solution for which a Notice of Change would have been raised and accepted.

37. I am not aware why Appendix H of Schedule 4 did not list the drawings comprising the Base Date Design Information since I was not involved in the contract-close phase and was not deployed to the Project until after that date [Question 59 (a)]. However, I do not recall any problems in locating those drawings and I believe they were contained in a data dump package, provided on a number of CDs [Question 59 (b)]. I do not recall any dispute as to what the drawings were.
38. Obviously, there were a significant number of Infraco Notices of tie Change (“INTC”), but taking account of the Pricing Assumptions, this was not so surprising to me [Question 60 (a)]. Any surprise factor was as a result of the number of changes that occurred, not the number of INTCs issued, but this was explainable by the state of the design used as the Base Date Design Information. In relation to Siemens’ scope the overall number seemed reasonable [Question 60 (b)]. In comparison to comparable projects I have worked on, the number was certainly not outside of a usual range nor was it unusual given the length and nature of the Infraco contract.
39. Circa 100 of circa 850 of the INTCs raised before the Mar Hall mediation related to Siemens directly [Question 60 (c)]. These represented an increase claimed by Siemens of approximately £35m. Overwhelmingly, the most significant factor giving rise to INTCs which affected the cost of Siemens’ works was the time and Programme impact as Siemens’ works could not be carried out as originally planned due to the delays arising from preceding

works, namely the completion of utility diversion (MUDFA) works [Question 60 (e)]. This prevented Siemens from having site access, as planned.

40. In addition to INTCs, there were also tie notices of change [Question 60 (f)]. There were very few of these, with the number of changes proactively brought about by tie being far less than the changes instigated by the Consortium. However, I could not comment on the extent to which tie notices of change affected the cost and time of the project, as this would have to be the subject of a detailed programme examination. Since there were far less in number, I would expect the impact to have been less than for the INTCs, and I am not aware of any tie notice of changes that had a significant impact on Siemens work.
41. Paragraph 3.5 of schedule part 4 deemed any Notified Departures from the Base Case Assumptions as defined at para 2.2 of Schedule Part 4 to be a Mandatory tie Change, and that tie would be deemed to have issued a tie Notice of Change on the date that such a Notified Departure was notified by either party to the other, and therefore the change procedure set out in clause 80 of the Infracore contract applied.
42. One of the problems that I recall is that agreement on Programme impact could never be reached and works to implement the changes could never commence in the absence of an agreed Estimate [Question 61 (a)]. In the absence of agreement, these Estimates were in most cases not referred to the Dispute Resolution Procedures for determination, and works effectively stopped in the location affected by the changes. Had the Estimates been referred to the Dispute Resolution Procedure for determination, tie could have instructed the Consortium to carry out the proposed tie change prior to determination of the Estimate. The administration of the contract change process was cumbersome and the absence of agreement on Estimates meant that the parties were having to deal with numerous ongoing issues at the same time.
43. Pursuant to Clause 80.10, the Consortium itself could have referred an Estimate for determination in accordance with the Dispute Resolution

Procedure. From Siemens' perspective, the number of changes was of a lesser magnitude and its strategy was to try to agree with the client. There was not really seen to be any advantage to the Consortium in referring to the Dispute Resolution Procedure. This was because there was no confidence that the dispute could be resolved unless it was forced to adjudication, as not many disputes were being resolved at the initial management level meeting as first step of the dispute resolution procedure.

44. I never fully understood why tie did not refer disputed changes to the dispute mechanism, to then be able to instruct the works and agree Estimates later through dispute resolution [Question 61 (b)(ii)]. I always felt that Siemens was a passenger in this situation, despite Siemens being largely ready to deliver on time (including ensuring all equipment and materials were ready for use and installation). As a consequence of no site access, Siemens could not undertake its works. Siemens' hands were tied in this respect [Question 61 (b)(iii)].
45. In terms of any difficulties which arose in agreeing Estimates with tie, the process of finding agreement was slow [Question 61 (d)]. Estimates were frequently disputed in relation to time and cost impact; and, sometimes, in relation to Siemens' works, it almost seemed like tie had a policy of not agreeing to anything [Question 61 (d)]. A lot of time was spent explaining how the Estimate had been arrived at, and providing details. Rates used in the Estimates were the subject of external audits. My main contact at tie in this respect was finance director, Dennis Murray. Despite his seniority, I had the impression that there was simply no authority on the part of tie to approve the Estimates. In some cases, Siemens compromised on a cost contained in an Estimate knowing that the figure agreed would not cover the real cost just to gain some agreement and progress.
46. In terms of whether there were any difficulties arising where the notified departure necessitated design work by the SDS Provider, a change had to first be agreed for the SDS Provider to adjust the design with input from the Consortium [Question 61 (e)]. After that, a second decision was required to implement the changes required as a result of the updated design. The

change notice process was therefore difficult when a change in design was involved.

47. There was a dispute over tie's power to instruct the Consortium to carry out work in advance of agreement that the work was a change and of the Estimate relating to it [Question 61 (e)]. This dispute arose in the context of instruction issued by tie on 19 March 2010 to carry out INTC 109 (Murrayfield Underpass) works. My understanding is that whilst the existence of a Notified Departure was not disputed, there was no agreed Estimate. In the absence of an agreed Estimate, the Consortium refused to comply with tie's instruction to undertake the INTC 109 works. The Consortium's position was that Clause 80.13 only entitled tie to direct Infracore to commence works in respect of a tie Change where there was an agreed Estimate or where the Estimate had been referred to the Dispute Resolution Procedure. The Adjudicator found in favour of the Consortium on this point of principal. [Question 61]
48. Within reason, the Consortium was willing to progress works in the absence of agreement. I recall that BB undertook works in respect of a number of not-agreed INTC on a without prejudice basis. These works were referred to as the 'Goodwill Works'. I also recall that, notwithstanding the absence of agreed Estimates, Siemens proceeded at risk with a number of design changes in order to mitigate delay to the Works. I believe that Siemens took a common sense approach to such matters. Over time, a sense of frustration emerged in the Siemens team about the difficulties to reach agreement on changes, especially given the numbers of changes that this concerned [Question 61 (g)]. However, mitigation was always sought and works continued wherever possible.
49. Given the numbers of Estimates with approval outstanding, it may not have been a viable option to refer the Estimates through the dispute mechanism. The alternative option would be for both parties to reach a further compromise, and one way of doing this was to bundle together the outstanding changes and reach a deal based upon the package of changes being agreed, as was suggested with the Phoenix proposals.

50. Had tie referred the matter through the Dispute Resolution Procedure, tie would have been liable to pay the Consortium's demonstrable costs in accordance with Clause 80.16 pending final determination of the Estimate [Question 61 (h)]. There is a probability that using the Dispute Resolution Procedure and instructing the Consortium to proceed would have made it possible to finish the project earlier [Question 61 (i)]. I assume overall there would have been additional costs for tie for the changes in scope but less impact in time related costs [Question 61 (i)]. However, tie would have had no certainty in regard to the cost and/or time implications of Changes, as these would have fallen for determination by others and tie would have lost the ability to reach a deal on price. Due to the volume of Notified Departures the widespread use of such a strategy would have required careful consideration. My own conclusion was that either tie had no authority and no budget available to agree the changes or that tie was trying to prevent any precedence being set since agreement could not be reached even in respect of the most simple Estimates.
51. Clause 60 of the Infraco contract required the Consortium to update the Programme and made provision for agreement of the Programme with tie.
52. I was not directly involved in Programme matters, but my understanding was that the biggest impact on the Programme was the utility diversion (MUDFA) works which resulted in the Extension of Time claims. Apart from the agreement of the impact of INTC No.1 (and the acceptance by tie of Contract Programme Rev.1 on 17/12/2008), my understanding was that the parties were wholly unable to agree a Programme prior to the Mar Hall mediation. Each reporting period the Consortium submitted an updated contract Programme, showing the impact of design, approvals and work delays. [Question 62 (a)] For Siemens, Matthias Hecht provided input into the Programme, and Steven Sharp updated the Programme on behalf of the Consortium. Steven Sharp was a highly professional and experienced scheduler, but my impression was that his counterpart at tie was not equally experienced. I mention this because in my experience the professional management of the programme is an absolutely essential key task in managing a project like this. [Question 62 (b)]. It appeared to become much

easier for Steven Sharp to reach agreement on the Programme after the Mar Hall mediation, when a new consultant was brought in on the client side, who had a similar level of experience to Steven Sharp.

53. In the absence of an agreed Programme, the Consortium had to work in accordance with what the Consortium regarded necessary in order to properly plan the sequence of works to be carried out [Question 62(c)]. There was no real impact in terms of performance management of the contract, as progress was always reported. Payments were mostly based on completion of activities, rather than completion within defined timescales. The consequences for the project of not having a Programme agreed with the customer were therefore not significant in terms of carrying out the physical Siemens site works. However, having an agreed and somewhat reliable programme would have made resource planning easier for Siemens and its subcontractors.

53.1 Clause 61.8 of the Infraco contract provided for the payment of the sum £1.2m for completion of each work section, if certain conditions were met. These payments were part of the Construction Works Price which would fall due when the activities constituting a milestone were completed [Question 63 (a)]. These were not additional bonus payments for completion within a certain timescale. These sums were paid as part of the Construction Works Price [Question 63 (b)].

After Infraco Contract Close – May 2008 onwards

54. I have been asked by the Inquiry to provide my understanding of the extent to which the overall Infraco Programme delay, after contract close, was attributable to various factors [Question 64 (a)]. Given the number of activities involved, it would not be possible for me to apportion the extent to which those activities were influenced by the various factors. A comment on this could only really be provided by a scheduling expert who has undertaken a cause and impact analysis. My impression was that it was the delay in the diversion of utilities that had the greatest impact [Question 64 (a)]. In its Estimate for INTC 536 (Mudfa 2) the Consortium Estimated the required

Extension of Time in the period to 31 July 2010 for delays attributable to incomplete utility diversions was 10 December 2012 for Section D (Service Commencement) of the Infraco Works. This represented a further 15 month delay to the Works from that agreed as part of EOT No.1, namely 06 September 2011 for Section D.

55. In the preparation of Estimates pursuant to Clause 80 the Consortium undertook an assessment of the impact of each proposed change on the Programme for the Works. This process was ongoing and continual. Also, as part of the Estimates provided in connection with MUDFA Rev.8 (INTC 429) and MUDFA 2 (INTC 536), the Consortium undertook a detailed analysis of the impact of preceding delays on the Programme, including possible mitigation measures. Also, in each of the Period Reports, which were provided on a monthly basis, the Consortium provided an update on Programme matters and identified delays to progress due to design, consents, approvals and other matters. [Question 64 (b)]. For example, if there was a delay to the utility diversion works in a particular section, the whole project would be delayed if that section was on the critical path of the programme. For this reason, the MUDFA claims were put forward in isolation to provide transparency as to what the impact of those delays were for the Works to be undertaken by the Consortium and to demonstrate how significant such delays were.
56. In respect of the extent to which the design was delayed after Infraco Contract Close, there was a significant number of revisions to the design Programme [Question 65 (a)]. However, changes to the design and end dates for certain activities did not necessarily hinder the work. Progress could be made on elements of the design that were complete. There may be delays to sections where the design was incomplete but whether that impacted upon the project end date, depended upon whether those sections were on the critical path.
57. The Base Date Design Information was based on a number of assumptions which transpired not to reflect the reality on site, and this was the reason for the numerous inevitable iterations of the design after contract close. It was

known at Contract Close that design changes would occur and the parties therefore agreed a mechanism as to how to adjust the price. [Question 65 (b)]

58. I would not be able to express a view on the performance of the SDS provider in producing the designs, as this was not within my area of responsibility. BB would have taken the lead on managing the performance of the SDS provider through the payment process, when it was necessary to take a view as to whether milestones that triggered payment had been achieved or not. I am not aware of any major disputes in this regard, and reviewed some of the applications for payments when Siemens' comments were sought. The SDS provider was a subcontractor to the consortium, their management was led by Bilfinger in their role as consortium leader [Question 65 (c) and (d)]. The applications did not seem out of the ordinary to me.
59. Each party within the Consortium was responsible for its own scope of the management of design production [Question 65 (e)]. BB would build what had been designed by the SDS provider. Siemens delivered its own designs in accordance with the Employer's Requirements in a way that fitted with the design of the SDS provider, i.e. Siemens provided design input so that those details could be integrated with the overall system design. For example, the SDS provider would determine where a track had to go, and the dimensions. Siemens would provide input for example, what materials would be used. Input was provided by Siemens through its Design Manager, Michael Wilken. I had no involvement in the management of design production and am unable to comment upon the extent of any problems, save that I am not aware of any problems in Siemens' scope of work that were so significant as to cause problems for the overall project [Question 65 (f)].
60. In respect of the impacts on Siemens regarding the production of the design, Siemens would always have undertaken a sanity check on every revision made [Question 65 (g)]. This was required to ensure that the revised design would fit together with any Siemens scope and would not need any additional adjustments.

61. I have been referred to minutes of a Consortium meeting on 5 June 2008 [SIE00000228] which noted at paragraph 2.3: "The Programme for the On-Street section is determined by the ongoing Mudfa works whereas the Off-Street section is mainly depending on the progress of the design." [Question 66 (a)] I was not an attendee of that meeting. Under the contract and its Programme, the On-Street section and Off-Street sections were not considered in isolation. The On-Street section was on the critical path for the overall works; any critical delay to the On-Street works would automatically have had an impact on the overall Programme. On the contrary, in the event there were minor delays to the design for the Off-Street works, this might have affected the date for completion of specified activities, but would not have necessarily had any impact on the overall completion of the Programme as the Off-Street sections were not on the critical path [Question 66 (a)].
62. MUDFA works to the On-Street sections remained the main driver of delay as by the time of the Mar Hall mediation the MUDFA works were still not complete.
63. The minutes note other Programme constraints (number of track gangs, interface with Network Rail, links between depot excavation and earthfill sections, special events, Code of Construction Practice) [Question 66 (b)]. Again, any analysis of the impact of any contributory factors would have to be completed by a scheduling expert. However, I am able to comment to the extent of the following:
- 63.1 With regard to the number of track gangs, an assumption was made in the Programme as to the number there would be. These were therefore constraints that were included and maintained throughout the Programme. Although the number could have been increased, this would have been an acceleration of the Programme. The number of track gangs did not contribute to delay since the number was included as an assumption from the outset [Question 66 (c) and (d)].

- 63.2 There were complexities to the interface with Network Rail for both Siemens and BB. However dealings with Network Rail were not critical to the overall completion of the Project [Question 66 (c) and (d)].
- 63.3 The Code of Construction Practice is a rule book that has to be followed and has implications for health and safety on site. Adherence to the Code is a requirement and as such would not have contributed to delays to the overall Programme [Question 66 (c) and (d)].
64. The minutes of the 5 June 2008 meeting state “tie expects Programmes to be fully resourced but due to incomplete design information it is expected to agree with tie to submit at this stage only limited Programme information”. Since I was not present at the meeting, I do not know what this comment was referring to [Question 66 (e)].
65. I have been asked by the Inquiry to comment on the following statements contained in the minutes of the 5 June 2008 meeting: “Lumpsum but ‘soft’ because price is based on Design Information from 25th Nov 2007 and later changes in the IFC (Issued for Construction) Design is regulated in Schedule Part 4. Everyone to read 1st part of Schedule 4 to understand BBS strategy towards Design Changes.”; and, “For legal clarity TIE’s acknowledgement of base case assumptions and expected changes of these has been embedded into Schedule Part 4. However, normal design development remains BBS risk” [Question 67]. I was not present at this meeting and can only assume that BBS strategy towards Design Changes refers to my understanding that design changes would have to be evaluated in respect of their impact to cost and time, and any difference would represent a change in price. Normal design development that remained the risk of the Consortium did not include significant changes to shape, form or quantity. An example from Siemens’ scope of work, would be if the colour of a passenger information display was changed e.g. from stone grey to light aircraft grey, this would be normal design development. However, if an additional two passenger information displays were required, this would constitute a change.

66. The minute also noted (item 8) that a “dedicated Change Team is being built under management of Tom Murray. Up to now 24 Changes have been notified. Pinsent and Masons [sic.] hold a teaching session about the contractual Change Mechanism to be followed by BBS. The Change Team relies on information from Design Team and others.”(Item 26): **“Drawings from dataroom** issued after design freeze may be used only after informing TIE about notification to TIE and receiving instruction to go ahead with these.” [Question 67 (d)] Since the change mechanism was complex, a briefing was arranged from legal experts to apply it correctly. I do not recall if anyone from Siemens attended that briefing, or whether Siemens had its own internal briefing. To hold such a briefing is completely normal practice in order to safeguard correct implementation of the contract [Question 67 (e)]. In this instance, the contract was not based on a standard form contract which would have provided a greater degree of familiarity in respect of the change process. The change process was therefore more complex than usual, and familiarisation with its requirements was necessary.
67. Siemens had someone responsible for the management of changes, and BB had its own change team [Question 67 (e)]. Likewise, Siemens had its own design team that worked with the SDS Provider to finalise relevant sections of the design. The change team would evaluate any changes to assess whether they constituted normal design development or a change. In terms of the relationship between the team at the SDS Provider and Siemens, there was a sense of there being a lot to do, but the teams dealt with each other in a professional manner [Question 67 (f)].
68. The minute of the meeting noted at paragraph 11: “SDS is initiating large amount of changes due to the approval process with CEC and other authorities. Track geometry could not be issued as IFC because there were still Interdisciplinary Design Checks pending. BBS to obtain approval from TIE for procurement based on current design information.” Whilst I was not present at the meeting, my understanding of this was that the Interdisciplinary Design Checks were carried out to make sure the design integration was correct [Question 67 (g)]. The Consortium wanted to start the

process to procure the tracks as it was not expected that changes would impact upon the need to source the tracks.

69. In June, July and August 2008, the Consortium began carrying out works where it was able to. It was common knowledge that the utility diversion works were delayed but in some instances work could commence regardless [Question 68 (a)]. I was not involved in any detail in those works since there was no significant activity for Siemens on site [Question 68 (a)]. I am not aware of any agreement or arrangement having been reached in that regard between Willie Gallagher of tie and Richard Walker of BB [Question 68 (b)].
70. I was aware of difficulties in agreeing the consequences arising from the slippage in the design Programme which had occurred by Contract Close. However, I was not involved in the detail of this, nor was I, or any other Siemens person present at the meeting that took place between tie and the consortium on 20 October 2008 [Question 69 (a)]. Siemens would have been provided with the minutes for information, but I cannot recall these [Question 69 (b)].

Extension of Time Claim 1 (EOT1)

71. The Inquiry has referred me to the BSC Infracore period report to 13 September 2008 (CEC01154352) and has stated that it has noted at paragraph 3.3 that Tie's evaluation of entitlement was 5 days, whereas the Consortium's was at least 9 weeks. However, this appears to have been mis-stated. In its letter INF CORR 126, dated 28 August 2008, tie advised that, in the absence of a detailed analysis, it had made "an interim assessment that the delay impact is 5 days in relation to Open for Revenue Service Date". This is the Section D, 'Service Commencement Date'. At that time the Consortium's assessment of the Extension of Time due in respect of Section D was 7.6 weeks to 06 September 2011 (BSC letter 25.1.201/GC/480 dated 10/09/2008). This was the same as the final Extension of Time awarded by tie (as confirmed by acceptance of Programme Revision 1 and by Change Order 116 (issued under cover of letter INF CORR 2871 dated 19/11/2009).

72. My recollection was that there was never a real dispute about the time elements of the Consortium's assessment of the Extension of Time, and that the final Extension of Time awarded by tie reflected the Consortium's assessment. I understood that the dispute was about the Estimate of associated costs that flowed from that Extension of Time.
73. The minutes of the meeting of 20 October 2008 [CEC00354178] include an email from Michael Flynn dated 15 October 2008 proposing three work-streams to address: the Programme; an emergency instruction process; and a task force to address the top ten problem items. Michael Flynn represented Siemens on the Consortium Board [Question 69 (b)]. I do not recall the details of this proposal, nor whether the work-streams were formed [Question 69 (b)]. However, this appears to have been a pragmatic proposal to resolve the issues. From Siemens' perspective, there was certainly motivation to progress matters and concern that Siemens could ultimately be affected by the problems. Throughout the project, Michael Flynn was very much involved in attempting to find solutions and acting as a broker to get matters back on the straight and narrow [Question 69 (b)].
74. I understand that a Consortium meeting took place on 8 December 2008. I was not in attendance at this meeting so am unable to comment in detail [Question 70 (a)]. However, I note the meeting minutes [SIE00000231] contain reference to "increasing delays to alignment of Infracore proposals and SDS design is now impacting on construction start dates." An impact on construction start dates does not automatically mean that there would have been an impact on the construction end dates. I do remember there being discussions to expedite changes in a quick and efficient way, and that the contractual mechanism for Small Works Changes was also looked at to see if those could be progressed [Question 70 (a)]. These discussions were driven by BB but no urgent change mechanism came about as there seemed to be no way to find an agreement, albeit I do not know why [Question 70 (b)]. There is a reference in the minutes to David Carrick who became the Claims Consultant used by BB. The minutes refer to Siemens not requiring his services. At that time, Siemens had less need for additional resource

because Siemens' scope of work was not being directly affected to the same extent as BB's scope of work [Question 70 (c)].

75. I have been referred to document TIE00089656, which includes TIE's notes of meetings on 9 and 10 February 2009, whereby the one on 9 February having involved, amongst others, Michael Flynn of Siemens, Richard Walker of BB, and Steven Bell and Stewart McGarrity of TIE. I was not at the meeting and cannot comment on the accuracy of the records kept by the tie personnel at the meeting [Question 71 (a)]. Having read the documents, I can only comment as follows [Question 71 (b)]:

75.1 The covering email from Stewart McGarrity of 25 January 2010 refers to claims amounting to £50 - £80m. This could be misleading as there is a reference to Siemens in the previous sentence, from which it might be thought that the £50 - £80m related to Siemens' claims. Siemens did not have claims of £50 - £80m at this point, so this figure must relate to the Consortium as a whole.

75.2 There is a comment regarding the Consortium's view of normal design development being very different to tie's view. The boundaries of normal design development were seemingly being pushed by tie to try to encompass matters that constituted a change. This was a key issue.

75.3 There is a comment that: "the reasonable man is never going to accept that a Bilfinger and Siemens consortium found the project a management of a linear rail project too difficult in the round". The Project was a complex scheme because of its 'multi-level' contractual set-up - i.e. it was also required to observe the contracts that tie had previously entered into relating to the interfaces that were required which became appendices to the Infraco Contract. There were also complexities due to the third parties who were involved and the approvals that were needed. Furthermore, it was positioned in a Network Rail corridor; it had On-Street sections and it was located in close proximity to an airport and a harbour, all of which contributed to the complexity of the Project. This comment gives me the impression that tie were underestimating the complexity of the Project.

- 75.4 There is also a question posed: “what have they been doing for 9 months given so little progress or a plan to progress? – what have their substantial team of QS’s been doing? - why is their supply chain not wholly contracted and ready?”. The better question to have posed would have been “what had tie been doing in terms of the utility diversions?”. The Quantity Surveyors had been evaluating the impact of the changes, and Siemens’ sub-contractors were unable to do anything since the sites had not been made available for Siemens’ scope of works to get underway.
- 75.5 I do not understand the comment that: “they don’t believe there is any contractual requirement for them to justify or explain why a Notified Departure is a tie Change”. Under paragraph 3.5 of Schedule Part 4 of the Infracore contract, it states that “such Notified Departure will be deemed to be a Mandatory tie Change...in respect of which tie will be deemed to have issued a tie Notice of Change on the date that such Notified Departure is notified by either Party to the other”.
- 75.6 I note that Michael Flynn questioned whether the budget/funding was in place to complete the project. This reflected the impression that I had formed, that potentially there simply was not the budget to agree the Estimates.
- 75.7 There is a reference to the suggestion to suspend construction for a period of time sufficient to complete the design and utility diversions and re-price/re-Programme. There was a sense that there were too many issues to be sorted out, and no meaningful progress was being made on site, so one solution would have been to suspend work and re-mobilise later again. However, tie seemed to be concerned about the procurement consequences of this.
- 75.8 Siemens had no representative present at the meeting on 20 February 2009. With reference to the route-map to be produced by the Consortium, BB would not have wanted to commit to such a route-map without there being a joint position agreed with Siemens.

Princes Street Dispute and the Street Works

Princes Street Dispute

76. I had no involvement in the Princes Street Dispute or its resolution [Question 72 (a)]. However, I was aware of the dispute, albeit it mainly concerned BB [Question 72 (b)]. Given that preceding utility diversion works were incomplete on Princes Street, BB could not commence work in a meaningful way [Question 72 (b)]. The client had the idea that work should start in Princes Street to demonstrate to the public in a prominent place that the works were progressing. The client's idea was for BB to have resources on site at the same time as MUDFA to ensure maximum flexibility, albeit this would have led to additional costs and inefficiencies [Question 72 (b)]. If BB found utilities in an area in which it was working, MUDFA would carry out the necessary diversion, and the two would work hand in hand. This was in contrast to the planned method of working which entailed the sites being available to BB utility free. I recall evaluating the idea from Siemens' perspective and there was no objection on Siemens part since it would have allowed preceding works to be resolved making the site available for Siemens to carry out its scope of works more or less as planned. However, I did have some concerns that starting this new method of working in Princes Street carried risk, since this was the first major On-Street section. It did not seem to be to be a convenient place to elaborate suitable methods of working together, and that such an exercise would have been better conducted in a less prominent and more isolated area away from the City Centre [Question 72 (b)].
77. The idea culminated in the Princes Street Supplementary Agreement ("PSSA") which provided for the Consortium to be paid on a "cost plus" basis, as opposed to there being an agreed value for completed activities [Question 72 (d)]. In relation to Siemens' work, there was no change expected to the planned direct cost for the relevant activities that would have been incurred under the Infraco contract had the PSSA not been entered into [Questions 72 (e) and (f)]. Although I am unable to quantify precisely how much work Siemens did in respect of the On-Street sections under the original version of the Infraco contract, this would have been very little because the sites were

not available to Siemens- Siemens would not have entered the site unless the sub-base for the track was ready [Question 73 (a)]. Instead it had been procuring the equipment required, for example, to procure the track material ready to install [Question 73 (b)]. There would have been a time impact as a result of the PSSA which would have included any additional costs of BAM starting their work later or being delayed.

78. The best measure of the extent of work done On-Street by the Consortium prior to Mar Hall Mediation is provided by Infraco Period Report for 3-13 for period to 26 March 2011. This indicates that in the On-Street Sections Infraco had completed the following work percentages as at 18 March 2011: Section 1A-10.00%; Section 1B-3.00%; Section 1C-1.00%; Section 1D-Princes Street; and, Section 2A-33.00% [Question 73 (a)].
79. The reasons are explained in the same period report: Section 1A-incomplete MUDFA works/Obstructions to Piling/Expiry of Forth Ports Licence/Agreement of Changes/proposed addition of utility work to Infraco scope; Section 1B/1C-incomplete utility works/Lack of handover dates/delayed permits to work; Section 1D-(Haymarket junction to Shandwick Place) - incomplete utility works/Lack of handover dates/delayed permits to work; and, Section 2-awaiting agreement of Changes (BDDI to IFC)/SGN gasmain diversion/Planning approval of re-design of delata junction [Question 73 (b)].
80. I have been asked to comment upon negotiations between tie and the Consortium over an On Street Supplemental Agreement (OSSA) under which the principles of the PSSA would be applied to other on street works [Question 74 (a)]. I had no role in the negotiations [Question 74 (b)]. Siemens had no objection to this approach, particularly if it helped to resolve the ongoing issues [Question 74 (b)]. I do not think it would have changed the basis upon which Siemens was to be paid, as payments to Siemens presumably would have continued in accordance with the payment milestones. Had the OSSA come to fruition, there may have been a time saving, which would have reduced the Extension of Time claims. However, the negotiations stopped and I was not sufficiently involved in the detail of

this to know the reasons for this [Question 74 (d)]. I can surmise that it may have been perceived as too expensive when the impact on the cost of the Princes Street works (which were higher than listed in the original payment milestone schedule) was extrapolated to the entirety of the on street works. [Question 74 (d)]

81. The Inquiry have referred to the period in or around March 2009 whereby Siemens produced a “Framework Concept” for discussion as a means of trying to unlock the dispute and have surmised that this proposal appeared to have developed into the Project Management Panel. I cannot recall that proposal, nor a Project Management Panel being established [Question 75 (a)]. However, such a proposal is consistent with my recollection of Siemens trying to broker a resolution to the problems, with Michael Flynn often taking the initiative. I do not know the outcome of this proposal, but I would expect that if it had been implemented I would have known about it [Question 75 (c)].
82. The Inquiry has referred me to minutes of a Siemens Bi-Weekly Team Briefing on 20 May 2009 [SIE00000211] in which concerns regarding BB’s claim strategy was discussed. Siemens was trying to think of ways to expedite its ability to carry out works on site. There was an idea that if BB could carry out its work in some locations where the risk was lower, this could enable the site to be available to Siemens [Question 76 (a)]. The difficulty was that Siemens had incurred considerable sums procuring the materials for its works, but could not gain access to the sites to undertake its scope of works and be paid for it accordingly [Question 76 (a)]. Siemens was overall concerned due to the lack of access to carry out Siemens’ scope of work and Siemens was incurring unplanned time related costs for its own staff and the staff of subcontractors. [Question 76 (b)].
83. The minutes of this team briefing refer to Siemens view that “some of BB’s arguments were putting the Consortium at undue risk of concurrent delay and other similar factors”. Siemens concerns whether BB’s claims, for whatever reason, would not hold up were based on risks of possible outcomes, rather than being based on any detailed analysis of the merits of any of BB’s claims [Question 76 (b)]. Since Siemens would have Extension of Time claims,

there was concern that tie might try to defend such claims on the basis of the consortium being made responsible for concurrent delay. This was viewed as a potential risk, not that Siemens believed there to be grounds for a claim by tie against BB. In the end, Siemens considered that overall BB's stance was largely in line with the contract [Question 76 (b)]. Nevertheless Siemens continued to urge BB to carry out works wherever possible for Siemens to follow suit with its own works. This was purely to minimise Siemens cost and exposure [Question 76 (b)].

84. I was aware of a Minute of Variation ("MoV2") of the Infracore contract (BFB00053622) that the parties entered into on 3 June 2009 [Question 77]. However, this related to BB's civil engineering scope, rather than Siemens scope of works. My understanding was that it represented an agreement reached in respect of BB's site preliminaries [Question 77].
85. The Inquiry has referred me to an email from Michael Heerdt (an individual I have no recollection of) to Richard Jeffrey of tie (CEC00986647) of 8 June 2009 which said that "we anticipate additional project cost in the range of 80 to 100 Mio. GBP (excl. any additional cost related to the specific scope of work of Siemens and CAF) and a project overrun of around 18 months". Some Notices of Change had been issued in respect of Siemens' scope of works at this time, but the full extent of its Extension of Time claim had not been quantified [Question 78 (a)]. A method had to be developed to evaluate the impact of the Extension of Time and discussions had started with tie as to how to evaluate the claim and to agree the methodology in principle. Siemens concerns at the time were that out of the changes notified unexpected cost could occur in relation to systems and track works and also that there would be additional time related costs as a consequence of the Programme slippages [Question 78 (b)].
86. An informal mediation between the project managers for tie and the Consortium took place between 29 June 2009 and 3 July 2009. I was involved in pricing the Siemens element of EoT1, the first Extension of Time claim [Question 79 (a)]. However, I was not present at the mediation, and my understanding was that the mediations were largely not successful as a

result of there being an unwillingness to compromise on the part of tie [Question 79 (c)].

Phase 1b

87. I have been asked to comment on the payment of £3.2m that was to be paid in the event that tie decided not to proceed with phase 1b [Question 80 (a)]. As within the consortium the £3.2m related to BB's scope of works and BB received this payment. The arrangement was negotiated before my time on the project so I cannot comment in any detail on it [Question 80 (a)].
88. In respect of the price proposed by BSC for phase 1b, when the proposal was prepared, the price was significantly higher than the indicative bid price of £49.7m [Questions 80 (b) and (c)]. Under the contract, there was an obligation to update the figure and BB and Siemens therefore produced an Estimate to propose the price which was based on the new design information available at that time. There are various topics referred to in document [CEC01120001] which provide indications as to what had changed, for example, change in designs, changed quantities, changes to the substations and changes to the exchange rate. E.g. Siemens' element of the Estimate increased because of changes to the track form [Question 80 (d)]. I was not involved in preparing the Estimate so am unable to meaningfully comment on tie's analysis that "*BSC has considered every risk and worry they perceive from Phase 1a and added it into their price. This is admitted by BSC. This is not a competent bid and requires much more information from both designer and contractor*" [Question 80 (d)]. The Siemens bid team in Berlin that had prepared the original bid provided Siemens input into the Estimate based on the new designs available, and my understanding is that there were significant changes to the basis of the pricing.
89. The Inquiry has referred me to a possible draft Siemens project report from around October 2009 [SIE00000251]. I do not recall whether I received this particular report – its format looks familiar but it is difficult for me to know if I received that particular one or if it was a final and approved version [Question

82 (a)]. It is probably a management report prepared for a management meeting which would also have been provided to the wider core Siemens team [Question 82 (a)]. It does not seem to be a standard report and seems to be in a draft format. Several individuals will have contributed to this document, and their input collated together. I would have contributed content to reports such as these, and sometimes collated input from others, but I don't know if I was involved in producing this particular report. With regard to the content, I can only comment as set out below, albeit I do not know if these views reflect the intentions of the report's original authors [Question 82 (a)].

- 89.1 Slide 3 – This reflected that there were different revisions of the Programmes in existence, which formed the basis of the various Extension of Time claims. The statement appears to be an expression of concern that there was not one Programme agreed since it had not been possible to agree the Programme with the client. This was concerning since the Programme is one of the most important elements of project management as referred to at paragraphs 52 and 53 above.
- 89.2 Slide 7 – There were ideas being discussed as to means by which Siemens could possibly mitigate the impact of the delay. One of the ideas was whether Siemens could carry out some of the construction work to enable it to have site access.
- 89.3 Slide 25 to 28 - Siemens' contract with BAM was not entirely back to back with Siemen's obligations under the Infraco contract. As a consequence, Siemens had exposure to possible claims from BAM. This did not impact upon Siemens management of the Infraco contract, and was more of a matter as to how the sub-contract with BAM was managed.
- 89.4 Slide 32 – Siemens position on the Extension of Time claims was clear in that Siemens was entitled to reimbursement of actual or estimated actual costs. Siemens was confident in that position, and was unwilling to retract from that principle.

- 89.5 Slide 33 - This seems to be reflective of Siemens' view that the MUDFA works was the dominant and critical factor causing delay to the project.
- 89.6 Slide 36 - This seems to reflect the general concerns of Siemens referred to at paragraph 83 above. Ultimately Siemens considered that the claims brought by BB were rightful claims, and Siemens stood shoulder to shoulder with BB in the approach taken. Most disputes at this time centred on Notified Departures in the civils works. Siemens were not directly involved, but as a Consortium member, was a party to these disputes. Thus, in reality, Siemens did not take an active part in these disputes, but did observe, support and note the outcome and the decisions on key issues and on contract interpretation.
90. The Inquiry has referred me to a spreadsheet [SIE00000190] listing INTCs which on Tab 2 also contains comments referring to "The first 50% of all BB Estimates (in total number) do not even account for 1% of the total BB claim value. As a consequence, the change process is collapsed, TIE resources are also collapsed; and, as will be shown in a separate graphic, BB own resources to produce Estimates are also collapsed, so that the time alone for submitting BB Estimates is, in average, late by more than 6-7 months than the contractually permitted 18 business days. Combined with BB's own refusal to start works without agreeing on an Estimate, this implies a high risk of concurrent delay in the ongoing EoT negotiations." I would comment that the schedule of INTCs itself appears to have been produced by BB from their change register, although I do not recognise the format. I did not write the comments, and I am not aware of this having been produced within Siemens, and it may have been a document produced by tie [Question 82 (e)]. In general, there was a concern in the Siemens team that the sheer number of changes made the change process unmanageable and responsibilities for delays and cost overruns could not be allocated properly any longer [Question 82 (e)]. Siemens wanted BB to proceed with small value changes 'at risk' in order to mitigate delay and/or enable progress on Off-Street sections of the works. In my opinion BB did this to the extent reasonably possible. These were known as the Goodwill Works already referred to.

91. I have been asked to comment on the minutes of a progress meeting on 1 December 2009 which noted that 92% of Planning Approvals had been granted and that 84% of Technical Approvals had been granted (CEC00429454). I had no involvement in the process for planning and technical approvals [Question 83 (a)]. Michael Wilken was responsible for liaison regarding approvals on behalf of Siemens.. I am therefore unable to comment as to any extent issues arising from those approvals affected progress on the project or caused delay [Questions 83 (b) and (c)].
92. I attended a Siemens bi-weekly team briefing on 8 February 2010, the minutes of which can be found at SIE00000217. The references at item 14 (to the delays in the city centre being caused by MUDFA with the full design of utility diversions not having been complete) and; at item 16 (regarding the escalation of tension at the start of the new year with a need for BB to produce more progress on site and Siemens to try to progress on site as much as it reasonably could economically) are a fair expression of the matters discussed [Question 84 (a)]. Siemens' approach was to work wherever it could, even if this was in an uneconomic way [Question 84 (b)]. An example of this was in respect of the Guided Busway when Siemens took over some of the construction works from BB. There were technical problems and inefficiencies entailed in this. There was also an increased risk for Siemens as it took on technical risk outside its core area of expertise. Siemens would not ordinarily take on the risk of construction works. This transpired to be a difficult section. Siemens incurred additional costs which it bore, and Siemens lost money over this section. The only element of additional costs for tie related to a change of track upon which agreement was reached with tie. It is therefore a good example of the steps Siemens took to progress the Project. However, in general terms, there was a lack of site access for Siemens. Siemens throughout this time maintained its manufacturing and procurement Programme to be ready to commence its work without delay once site access was given [Question 84 (b)].
93. I understand that a possible draft Siemens internal MIS report of February 2010, SIE00000257, notes that over 90% of changes in the change management process were BB changes. There is a payment certificate

which would show the proportion of change under the Infraco contract, by value as well as by number that concerned BB's work on the one hand and Siemens work on the other, although that may only show the post Phoenix changes. In the change register dated 15 February 2011 it was recorded that Siemens raised 102 changes (of which 59 were agreed) and BB raised to 742 changes. This reflects my recollection that approximately 90% of the changes by number were raised by BB. By value the proportion issued by BB may have been higher, since the value of approved Siemens changes was circa. £4m in addition to its Extension of Time claim up until the Mar Hall mediation. In a project spanning four years, with little progress over three of those four years, I would consider this to have been a relatively minor increase.

94. I understand that slide 5 of the February 2010 report (SIE00000257) also noted that, of 557 changes notified to TIE, 123 were still unpriced by the Consortium; 83 still required an updated design; of the 158 changes where Estimates had been submitted but were still not agreed, 75 represented less than 1.5% of the total change value; and that the average reduction in the price for Estimates which had been agreed was over 40% [Question 85 (a)].
95. To evaluate a change the underlying design change had to be completed (otherwise there is no basis for an accurate Estimate). To adjust the price in an iterative process and finally to reach agreement I regard as a normal process. It is also quite normal for the finally agreed price to be lower than the original Estimate after some iterative discussions. It would be quite wrong to draw a general conclusion from this that the Estimates were over-priced at the outset. There could be scope adjustments, use of different materials etc. agreed in order to reach a lower price [Question 85 (b)].
96. With regard to the notices of change in respect of Siemens' scope of works, such notices tended not to be of small value. Siemens' work was not primarily defined by quantities but by the Employer's Requirements. Therefore since Siemens elements were not described in the same manner in the Base Date Design Information, it was less obvious when there was a change than for BB's scope. For example, the BDDI design would not state

the functionality of a passenger information display that was required, and a change to this would have been less obvious than if more bricks were required in respect of BB's scope. For Siemens to have brought forward small claims (e.g. £100.00) would not have been efficient and Siemens had a more relaxed view to absorbing small value changes as often detailed configurations of equipment could still be done during the production or installation process without significant additional costs.

97. My recollection is that with respect to changes in Siemens' scope, it usually took longer than usually to be expected in such a project to reach agreement and that the degree of scrutiny applied to our Estimates was also higher than compared to other projects [Question 85 (c)].
98. I have been asked about my understanding in relation to slide 6 of the February 2010 Report (SIE00000257) noted that tie's conflicts under Infracore were with BB and not Siemens; that in late 2009/early 2010 the relationship had clearly worsened; that BB as consortium leader had its own, "very aggressive" strategy; that there was increasing tension between BB and Siemens; and that the main areas of conflict were "non-agreed strategy on prioritization of progress and mitigation of delay" and "risks of cross-compensation for concurrent delay so far (incl. design delays, etc)." This reflected the concerns that I have explained at paragraph 83 above [Question 85 (e)].

Further agreement with SDS/Parsons Brinckerhoff

99. I understand that BB and the SDS Provider entered into a Minute of Agreement on 25 February 2010 (BFB00112154). I was not involved in the process directly and cannot recall any details [Question 86 (a)]. With regard to Appendix 1, I understand that it listed information needed from Siemens for the parties to carry out their design obligations. I was not the design manager, but my understanding was that any details that were outstanding were not time critical as they did not have an impact on completion of the Project [Question 86 (c)]. If the agreement was a matter of concern to tie, I cannot recall any details of this, nor whether the agreement was successful in achieving its objectives [Questions 86 (d) and (e)].

Formal 'contractual' approach by TIE

100. Through 2010, tie's approach differed and its volume of correspondence increased considerably. Siemens had to ramp up its own contract management resources to keep up with the volume of correspondence [Question 87 (b)]. I had no insight into the reasoning of tie, but from Siemens' perspective, it was not helpful at all and only served to complicate matters [Question 87 (a)]. It appeared to be a clear indication that tie was not willing to find any neutral agreement. In the letters tie would typically set out their view of the contractual position, but this did not facilitate discussion and the Consortium then had to respond to counter that stance with its own contractual position. Such exchanges did not contribute to resolution of the issues and bound considerable management resources [Question 87 (c)].

BSC correspondence with CEC

101. In March 2010, Richard Walker, the CEO of BB wrote to various CEC officials and a councillor expressing his concerns about the Project and tie's approach to it. This was an attempt by the Consortium to engage CEC as ultimate stakeholder to take more control of the project to complete it timeously and with overall best value for the public purse [Question 88 (a)]. The Consortium were concerned about the lack of progress; the budget; and tie's engagement with the parties. It was felt that more engagement by CEC was necessary. I was disappointed to learn that CEC as ultimate stakeholder referred us back to tie [Question 88 (b)].

Instruction under clause 80.13

102. In a letter of 19 March 2010, Steven Bell, the Project Manager of tie, instructed the Consortium to carry out a range of works subject to INTCs where Estimates had not been agreed. I was aware of this instruction but would not wish to speculate as to what the purpose of it was for tie [Questions 89 (a) and (b)]. I doubted that it was a valid instruction under the Infraco Contract, at least in relation to the changes that had not been referred to the dispute management process [Question 89 (c)]. This was the general view of the Consortium, and was not therefore implemented [Question 89 (d)]. It seemed to be an act of desperation attempted in case there was any

chance it could hold up as being valid. It resulted in an adjudication decision which confirmed that it was not a valid instruction.

Audits under Infraco

103. In 2010, there were a number of audits of the Consortium, which were carried out upon the instruction of tie. I had no direct involvement in the audits but it did appear that all of a sudden, there were quite a number of these being carried out [Question 90]. A representative of tie would come to Siemens' premises and inspect documents. There was, I believe, some dispute as to the extent to which tie was entitled to carry out the audits, but Siemens engaged with the process in accordance with its contractual obligations. It created an impression that the audit process was being used to put the Consortium under pressure, particularly given the timing when the mediations had broken down.
104. Having regard to the concerns that the Inquiry has stated that tie had following these audits, I am unclear why an audit was needed to assess such matters. The design Programmes and design solutions proposed were available. Information to address each of these issues would have been available without necessitating an audit, which creates a question whether tie were fishing for information that could be used against the Consortium. I was aware of the concerns arising out of the audit, but I do not know what happened to address those concerns. Ineke van Klaveren was the Quality Manager for Siemens who handled these audits.
105. The Inquiry has referred me to minutes of a Siemens bi-weekly team briefing on 22 March 2010 [SIE00000219], specifically (item 6): "The biggest enemy to the project is delay. Anything we can do to progress works and get others to progress works significantly reduces our risk and increases chances of viability and survival. Anything you can do to make the work progress in design or construction or site release, will put us in a better situation." From Siemens' perspective, the team and resources were fully mobilised, which exposed Siemens to risk of unplanned time related cost [Question 91 (a)]. As described previously the manufacturing Programme for equipment was largely maintained to be ready for installations as soon as site access was

given. In many cases, Siemens worked in an inefficient manner in smaller sections, e.g. the Guided Busway to achieve any progress at all [Question 91 (a)]. In regard to the civils works we understood, and later, in light of the adjudications, more fully understood, that BB could not progress these works in the absence of agreed Estimates unless tie referred un-agreed Estimates to dispute resolution. This they seemed unprepared to do despite the clear impact upon progress. BB and Siemens also undertook some activity re-sequencing to mitigate delay. Possible mitigation was limited because of overwhelming delay to MUDFA works and in the agreement of Estimates.

106. Working in smaller sections of the Project to achieve some progress did not have a significant impact on the completion of the Project, but was a desperate attempt on the part of Siemens to achieve something. However, in respect of Siemens' efforts considering the Project as a whole, in my opinion, Siemens contributed considerably to the early completion of section C and D which were handed over 6 – 7 weeks early compared to the planned dates in the Programme after mediation [Question 91 (b)].
107. I did not attend the Siemens bi-weekly team briefing on 19 April 2010, although I would normally have been present and would have been on the distribution list for circulation of the minutes. The minutes [SIE00000220] of that meeting refer to the risk to Siemens position in respect of concurrent delay if Estimates were issued late and in respect of allegations that Siemens was the main cause of SDS delay. Siemens was concerned that any late submission of Estimates (in comparison to the contractual requirements) could be held against the Consortium by tie [Question 92 (a)]. Siemens did not want to give any room for allegations that Siemens was guilty of causing any delays [Question 92 (a)]. The sheer number of Estimates to be produced and their complexity meant that there would have been times when Estimates were not provided within the contractual timescales but there would have been good reasons for this. The Project Director through the team briefing was keeping up the pressure internally to produce the Estimates as quickly as possible. Equally, in respect of design delay, Siemens was still providing input into the designs and did not want to open up any possibility of allegations of concurrent delay in this process. The

statements in this meeting would have been more about fending off any potential allegations, rather than recognising problems.

108. There was a cash-flow issue for Siemens as referred to in the minutes of this team briefing [Question 92 (c)]. Payments were largely made according to construction progress on site. For long periods there was very limited progress on site and at the same time the Siemens team was mobilized and Siemens' manufacturing and production program continued. Hence the cumulative spending of money exceeded the cumulative payments at times leading to a negative cumulative cash flow for Siemens [Question 92 (c)].

Project Carlisle

109. I was not involved in the initial stages of the Project Carlisle proposal, but I understand this was a joint initiative of senior Consortium and tie personnel to bring back the project into a better place [Question 93 (a)].
110. The idea of Project Carlisle was to include all the changes and claims to date and to effectively come up with a package proposal. Project Carlisle adopted a staged approach – i.e. the Off-Street works were to be completed first, followed by subsequent stages addressing the On-Street sections. Further, the idea was to provide a working system from the airport to just inside the city centre within the available budget and to provide additional time to arrange a budget in respect of other sections throughout the city which were expected to be more complicated than the Off-Street sections. The proposed route remained the same; but Project Carlisle offered the alternative of a staggered approach [Question 93 (b)].
111. As the project was ongoing and the dedicated team busy Siemens engaged additional headquarter personnel to prepare the Siemens part of the Project Carlisle 1 proposal [Question 93 (c)]. I was involved together with Jill Stockman (HQ) in the price calculations for the proposal. From Siemens, Robert Krämer (technical) and Jill Stockman (commercial and financial), both from HQ, were the most involved. BB had a similar resource dedicated to this. I am not aware if tie had similar dedicated resource to this [Question 93 (c)].

112. The Project Carlisle 1 proposal would have introduced price and Programme certainty [Question 93 (d)]. In addition it gave tie/CEC options to develop the line in various stages in accordance with availability of funds [Question 93 (d)]. Conversely, with the new pricing proposed, there was greater risk accepted on behalf of the Consortium. The shortened list of pricing assumptions could be provided because the design was at a more advanced stage and this meant because there was better visibility of the Project, the price could be better ascertained. The Consortium was also open to amending the change mechanism. For tie, the proposal would have only delivered slightly into the City Centre in the first stage so there would not have been full delivery to the City Centre in the first phase. There would have been an option for tie to have stopped the Project after that phase had it not wanted to continue with the three On-Street sections. By choosing this section by section approach, cumulatively it would have been more costly for tie, because the Programme would have been longer and it is more economical to undertake the whole Project in one phase [Question 93 (d)].
113. The proposal was declined by tie and I believe this was because tie considered it to be too costly, and they would be better sticking with the terms of the Infraco Contract [Question 93 (e)]. I imagine they were concerned about the public outcry there would have been if tie admitted it would have to pay significantly more, plus as I have already speculated, there appeared to be problems with the budget available. I do not recall any stated position having been provided by tie as to why it rejected the proposal [Question 93 (e)].
114. Siemens' element of the proposal under Project Carlisle 1 was based on the original Infraco Contract but with deductions for omitted scope, since the £126,901,621 was the price for only the off street sections slightly into the City Centre [Question 94 (a)]. Time related costs were then added and there were some additional components included [Question 94 (a)]. The price increase was mostly a consequence of the increased time related costs [Question 94 (b)]. Pursuant to the Project Carlisle proposal Siemens was required to maintain a site presence for an additional 14 months, namely until 19 November 2012. Also, pursuant to the Project Carlisle proposal we would

have supplied materials and equipment for the entire alignment. Also, a significant proportion of this additional cost related to trackwork installation costs from our Key Subcontractor, BAM. Thus, the truncation of the line did not provide significant savings in respect of the trackwork or system elements as most of the cost for materials and manufacturing had been committed already at this point in time.

115. When tie rejected the first Carlisle Proposal, Siemens was very concerned that the dispute could not be resolved amicably and that, if tie decided to terminate the contract, any resolution in the courts would be lengthy and costly and would damage the reputation of the parties involved [Question 95 (a)]. Siemens considered what this would cost which included the potential of having to pay damages to its sub-contractors. To this end Siemens calculated various scenarios on which Siemens could compromise in order to expedite the project and avoid litigation. For the said reasons Siemens, at the time, was willing to compromise and find a settlement below what Siemens regarded as their actual entitlements under the contract [Question 95 (a)]. The Inquiry has referred to what it has called an internal Siemens document entitled Project Carlisle: Project Termination Limit” [SIE00000110] which states that a “second ‘termination limit’ shall be prepared”. I cannot recall if such a figure was calculated.

Project Carlisle 2

116. The idea of Project Carlisle 2 was to omit the riskiest section of the works (and resolve this later) so that at least an initial system could go into operation sooner [Question 96 (a)]. However, this meant that the first phase would stop at Haymarket, rather than going slightly into the City Centre.
117. In my view, the Project Carlisle 2 proposal was an idea born out of desperation [Question 96 (b)]. It omitted any On-Street sections so it would have been a first step to establish a functioning tram system and significant parts would have been built such as the depot. However, what would have been delivered would have made less sense for the client. Whilst passengers could have travelled from the airport to Haymarket, it would not have fulfilled the purpose of reducing traffic in the City Centre where there was the most

traffic and it was not therefore a very attractive proposal. I am not aware of any explanation having been provided from tie for rejecting the proposal under Project Carlisle 2 [Question 96 (c)].

118. As in Project Carlisle 1, the Siemens element of the price proposed under Project Carlisle 2 was built up on the basis of the original contract price taking into account any scope omissions (as the line was shorter), reductions and additions and additional time related costs [Question 97 (a)]. The difference in price between the two Project Carlisle proposals reflected the omission of the On-Street section (although it must be noted that most of the Siemens equipment for this section had already been ordered, manufactured and/or delivered) and the shortened Programme (i.e. reduced additional time related costs) [Question 97 (b)].

Remediable Termination Notices and Underperformance Warning Notices

119. Remediable Termination Notices (“RTNs”) and Underperformance Warning Notices (“UWNs”) were served upon the Consortium, albeit only one of these was also related to Siemens’ scope of works alleging a lack of integrated trackwork design. In my view, the RTNs were not valid as the alleged breaches were non-existent or immaterial. The UWNs were even less understandable as these are meant as an instrument during the maintenance phase of the Project, and it almost seemed to be an abuse of the contractual terms to try to invoke UWNs at this phase of the Project [Question 98 (a)]. However, these notices gave Siemens reason to be concerned. Each notice required a remediation plan, and if that plan was not accepted, it could have resulted in termination, so every notice was a potential bullet. Clearly we were afraid something could stick, whether justified or not [Question 98 (b)]. In respect of the notice aimed at Siemens’ scope of work, even though it was felt that it was not valid, Siemens still produced a remediation plan and defended its position, since it was feared that the contract as a whole would fail. I do not remember the detail of that remediation plan. I believe that a number of remediation plans were prepared and submitted by the Consortium and rejected by tie, but shortly after this the Mar Hall mediation took place and the process for termination was not followed through by tie.

Cessation of Goodwill Works – 29 September 2010

120. The Consortium had been carrying out works where no Estimates had been agreed on a goodwill basis [Question 99 (a)]. The INTCs which were being undertaken on a goodwill basis and upon which the Consortium stopped work are listed in the Consortium's letter 25.1.201/KDR/6860 dated 29 September 2010 attached as **Exhibit AE1**. I was aware of the decision as all site activities were stopped where Estimates had not been agreed. At this point, Siemens had been undertaking small sections by working inefficiently in order to expedite matters wherever it could. It had materials piling up that could not be used since Siemens still did not have the level of site access it needed. For Siemens, the decision to stop carrying out works on a goodwill basis had no material effect. The sites were in any event, not yet completed and accessible for Siemens works, and there had been very few opportunities for Siemens to carry out Goodwill Works in the smaller sections [Question 99 (b)]. The decision of the Consortium to stop carrying out Goodwill Works was in my view, understandable under the circumstances [Question 99 (d)]. There was a view that we needed to close the running (money) tap and mitigate losses [Question 99 (d)]. From Siemens perspective, largely it did not demobilise the core team, but mitigated in terms of site resources and deliveries to site where possible. At the same time Siemens maintained its readiness to recommence works without undue delay should the circumstances allow to do so [Question 99 (e)].

Adjudication Decisions

120.1 A number of matters under the Infraco contract were referred to adjudication, albeit these mostly arose out of BB's scope of work -[Question 100]. The outcome of the adjudications was monitored by Siemens in case there were implications over future contractual interpretation to ensure that the position Siemens was adopting was in line with the contractual interpretations favoured in the adjudication decisions.

120.2 My understanding is that these adjudications established a number of key principles. The key guidance provided is summarised in our Mediation Statement:

- *That in the absence of an agreed Estimate, the Consortium is not obliged or permitted to commence or carry out works associated with a tie Change (Mandatory or otherwise) (Lord Dervaird: Murrayfield Underpass adjudication);*
- *That there is a distinction between the Consortium's obligation to complete the Works in accordance with the Employer's Requirements and the Consortium's entitlement to be paid for these Works – in this regard Schedule Part 4 to the Infraco Contract takes primacy as far as entitlement to payment is concerned (Mr. Hunter: Carrick Knowe and Gogarburn Bridge);*
- *That in determining whether there has been a Mandatory tie Change to the design, the starting point is the BDDI information, not the Employer's Requirements. (Mr. Hunter: Carrick Knowe and Gogarburn Bridge);*
- *That in respect of Estimates (to be submitted following the occurrence of a Notified Departure) the Infraco Contract does not provide a quality standard for Estimates and it is possible (and permissible) to submit 'Part Estimates' (Mr. Wilson: Russell Road Retaining Wall);*
- *That the following principles should guide BSC's entitlement to an Extension of Time as a consequence of preceding delays to the MUDFA works (Mr. Howie: Delays Resulting from Incomplete MUDFA Works):*
 - (a) *BSC is both bound and entitled to work to the Programme. The Programme remains in Revision 1 and this forms the basis of the Consortium's analysis of critical delays.*
 - (b) *It is correct to consider the impact of the Notified Departure on the Programme without a full retrospective delay analysis and without consideration of other potential causes of delay.*

- (c) *The Consortium is obliged to propose potential mitigation measures in its Estimate but these:*
 - (i) *do not include acceleration measures (contrary to tie's assertion);*
 - (ii) *do not require the Consortium to give up any of its contractual rights including, specifically, the right not to have to work alongside others (including the MUDFA contractor) within a Designated Working Area;*
 - (iii) *do not make assumptions regarding the possible relaxation of contractual restrictions (again contrary to tie's assertion that in order to mitigate delay, the Consortium should have sought relaxation from certain 'embargoes' on working).*
- (d) *Mitigation seeks to limit an over-run on the Programme (a) without increase in overall resources applied to the works or (b) the abandonment of the Consortium's contractual rights.*
- (e) *Accelerative measures increase the rate of progress to pull back an already mitigated delay.*
- (f) *Designated Working Areas are not synonymous with the Intermediate Sections (as the Consortium had asserted)*

121. None of the decisions changed Siemens' overall interpretation of the Infraco Contract. The majority of the adjudications were decided in favour of the Consortium so did not really impact upon Siemens' method of working or approach other than endorsing it.

122. The decisions gave the Consortium the confidence that its strategy was justified. There was no option for tie, other than to accept the decisions, as

without challenging them in the courts, the contractual route for challenge was now exhausted.

123. INTC 429 (MUDFA rev 8), an Extension of Time claim, was the subject of an adjudication decision. We had been constantly working on our detailing of EoT claims (i.e. to provide transparency on affected resources and rates) [Question 101 (a)]. From the very first Extension of Time claim, it had been considered important to establish principles in respect of the amount of time claimed and cost in order that each Extension of Time Claim could proceed on the basis of agreed principles. Very detailed spreadsheets were produced with resources and costs and various sessions took place with tie to justify the details. Our approach was questioned, justifications sought and our rates audited for both our on-site resources and off site resources in Germany. However, there was never any indication that the methodology was agreed in full. With MUDFA rev 8 we had reached the best standard to date in our opinion including auditing of most our personnel rates by external auditors. In addition, the MUDFA delays were so dominant that it seemed important to us to make clear our standpoint in this regard by presenting a claim for the MUDFA delays in isolation (ie without considering additional delays). [Question 101 (a)].
124. Due to an accident, I was not present at Mar Hall (which was a comprehensive attempt at compromise in my understanding weighing the opposite positions against each other) [Question 101 (b)]. However, the methodology for calculating Extension of Time claims had been presented consistently by Siemens and was used as the basis for discussion both before and after Mar Hall. The information that backed up the methodology was provided to Colin Smith after Mar Hall (in the process of calculating the On-Street Works) in order that it could be checked by Faithful & Gould. Whilst I never received any feedback, the rates developed for time related costs were added to the rates schedules in the settlement agreement. I cannot recall there being any new Extension of Time claims after Mar Hall, other than as a result of the Project completion date shifting as a result of including the On Street sections in the settlement agreement. [Question 101 (b)].

125. A consideration of Siemens around December 2010 was its relationship with BAM. A Siemens' MIS report of 7 December 2010 stated "Termination of BAM sub-contract is currently under review in light of serious concerns regarding lack of progress of both design and site installation and general lack of co-operation". Presumably to protect their own interests during the difficult times of the project, BAM had taken a very hard contractual stance on Siemens [Question 101 (d)]. Like Siemens, BAM was in the passenger seat (albeit in the back seat), awaiting the actions of others before it could get its own works under way. They were experiencing the same problems as Siemens that they had teams mobilised and ready, and it was understandable that they took a strong approach to their claims management. However, this was handled by Siemens so that it did not have a significant influence on the overall project [Question 101 (d)]. Siemens stepped up its resource so that there were 5 or 6 persons managing the relationship with BAM. Although BAM took a tough stance on its contractual claims, it continued to be helpful in working in areas where it could work. It was BAM's responsibility to procure the track material and designs and they continued to do this. BAM continued to deliver on their contractual obligations. When they were asked to work, even if it was in an inefficient manner, they would do so, albeit financial recompense would be sought through an additional claim.
126. After the Mar Hall settlement we could also settle our disputes with BAM amicably. As part of that settlement the On-Street section was omitted from BAM's scope as they regarded that too risky based on their experience on the project to date [Question 101 (d)]. Siemens decided to manage the On-Street section itself.
127. By the time of the mediation at Mar Hall, the full extent of claims made by the Consortium had been included in the Phoenix proposal (albeit that proposal was not accepted in full at Mar Hall). I was very confident that these claims represented valid entitlements. I was (and remain) convinced that the delays underlying the claims were not caused by Siemens, and that Siemens had not caused any significant concurrent delay. After the Mar Hall negotiations

reached a settlement, it was not necessary to consider further Extension of Time claims.

128. Since I was not at Mar Hall, I do not know the extent to which the principles underlying the Extension of Time claims were analysed. The adjudication decision arising from claim regarding revision 8 of the MUDFA Programme had been decided in the Consortium's favour and there had been no reason to change the principles as to how to price such a claim. It appears that at Mar Hall, a commercial settlement was reached which inevitably means reaching a compromise in order to get a deal done.
129. A Siemens MIS report of 2 February 2011 [SIE00000301] noted "We have advised Bilfinger Berger of our concerns regarding cessation of 'goodwill works' and our concerns regarding incomplete and outstanding Estimates." I have no recollection of anything that had been said by Siemens to BB [Question 101 (d)]. Siemens had concerns about stopping the Goodwill Works that there could be some works accidentally suspended that the Consortium was obliged to do, which could leave the Consortium open to attack.
130. The Inquiry has referred me to an undated and unattributed document recovered from Siemens which appears to analyse the causes of the overall project standstill (SIE00000246). I do not recognise this document [Question 103 (a)]. It bears no name and I have no recollection of the document at all. It is difficult to interpret since I do not know the context in which it was written, when or by whom. It appears to be an attempt to analyse the overall project situation, but represents the opinion of one unknown individual who is expressing a view that I am not familiar with. It is not a format typically used within Siemens and is not part of the documents that make up Siemens' project management toolbox.

Project Phoenix

131. The Project Phoenix proposal was produced by the Consortium on 24 February 2011. This provided a price in relation to the Off-Street works from the Airport to Haymarket with a shortened list of pricing assumptions and

more risk to be taken on by the Consortium [Question 104 (a)]. The price included all known claims and changes and had been updated since the Project Carlisle 2 proposal to reflect the changes that had occurred to the Programme within the six months since Project Carlisle 2 [Questions 104 (d) and (e)]. As for the Project Carlisle proposals, the Siemens element of the price proposed under Project Phoenix was built up on the basis of the original contract price taking into account any scope omissions, reductions and additions and additional time related costs [Questions 104 (d) and (e)].

132. I have seen an email from Anthony Rush to Mr Nolan dated 27 February 2011 [CEC02084651]. As explained further below, the £68m figure is not a suitable basis for comparison. I assume this has been calculated on the basis of the payment milestone schedule but it disregards that practically all of the materials for the On Street section had already been procured. The matters set out in this email appear to be internal considerations of the client and I was not aware of them at the time. Anthony Rush did not play any significant role in the conclusion of the negotiations.

133. I have been referred by the Inquiry to an email dated 1 March 2011 [BFB00094574] where Brandon Nolan of McGrigors (for CEC) noted that Siemens' proposed Project Phoenix price of £136.5m was "double Siemens' original price of c £68m (Airport to Haymarket)" and he sought an explanation for the difference. I have also been referred to another document [BFB00094604] in which Mr Nolan explained how the £68m figure had been calculated; and also Sue Bruce's opening statement at the mediation, [CEC02084575_13], where this point is repeated. I am not entirely clear how the £68m has been calculated given the difference in scope between the original Infracore contract and the price set out in Project Phoenix [Question 105 (a)]. It is not the case that apportionments can be applied across the board, since some activities are system wide, for example the preliminaries whereas other activities are specific to the scope. Matters such as design would have been mostly completed for the Project irrespective of whether the scope of what was to be constructed was to be narrowed. All equipment for the on street section would have been procured and available regardless of whether that On-Street section was to be built.

134. Siemens price under the Phoenix Proposal was higher than under the Infraco contract, but this would have been largely because of the unplanned time related costs and changes to the Siemens' scope of works [Question 105 (2) (b)]. There had been an extended presence on site with full site team since Service Commencement moved by over 26 months from 16 July 2011 to 22 September 2013. Additional costs had been incurred in respect of trackwork to BAM. The effect of changes to the exchange rate had to be taken into account. Siemens would also have delivered all of the equipment for the On-Street Site under the Phoenix Proposal which would have added to the costs.
135. In order to produce the Phoenix Proposal, Siemens invited BAM to make best endeavours in supporting us to find an amicable solution with tie/CEC and to this end we asked them to provide a comprehensive and competitive proposal to us wrapping up alleged open entitlements to date so that we could consider this in our part of the Phoenix proposal [Question 106 (a)].
136. Around March 2011, the term "Phoenix Lite" was coined. I remember this term albeit cannot recall the details of it. I believe it was an attempt to come up with better pricing in order to bring the sites that were incomplete across the city to an end [Question 107 (a)]. The idea was for the Consortium to be paid for work done and for the materials procured, to complete the sections at the depot and airport so that there was a facility to stable and test the trams and then to continue with the works in the future when there was a budget available. It was really a means of patching up the open wounds across the city. As an idea, it never really took off, and was only under internal Consortium consideration as a contingency plan if the mediation at Mar Hall did not go well. I do not believe Phoenix Lite was proposed to tie, although it may have been mentioned at Mar Hall. It must have been the consensus that it was better for the Project to produce a meaningful transport system, so Phoenix Lite would have been off the table. I am not aware of the idea having any influence on the mediation or the subsequent settlement agreement [Question 107 (b)].
137. If tie had terminated the Infraco contract at or around the time of the Mar Hall mediation, first and foremost there would have been a reputational damage

for all parties [Question 108 (a)]. Also due to the complex situation we feared that any following litigation would have been long and costly. While we were convinced that Siemens' claims were valid and enforceable, there was a concern that a lengthy litigation process would, in the end, cost substantial amounts of money which could not be recovered. This was more a general concern based on Siemens' experiences in litigation worldwide [Question 108 (a)]. There would have been disputes around unrecovered entitlement. Additional costs would have included de-mobilisation costs; making works safe; claims from CAF and BAM Rail; payments due to other sub-contractors and suppliers; cost and time together with management time of engaging in dispute resolution and possible legal action over wrongful termination; and, the need for re-deployment of personnel. [Question 108 (a)] From a litigation perspective, the client would have ended up with a lawsuit instead of a transport scheme. There would have been losers on all sides.

138. The Consortium did have concerns that tie might terminate given the issue of RTNs and UWNs. I have been asked to comment upon a document [SIE00000173] which appears to show an attempt to calculate the exposure for Siemens in terms of costs spent to date, client payments received to date, abortive costs and amounts recoverable through sale of equipment to third parties or re-use. Although the document looks at the internal considerations of risk exposure for Siemens, it does not deal with the merits which would have been established in a litigation process (for example the validity of potential claims).

Mar Hall Mediation – March 2011

139. Prior to the Mar Hall mediation, a new chief executive in the CEC was appointed, Sue Bruce, who held a very different approach to the project to her predecessor. In previous instances, the Consortium's attempts to speak to the ultimate stakeholders of the project were fruitless. Under the new chief executive, a new agenda and approach was taken and there was a visible change to the attitude on the client side. The aim was to have a clean slate, to rebuild trust and thus successfully complete the scheme [Question 109].

Discussions were held between the Consortium, tie and CEC at management level to agree to hold another mediation.

140. At the time the mediation began, the claims made by the Consortium against tie should be apparent from the correspondence and change register [Question 110 (a)]. The Siemens proportion of the claims was mainly time related costs (Extension of Time claims in respect of Mudfa Rev. 8/Mudfa 2/Section A), and to a lesser extent in relation to scope changes for which there were various un-agreed Estimates and Changes plus unpaid preliminaries and unpaid contract milestones [Question 110 (b)]. It was not the case that Siemens sought to have taken into account at the mediation any claims which it was envisaged would arise, but which had not at that point been made [Question 110 (c)].
141. I was not present at the mediation talks at Mar Hall between 8 and 12 March 2011, having suffered a skiing accident. I therefore did not play any part in the mediation, or advising those present at the mediation and I am unable to comment on what discussion or negotiation took place [Question 111 (a)]. Likewise, I cannot comment on areas of consensus or contention; how the parties positions changed over the course of the mediation; or upon any significant developments or concessions [Questions 111 (a) – (h)].
142. The Heads of Term document arising out of the mediation was shared with me. The agreement was broken down into two parts, the Off-Street works for which a price was agreed, and the On-Street works (in relation to which a price remained to be agreed). Generally it was the view that the On-Street section was particularly risky for both parties and required a special contractual mechanism to allocate the risks fairly [Question 111 (i)]. It is normal for risk considerations to be built into price taking account of the type of risk and the likelihood of the risk occurring.
143. Overall Siemens conceded a substantial amount from its portion of the Phoenix Proposal (approximately £11m). How and if this related to individual elements of the proposed sum in the Phoenix proposal I do not know since I was not present at the Mar Hall negotiations [Question 111 (j)]. First and

foremost, I considered this as a fair deal where both parties made concessions. In summary, not all the sums to which we believed we were entitled would be recovered but there was a sense of relief that the project could continue in a more normal and less confrontational way [Question 111 (k)]. My own expectations were quite low based on the past experiences on the Project and I think it was hugely influential to a deal being reached that there had been a change of personnel at CEC. To this end the outcome was better than I had feared [Question 111 (l)]. In general, this was considered a sensible deal; mostly the reputational risk seemed drastically reduced and also the risk of a termination and litigation was removed for both parties. Finally, it put us in a position to deliver the project as promised [Question 111 (m)].

144. At the mediation, the Consortium sought an Independent Certifier to determine issues of principles and quantum (money and time); an appropriately qualified employer representative with full authority to act on behalf of CEC; and a project board comprising principals of CEC and the Consortium. These were considered essential by the Consortium [Question 112 (a)]. I believe an Independent Certifier was needed as there had been so many disputes in respect of payment falling due and the agreement of Estimates. It was thought that it would assist to have an impartial view to avoid such disputes happening in the future. It was important to have a representative of CEC, in contrast to tie, because attempts to engage with CEC in the past had been defeated, and a direct forum with the ultimate project owner was considered useful to address matters of concern directly. A project board with principals of the Consortium, and CEC was intended to facilitate that dialogue. The Agreed Key Points of Principle signed on 10 March 2011 included provisions for a substantial cultural shift and improved communication protocol, and this was re-iterated in the Heads of Term document. There was then a process of around 6 months to negotiate all of the amendments to the Infraco Contract during which the new methods of working were established. This included introducing the Independent Certifier, the CEC representative and the project board of principals that the Consortium had sought [Question 112 (a)].

145. I probably did not see tie's mediation statement at the time, given that I was not in attendance at the mediation. I therefore, would have been unable to form any view on the legal arguments presented by tie, nor would I have formed any view as to how strong I considered those arguments to be [Questions 113 (a) and (b)]. Likewise, I do not know to what extent those legal arguments influenced the deal agreed at and after the mediation [Question 113 (c)].
146. By the time of the mediation, a number of adjudication decisions had been issued and these decisions established principles for interpretation of the Contract. I understand that in their mediation statement, tie stated that these decisions were binding only within their own scope and had no general application. This view had been taken by tie previously [Question 114 (a)]. Had tie applied the principle that in the absence of an agreed Estimate, the Consortium was not obliged or permitted to commence or carry out works associated with a tie Change, it would not have issued a long list of instructions to carry out works. Given the adjudication decisions in favour of the Consortium, the Consortium was confident that the adjudication decisions had relevance in terms of the principles of the contract (in contrast to being one-off decisions applicable only to the specific facts of the dispute) [Question 114 (b)].
147. The fact that tie had not followed through with the RTNs and UWNs to terminate the contract gave rise to the notion that perhaps tie had doubts about their ability to rely upon those notices [Question 115]. Any termination scenario was considered by Siemens to be the worst possible outcome, and it was willing to compromise to avoid that eventuality. In addition to the risk of incurring associated costs, it would have created reputational issues for Siemens going against its general policy to deliver projects to the customer as promised. Siemens' reputation would have been dented certainly in Scotland, and to a lesser extent in the rest of the UK and worldwide [Question 115 (b)].
148. The Inquiry has noted that one key difference between the Project Phoenix proposal price (£449m) and the Off Street Works price agreed at Mar Hall

(£362.5m) is that the former included £65m for the tram supply, but the latter did not. This is correct [Question 116 (a)]. The summary of the Project Phoenix Proposal Price at section 3.7 of the BBS Mediation Statement makes it clear that it includes the sum of £65.3M for CAF. However, the Project Phoenix Proposal also makes it clear that a key mediation objective was the agreement of novation terms for the Tram Supply and Tram Maintenance Agreements. Excluding the cost of the tram supply, the Project Phoenix Proposal price was as follows: BB - £231.8m; Siemens - £136.8m; SDS - £15.1m; Total - £383.7m. The difference between that figure and the Off-Street works price agreed at Mar Hall of £362.5m is the reduction that was agreed as a result of commercial negotiation and compromise [Questions 116 (c) and (d)]. A document was prepared [SIE00000184] that identified how the £11m discounted by Siemens related to the overall settlement with the consortium [Question 116 (e)].

149. Having looked at the Agreed Points of Principle [CEC02084685] arising out of the mediation, and comparing them against the Phoenix proposal; the key differences were the new changed behaviours to be introduced and a shifting of risk [Question 116 (f)]. In addition to the change in price, I would comment as follows with regard to the shifting of risk [Question 116 (f)]:
150. Item 2 – acknowledged that price certainty was almost impossible;
151. Item 3 – I do not know if this was a departure from the Project Phoenix proposal; however, these additional works had been subject of lengthy discussions almost from the start of the Project.
152. Item 4 - This was a shift so that the Consortium bore more of the risk;
153. Item 5 – This was not a change;
154. Item 6 – This was a shift so that the remediation of Princes Street would be at the Consortium's cost and risk;
155. Item 7 – This related to the process to achieve resolution of outstanding issues;

156. Item 8 – Self-certification of the Infraco works was a simplification of the process but created an increased risk for the Consortium since it would be liable for the consequences if the works were not of the requisite standard;
157. Item 9 – This related to process to achieve resolution of outstanding issues;
158. Items 10 and 11 – Cultural and communication behaviours were key to addressing the problems that had been apparent throughout the Project, but did not in itself shift the risk between the parties. This was however, a key difference between Project Phoenix and the Agreed Points of Principle;
159. Item 12 – This related to the process to achieve resolution of outstanding issues;
160. Item 13 – This appears to give expression to the concern that CEC had insufficient funding and a recognition of the strain placed upon City finances, given that there was no significant contingency fund available from Transport Scotland.
161. The Inquiry has referred me to:
 - 161.1 Project Phoenix's proposal proposed completion of section D by 22 September 2013;
 - 161.2 the Heads of Terms which merely noted that a Programme, and the sectional completion dates, were to be agreed (CEC02084685_4, 8.1); and
 - 161.3 the revised Programme in the settlement agreement (CEC02085650_3) which provided for completion of section D by 8 July 2014.
162. The explanation for the difference in dates, is as a result of the Settlement Agreement including provision for completion of the On-Street Works east of Haymarket whereas the Phoenix Proposal related to only the Off-Street Works to Haymarket. There was therefore more to do, and in a more difficult section.
163. The Inquiry has referred me to an email sent by Steven Bell to Alastair Maclean dated 12 April 2011 [TIE00686636], shortly after the Mar Hall

mediation had taken place. His comments provide a snapshot of his views at that specific time. However, it is important to bear in mind that this email was sent around 5 months before the settlement agreement was finalised and the detail of the settlement agreement was negotiated during this period. Steven Bell did not appear much in discussions etc after Mar Hall. Whilst the email may have reflected internal discussions, these concerns were not shared with me. Negotiations around the Settlement Agreement were dealt with by CEC representatives directly. First of all it must be noted that the Project Phoenix proposal assumed that the line would only be completed to Haymarket, i.e. the most time critical sections were not considered. Subsequently programme revision 3a was issued which included the On-Street works (subrevision 0 submitted on 11 May 2011). However, due to the complex negotiations and a slightly delayed confirmation of funding availability on behalf of CEC the Settlement Agreement was signed later than originally envisaged and a couple of assumptions in revision 3a became obsolete and per way of update and to take into account the latest available information on 15 September 2011, in conjunction with the execution of Minute of Variation 5, Programme Rev. 4 was issued. Between revisions 3a and 4 the service commencement date moved from 20 May 2014 to 08 July 2014 and it was agreed that any cost impact would be dealt with subsequently. This agreement was given effect by tie Change Order 529 issued on 21 December 2011. [Question 117 (a)].

164. I am not in a position to determine in detail what activities moved for what reason between revisions 3a and 4; this would require analysis by a programming expert considering all influences (including completion of preceding utility works, re-mobilisation dates etc.) [Question 117 (b)].
165. The Inquiry has referred me to a Siemens MIS report dated 13 April 2011 [SIE00000304] which noted progress in addressing approvals and consents, and a changed approach by CEC in managing tie. I share the view stated in the extract commenting upon this contained in the Siemens MIS Report. One of the reasons for the improved collaboration was that CEC technical personnel were re-located to an extension built to the Consortium project

office. This enabled more direct communication between CEC, the SDS provider team and the Consortium [Question 118 (a)].

166. Previously, that method of collaboration had not been present [Question 118 (b)]. It assisted that there was an Independent Certifier as an impartial person to monitor and guide which removed the conflict. He oversaw the co-operation and facilitated meetings. Gradually tie personnel were replaced and their function was taken over by CEC [Question 118 (a)].

The Off-Street Works Price

167. The Heads of Terms included an agreed price of £362.5m for the Off-Street Works, certain enabling works and the Prioritised Works. That figure was based upon the price set out in the Phoenix proposal, less concessions made as part of the negotiations [Question 119 (a)]. It is difficult to say to what extent the Off Street works price agreed included a payment to settle claims which the Consortium considered had accrued to it under the Infraco contract. A commercial negotiation took place and there is no detailed analysis that I am aware of which attributes a specific figure to the Consortium's claims. I do not know to what extent the value of those claims were analysed, discussed and agreed, and am not aware of any such analysis having been recorded anywhere. The concessions made in the settlement do not reflect any perceived weakness in the Consortium's claims. In my opinion, however, the settlement reached was adequate to recover an appropriate portion of Siemens' rightful claims (but not all of them) considering the potential consequences in case of not finding a settlement. [Questions 119 (b) and (c)].
168. The spreadsheets that have been referred to as having been circulated by Colin Smith and Alan Coyle were CEC documents [BFB00101644 and CEC01952969]. They appear to largely reflect the breakdown of the Off-Street price as understood by Siemens [Question 120 (c)]. I recall checking a spreadsheet with yellow highlighted rows to ensure that Siemens' elements were correctly recorded, but I don't recall having visibility of the second one coloured grey. It is worth pointing out that these spreadsheets do not

represent the Consortium's values alone; they also reflect CEC's own elements. The overall ownership of the spreadsheets was with CEC.

169. I am unable to reconcile the different breakdowns from the two spreadsheets having not been involved in the preparation of them, and having had no input in how the figures were calculated or arrived at [Question 120 (d)]. CEC appears to have applied its own analysis and system to break down the Off-Street works price. I am unable to agree or disagree with any figure that CEC attributed to the settlement of the Consortium's claims since no detailed analysis was provided by Siemens to analyse what the discount on the Phoenix Proposal price was given for. The Consortium's view was that the £362.5m figure included settlement for all of the Consortium's claims without a need for attribution to individual items detail; if such detailed attribution was done by CEC I am not aware of it. [Question 120 (a)].
170. I am unable to say what the £98.35m that appears to have been deducted from the Off- Street works price of £362.5m was in respect of "system wide costs from cert 47". This is a description that has been applied by CEC and although Siemens would have had its own understanding of what system wide costs entail, this may not necessarily correspond with CEC's application of the term [Question 120 (i)].

The On-Street Works Target Price

171. For the On-Street Works, it seemed almost impossible to agree a fixed sum since it was known that there were many conflicts to be resolved in respect of working in parallel with the utility works which created inefficiencies. This means that the price could not be calculated as a fixed sum, or that the price would have been so high due to the element of risk involved that it would not have been favourable to the client [Question 121 (a)].
172. The £39m figure for the On-Street Works was a target figure based upon the Estimated cost of the work plus the additional time-related costs [Question 121 (b)]. In respect of Siemens, time-related costs was the dominant factor. A detailed breakdown was provided by Siemens in respect of its element of the £39m figure to Faithful & Gould. [Question 121 (c)]. This was the best

Estimate that could be given at the time as a target price. I believe that £39m was the target price proposed by the Consortium and I do not think it was reduced during the mediation [Question 121 (d)].

Design and Trackwork for line beyond that which has been built

173. The Agreed Key Points of Principle (see CEC02084685) noted that the £362.5m price included integrated design to Newhaven. I was not engaged on a day to day basis with design matters [Question 122 (a)]. However, I understand that Infracore was required to deliver the design for all of Phase 1a, including 'Secondary Phase 1a'. Thus, subject to what were known as the 'Secondary Phase 1a Design Exclusions', Infracore was required to provide the 'Secondary Phase 1a Design' for Secondary Phase 1a, namely the section of the alignment to Newhaven (as shown at Section 2.2 of the Employer's Requirements) [Question 122 (a)].
174. I believe that Infracore completed as much as reasonably practicable of the Secondary Phase 1a design work. On 27 June 2012 Infracore submitted its 'Closure of Secondary Phase 1a Integrated Design Report' (ref: 25.1.201/B/9541). This report was accepted in full by CEC on 19 September 2012 (INF CORR 8583/RL). Michael Wilken would be able to comment further on the extent to which there were design obligations in respect of the section from the Airport to Newhaven, and the extent to which these obligations were met.
175. The price of £362.5m also included all Siemens' materials and equipment to Newhaven [Question 122 (b)]. There was an extensive list of materials that were transferred to CEC in an inventory provided under cover of a letter from the Consortium to CEC of 4 June 2014 reference ETN(BS)CEC#061496. A copy is attached at **Exhibit AE2**. There were some materials that could be cancelled and in those circumstances, it was agreed that the items would not be supplied, and the Consortium would give credit for those items against the price. These materials eventually put in storage by CEC had been a part of the original contract scope. They had already been procured or manufactured and could not be used for any other Siemens Project. Furthermore, CEC did

not want to cancel them in the event that they could be used in the near future as part of the secondary phase (Phase 1a) of this Project.

176. The exact materials supplied by Siemens pursuant to Minute of Variation 4 are set out in the various Vesting Certificates issued by Siemens to CEC. These vesting certificates were in the form prescribed in Schedule Part 6 to Minute of Variation 4. These certificates and the amount claimed in respect thereof were as follows:

<u>Vesting Certificate</u>	<u>Vesting Date</u>	<u>Vested Value</u>
110415_Inventory List_Vesting_HG1	15/04/2011	£14,595,988
110517_Inventory List_Vesting_HG2	17/05/2011	£402,676
110615_Inventory List_Vesting_HG3A	29/06/2011	£4,365,154
110715_Inventory List_Vesting_HG3B	27/07/2011	£4,411,291
110817_Inventory List_Vesting_HG3C	24/08/2011	£4,447,551

177. Due to there being no rates available for these materials, the price was in effect a proportion of the price for equipment from the Infraco Contract. The price for equipment in the Infraco Contract would have been based upon a contract specific sell-rate (i.e. the cost of the items plus an element of profit and overhead costs). [Question 122 (d)]

178. [Question 122 I] I would expect that the design is largely sufficient for the line to be extended to Newhaven since it was developed to a certain standard before it was closed, although I do not have the requisite design expertise to comment in detail on this matter. There could always be circumstances on site that would not have been taken into consideration at the time, for example the road layout or utilities on site may be different. However, it was

completed to the extent reasonably possible. Today it would need to be checked and/or revisited according to new current requirements on site. I would expect the sufficiency of the design would very much depend on the chosen infrastructure contractor and upon the chosen design team for any extension of the network. In particular, a new contractor may propose different construction methods and materials and there may be changes in technology.

179. With regard to materials, there were some materials which were cancelled and credit given, so those items would not be available if the line was extended to Newhaven. It is also not known what conditions the materials provided have been stored and maintained [Question 122 (e)] . These items are not covered by Siemens' maintenance obligations under the contract.

Mediation – General

180. Ultimately, the outcome of the mediation that was crucial for completion of the project was the new method of collaboration. Joint Control meetings subsequently took place with senior management of the major stakeholders in attendance to address any potential dispute quickly and amicably. A stringent governance structure was put in place to enable decision making by those empowered to take decisions.
181. There are a few additional documents which I have referred to above which I provide to assist the Inquiry.

After the Mar Hall Mediation – March 2011 onwards

Minute of Agreement 4

182. The Inquiry has referred me to the Minute of Variation 4 in respect of the prioritised works (CEC01731817), entered into on 20 May 2011 between tie, Bilfinger, Siemens and CAF. The clear purpose of MoV4 was to give effect to the agreements reached by the parties in mediation, as recorded in the heads of terms. One express purpose of MoV4 was to give effect to the Prioritised Works (Recital F to MoV4). MoV4 enabled the execution of these works whilst CEC consulted with stakeholders and sought to obtain required

funding for Initial Phase 1a. [Question 124 (a)]. In respect of the depot, the mini-test track and Haymarket Yards, these were very time critical issues for the off-street section. In respect of the Princes Street remedial works, this was a reputational issue for all parties due to the prominent location of the Street in the city. There was therefore a mutual interest to focus on Princes Street.

183. The Inquiry has referred me to clauses 6, 7 and 8 of the Minute of Variation 4 which provide for the payment by tie to the Consortium, in instalments, of a sum totalling £49m with £32.5m to be paid to Siemens for materials and equipment. The balance was in respect of site preliminaries (payments covering the Consortium's time-related costs) and mobilisation [Question 124 (b)]. Such a payment was necessary from Siemens perspective because it had procured materials and paid sub-contractors, and its cumulative expenditure exceeded its cumulative income at that time [Question 124 (c)]. This arrangement was needed to normalise the position, including handing over the materials so that ownership would vest in the client. The £49m formed part of the Off-Street price of £362.5m [Question 124 (d)].
184. I understand from the Inquiry that tie had considered the £49m to be excessive and that £19m was a more appropriate sum, and that this was referred to in an email from Richard Jeffrey dated 7 April 2011. My understanding was that the proposal that the Consortium would receive this £49m was largely accepted, and I am not aware of internal discussions at tie around that figure [Question 124 (e)]. The payment was a key feature in rebuilding the Consortium's trust and confidence that its contract partner was serious in completing the Project. The figure had been well presented and substantiated by the Consortium which was willing to accept the payment in three instalments. Such an email was typical of the unhelpful tie behaviour that the Consortium had experienced prior to the Mar Hall mediation. In light of the accrued underpayment and the extent of materials procured to that date, the payment was fair and proportionate.
185. Clause 10.3 and schedule 7 of Minute of Variation 4 provided for a new change procedure to apply to the Prioritised Works. It was clear that this

helped to smoothen the process as there was not the same level of problems as had previously been experienced. Not only was the change procedure simplified, there was a positive change in behaviour on behalf of the client that helped [Question 124 (f)].

186. This change procedure was understood to represent a draft arrangement pending agreement of MoV5. The key benefit of the revised change procedure was that the previous version of Clause 80 was dis-applied and that CEC could insist that Infracore be required to proceed with the proposed Change in advance of agreement or determination of the related Estimate. [Question 124 (f)]
187. The Inquiry has referred me to an exchange of emails in July 2011 (TIE00688914), whereby representatives of tie and CEC discussed Siemens' share of the proposed On-Street price. The Inquiry note that there appeared to be a difference of view between tie and Siemens over what had been agreed at Mar Hall, with the result that Siemens' proposed part of the on street price was £14m higher than tie thought acceptable. The increase was as a result of the duration of the Programme extending and there was a significant cost to keeping the project team running for a longer time as a consequence of including the On-Street works again in the contract [Question 125 (a)].
188. It is also worth noting that the reference to the Phoenix Siemens Price in Dennis Murray's email to Alan Coyle of 8 July 2017 is incorrect and the discount negotiated at Mar Hall was £11m, and not £14m as it is suggested that Siemens was trying to recover through the On Street Price. Bearing this in mind, the £14m additional cost related to the extension of time for the On-Street works which shifted the end date of the Project from September 2013 to May 2014. The £4m figure was the value of Siemens' construction milestones relating to the On-Street section of the Project. I should also make it clear that I never stated that this £14m was a "recovery of Siemens' losses as a result of the Mar Hall negotiations" as Vic Emery states in his email to Sue Bruce, dated 22 July 2011. It was not the

case that Siemens was trying to reverse a discount that it had previously given.

189. Siemens provided detailed information in respect of its rationale behind the price to Colin Smith and this was examined by Faithful and Gould. Ultimately tie and CEC agreed with what was proposed. In return, I believe Siemens had accepted greater risk, which was enabled by the target price mechanism. An agreement was reached whereby when unresolved claims in respect of the On-Street Works exceeded a certain amount, a threshold was triggered enabling the Consortium to be paid on a cost plus basis. However, there was also a procedure for the swift resolution of any additional costs, and the threshold was therefore never triggered in respect of unresolved claims [Question 125 (b)].
190. The Inquiry has referred me to clause 3.3 and 3.4, in particular, that a deadline of 1 July 2011 was set for the parties to enter into the settlement agreement (referred to there as Minute of Variation 5) and the Memorandum of Understanding that was entered into on 24 August 2011 (BFB00097699) to extend the timescale for the conclusion of these negotiations until 31 August 2011. Ultimately, the negotiations were very complex. The review of the entire Infraco contract including its annexes had to take place and amendments made. This was not a matter of there having been dispute, but rather the extension was required simply due to the magnitude of the task [Question 126 (a)]. The determining factor for the new Section D date, 8 July 2014, was the inclusion of the On-Street works [Question 126 (b)].
191. I understand that Schedule 4 of the Memorandum of Understanding of 24 August 2011 provided a Target On-Street Works Price of £52,608,034. The basis of Siemens' part of the Target Price was set out in Siemens 'Target Cost Price Presentation' dated 20 June 2011 and handed to CEC on that same day.[Question 126 (c)]. My understanding is that it was based on milestone values from the Infraco contract in addition to the cost of the additional time as a consequence of the extension to the overall Programme.

192. There were also termination amounts payable if funding was not arranged before a termination date. These sums were prepared in light of the provisions of Clause 3.3.4 of MoV4 and the payments contemplated in the event of automatic termination of the Infraco Contract pursuant to Clause 3.3.3 of MoV 4 should CEC fail to secure project funding by the Relevant Date, namely 31 August 2011. The provision of these sums enabled CEC to make an informed decision about continuation or abandonment of the Project [Question 126 (d)]. The termination amounts related to the whole project, not just the On-Street Works. The purpose was to recompense the Consortium for any costs to date, sunk costs and loss of profit [Question 126 (d)]. The Consortium provided a document entitled "Assessment of Project Costs" prepared on 20 June 2011, and provided to CEC on 21 June 2011. The details and method of calculation in respect of the Siemens' part of the On-Street Works is set out eg in Siemens 'Target Cost Price Presentation' dated 20 June 2011; subsequently the pricing underwent further revisions to accommodate discussions between Siemens and CEC [Question 126 (e)] The termination figures were not of practical relevance since none of the parties wanted to walk away from the Project. It was more about providing a remedy for amicable separation if funding could not be made available [Question 126 (f)].
193. I have been referred to a report to CEC in August 2011 which noted an agreement at mediation that each Consortium member would prepare a sealed envelope Estimate of their costs for walking away from the project; and that further discussions had indicated that the cost of this would be £80m less than the cost of unilateral separation previously reported. I am not in a position to comment on the origin or build up of the £80m figure and would like to refer back to the information provided from the Consortium to CEC on 21 June 2011.
194. I was aware of the CEC's decision on 25 August 2011 not to pursue a line to St Andrew Square/York Place, but instead to stop the line at Haymarket [Question 127 (a)]. I was quite astonished by this, as I had thought that option was off the table and was no longer under consideration by the political decision makers. It was a decision that did not make much sense

from a performance perspective since it would leave the tram line deficient as to what would be delivered. I was also aware of the meeting on 2 September 2011 that reversed that decision.

195. I understand that a meeting took place between CEC and the Consortium on 29 August 2011. However, I have not seen any notes of that meeting, and have no recollection of it [Question 127 (b)].
196. Immediately following the Council decision and the meeting of 29 August 2011, I wrote to CEC (letter 25.1.201/MF0/8706, dated 30 August 2011- **Exhibit AE3**). Therein, the Consortium advised that the consequences of the Council's decision needed to be considered fully, but these included [Question 127 (c)]:
 - 196.1 The termination at Haymarket was not defined and a turnback design strategy would be required;
 - 196.2 The scope of the works under the Infraco Contract would have to be re-defined;
 - 196.3 The effects on the Programme had to be analysed however, a delay could not be avoided;
 - 196.4 Mobilisation to commence the works would be delayed which would have further consequences on costs including subcontractor prices; and
 - 196.5 The re-defined scope would result in an increase in the price and an appropriate compensation will need to be agreed for the non-executed works between Haymarket and St. Andrew Square/York Place.
197. However, apart from this advice, it is my understanding that no costings were provided.
198. In terms of the full cost and time consequences of the Council's decision of 25 August 2011, CEC would have had the Consortium's Phoenix proposal but this would have left the city with a tram system that would not have been as much use. It would have been at a lesser cost, and would have been

completed in a shorter time frame, but also would have produced less revenue for the city [Question 127 (d)].

199. I am not sure if it is possible to accurately separate the cost consequences of this delay from the earlier delay in negotiations, which had led to the first Memorandum of Understanding to Minute of Variation 4. However, the combined effect of these delays led to the abandonment of Programme Rev 3A, as the re-mobilisation date therein was no longer achievable. Thus, it is my understanding that the Programme Rev. 3A to Rev. 4 costs arose from this combined delay to the conclusion of Memorandum of Variation 5. Tie Change Order tCO 529 in the sum of £4.541M refers to this.
200. In response to the Council decision of 25 August 2011, a Memorandum of Understanding was completed which, amongst other matters, made other changes to Minute of Variation 4 (see clauses 3.2 and 3.3). This was only to give effect to the payment mechanism to draw down the contract price [Question 127 (e)]. An additional column was added to the payment mechanism to reflect a period that had not previously been covered. The previous schedule had been based upon completion of the Prioritised Works by period ending 17 September 2011.
201. I have been referred to a report for CEC by Faithful and Gould (CEC01727000) whereby comments were made to the effect that BB and Siemens were in a strong negotiating position and had submitted grossly inflated prices for the On-Street works (totalling £53.4m). I have not seen this report before, and it does not seem to be a report that CEC would have shared with the Consortium [Question 128 (a)]. In respect of paragraph 2.3 of this report that refers to base cost values, I would agree that a large amount of costs had been determined by this stage as the Project was at a very advanced stage, particularly in respect of procurement of materials and equipment, but not to the same extent in respect of time related costs [Question 128 (b)]. In respect of paragraph 2.6 containing Faithful and Gould's assessment, they have entirely omitted to refer to the fact that it was not the value of the physical works that had led to the price; it was the Extension of Time. On the contrary, Siemens in MoV5 even agreed to be

continued to paid according to original milestones in case of flip over to actual cost based payment for the on-street works. I would agree that it would not have made commercial sense to replace Siemens at this point in time, although since the system was in sections, it would have been possible to terminate at Haymarket. I very much disagree with the statement that the prices were “grossly inflated”. I would like to reiterate that detailed breakdowns for the pricing had been provided by Siemens and that these were based on audited rates for personnel. Equally such criticism was never brought to my attention at the time. [Question 128 (b)].

202. The Target Price for the On-Street Works that was referred to in the Settlement Agreement was a joint target and all parties would work together to achieve this [Question 128 (c)]. The Target Price had increased from the target price referred to in the post-mediation Heads of Terms. My understanding is that the time element was the dominant factor in the movement in the price, as a result of the precise termination point being defined as York Place which was a little further. Regardless this decision was very meaningful in terms of system performance because there are many restaurants, theatres and other venues in the York Place area which generate greater footfall for the trams [Question 128 (d)]. It was not the case that the price of the On-Street works was inflated. Having regard to the detail, the Target Price was explainable and reasonable [Question 128 (e)]. The re-inclusion of the On-Street Works happened at the time when the Consortium’s resources that were deployed on the project were at their peak for Siemens. This therefore resulted in additional time related costs as a result of maintaining resources at their peak for a longer period of time. There was also a limit to the level of resource that could be deployed on worksites at any one time, as there comes a point when such resources hinder each other rather than accelerate the works.

203. Settlement Agreement, 15 September 2011

204. The claims that were being settled by this Agreement were the same as the claims at the time of the Mar Hall mediation [Question 129 (a)]. As referred to previously, there was no process to attribute a portion of the price to the

claims that were being settled [Question 129 (b)]. Certain known identified changes to come were excluded from the settlement. The exceptions included items which could not be sufficiently be defined in scope at the time of settlement.. Claims arising from the prolongation of the works between revisions 3A and 4 of the Programme were also excluded since the intention was to conclude the Settlement Agreement on the basis of the Programme at the time of the Mar Hall mediation. The valuation of the Extension of Time resulting from the changed Programme had not been concluded as the mechanism for pricing the quantum was still to be finally tested and applied [Question 129 (d)].

Pricing provisions following Settlement Agreement dated 15 September 2011

205. It was agreed at Mar Hall mediation that the parties would amend clause 80 and Schedule Part 4 of the Infraco contract to give effect to the principles agreed as part of the Heads of Terms. In essence, for the Off-Street Works, CEC acquired the risk associated with the existing Pricing Assumptions and Specified Exclusions. To give effect to the new fixed price it was necessary that these assumptions and exclusions were removed. This was essential for both parties in order to move away from the deadlock which had existed prior to Mediation. [Question 130 (a)]
206. The 'On Street Works Trigger Date' was a common-sense mechanism to give BSC confidence in the valuation by CEC on payments due for the On-Street Works. The Consortium's preference had been for a payment mechanism which permitted payment based upon recovery of demonstrable cost. This was unacceptable to CEC. The revised arrangements were a sensible compromise which reflected the sensitivities of both parties and which allowed the Consortium to claim on a cost plus basis once unresolved claims had reached a certain level. It must be noted that Siemens was confident enough about the works to be carried out that even after the trigger date Siemens would have continued to be paid based on the agreed milestone payments [Question 130 (b)]. As a result of the good working relationship between the parties post mediation and because of the new governance arrangements the trigger date never actually occurred [Question 13- (b)]. The trigger mechanism could have been invoked in theory by

forwarding unreasonable claims to enable the Consortium to claim on a cost plus basis. Or equally CEC could have unreasonably withheld approval of valid claims. The fact that the trigger date never occurred is evidence of the good co-operation between the parties.

Negotiation of On-Street price

207. The Target Sum for the On-Street Works of £47.3m contained in the Settlement Agreement was reached after documentation was collated to substantiate the price, the underlying assumptions and this was ultimately accepted [Question 131 (a)]. The price reached reflected a fair assessment of Siemens' entitlements under the original contract in my opinion. There are various documents referred to by the Inquiry containing statements by Dennis Murray, Steven Bell and Fiona Dunn. These were all old tie personnel. This seems to evidence there having been internal wrangles at tie and CEC, but a more co-operative approach was being presented to the Consortium. It would appear that CEC kept these disagreements away from the Consortium and I was not aware of them at the time.
208. I have been referred to documents referenced [SIE00000184, SIE00000185, and SIE00000186]. These are internal Consortium documents between Consortium partners to split the allocation of the settlement amounts between the parties. They appear to have been compiled at different points in time, and this may have been as a result of the transition from draft status, to being finalised documents [Question 132 (a)]. SIE00000113 is an internal breakdown of the Phoenix proposal, with the discount applied as a result of the settlement distributed on a pro rata basis across the elements in order to determine the price allocation to internal departments within Siemens [Questions 132 (b) and (c)].
209. I have been referred to a note (CEC02084577) of the Infracore opening statement at the Mar Hall mediation, given by Richard Walker of Bilfinger. At section 20, the on street works and the "OSSA" (i.e, the On Street Supplementary Agreement) are referred to. Mr Walker is noted as having said that "the on street works could have been commenced a year ago,

however there was still the possibility that the previous arrangement could be looked at, tweaked slightly and used as a bolt on to the Project Phoenix proposal". BB appears to have been simply pointing out that a proposal had been made, and it could be that a similar arrangement could be made to settle the On-Street Works [Question 133 (a)]. It might be true the On-Street Works could have been commenced a year previously and under different circumstances (e.g. site access), since anything is possible, but in the absence of an agreement this could not have happened [Question 133 (b)]. Although the OSSA was proposed, it was not accepted [Question 133 (c)]. The bulk of the additional costs for the On-Street Works on Siemens side was time related, so a good proportion of those costs could have been avoided had an arrangement been in place sooner [Question 133 (d)]. The agreement ultimately reached for the On-Street Works was different to that set out in the OSSA [Question 133 (e)]. The Settlement Agreement put in place a fixed price for the On-Street Works whereas the OSSA would have proceeded in a cost plus basis.

Programme

210. The Settlement Agreement introduced a new Programme into the Infraco Contract. The completion dates for section C and section D were arrived at as a consequence of the development of the project and the progress that had been made [Question 134 (a)]. The time anticipated for the outstanding works, taking into account the sequence of those works was added to calculate the completion dates. The Programme had been under continuous review throughout the Project.
211. My understanding is that Programme Rev. 4, which became the Contract Programme was largely based upon Programme Rev 3a upon which BSC had based its preliminaries costings. Programme Rev 3a had been agreed as a result of a number of Programme workshops between BSC and CEC. Programme Rev 3a was based upon the planned re-mobilisation date of 01 July 2011, as stated in MoV4. Programme Rev. 4 reflected the revised remobilisation date of 14 September 2011, the date of MoV5, a slippage of 75 days.

212. In Programme Rev. 4, as a result of discussions with CEC, BSC reduced the period for testing and commissioning from 26 weeks to 90 days. In addition, in Programme Rev. 4, despite the slippage of 75 days in remobilisation, the end date moved by only 49 days, namely the Section D Date moved from 20 May 2014 to 08 July 2014.
213. After the Settlement Agreement efforts were made, in consultation with CEC, to expedite completion. To this end BSC agreed to a new section, namely Section B1 (mini test track), to facilitate driver training by the Operator. In addition, in large part due to the efforts of Siemens both Section C and Section D were completed ahead of the stated Planned Sectional Completion Dates in Programme Rev.4. Section C was completed on 12 March 2014, 28 days early. Section D was completed on 30 May 2014, 39 days early. [Question 134 (b)] From Siemens perspective, work was carried out on more fronts than had been envisaged and additional resources were deployed at the same time. By deploying very efficient working practices, wherever possible Siemens started its activities early and working in conjunction on site with the utility companies and BB, rather than waiting for the site to be fully completed for handover to Siemens [Question 134 (b)].

Cost of Programme Change from Revision 3A to Revision 4

214. The Inquiry has referred to the opinion of the Independent Certifier on the change between revision 3A and revision 4 of the project Programme and his decision that the contract sum should be increased by £4,541,161. This Change (tCO 529) arose as a direct result of the agreement reached and recorded in the Settlement Agreement paragraph 3.1(a)(iii). There it was acknowledged that the Consortium retained, in principle, its entitlement arising from the prolongation of the Works due to the revision in the Contract Programme from Revision 3A to Revision 4. This entitlement was calculated by the Independent Certifier following the Settlement Agreement and the re-commencement of the Works. This Change recognised the Consortium's entitlement due to postponed re-commencement of the Works from 02 September 2011 to 03 October 2011.[Question 135 (a)]

215. The costs were calculated in accordance with rates set out in the Settlement Agreement for Extension of Time Claims. Those rates would have been applied to the period of the Extension. Those rates were set out in Appendix A of Schedule Part 4 and Appendix C of Schedule Part 45. [Question 135 (b)].

Operation of the Project after the Settlement Agreement

216. The Inquiry has asked me to confirm my view on how the project progressed after the Mar Hall mediation, with particular regard to specific elements. I therefore comment as follows:

216.1 Design [Question 136 (a)(i)] - This is not my area of expertise, but my impression was that design activities progressed much more smoothly, and I was not aware of any delays. By the time of the Mar Hall mediation, the design had been developed to a reasonable stage. It remained difficult to obtain approvals and consent from Scottish Water, but the CEC approvals process was much better. There were improved mechanisms to address any issues through Project Control and the governance structure. The co-location of CEC staff with SDS and consortium staff in the project office turned out to be very useful. [Question 136 (b)].

216.2 Change [Question 136 (a)(ii)] - The contractual change procedure had been simplified. As far as I am aware, there were no subsequent changes causing delays to the works. There was a reduced need for change, mainly because of the known issues which had been taken into account in the price [Question 136 (b)].

216.3 Utility Conflicts [Question 136 (a)(iii)] – BB would be in a better position to comment on this. However, on the basis of what I observed and heard, the utility diversions were working together on the same site and the same time as BB. This would have allowed progress, but may have led to inefficiencies [Question 136 (b)].

216.4 Differences and disagreements between the parties [Question 136 (a)(iv)] – From Siemens' perspective, in overall terms, matters were improved by the

new governance arrangements put in place post Mar Hall and the spirit of trust and co-operation generated between the parties. The personnel engagement and the openness displayed by Sue Bruce, Colin Smith, and generally by CEC staff was central to the project turnaround. [Question 136 (b)] Various statements have been referred to by the Inquiry including, “the Project had been one of the worst projects for co-operation but within the short period since the settlement agreement it had become an example of one of BB’s best projects for co-operation” (see CEC01891023); “The current way of working has been the correct way to go. Change mechanisms have worked but been assisted by the reasonableness of [Colin Smith]” (see SIE00000379); “Normally B & S and CEC stand together on matters” (see SIE00000379) . These statements are a fair reflection. There was a sense of the parties moving forwards together.

Post-Mediation Change

217. There were numerous changes under the Infracore contract following the Mar Hall mediation. Although these were numerous, they were not generally high value for Siemens [Question 137 (a)]. Before the settlement, dealing with those changes could have caused hold ups. There would still have been changes as a result of utility conflicts which became apparent when working on site. However, the number of changes was not so high for Siemens and some of the changes represented reductions when certain scope was omitted and when orders were cancelled [Question 137 (c)].
218. In respect of Clause 80 Changes for the Off-Street Works there was a total of 52 Changes related to Siemens. This total is not excessive in respect of the extent of the alignment and the Programme duration. In addition, of these 52 changes a total of 21 changes related to omissions or savings in the Works. [Question 137 (c)]
219. In addition, a number of these changes were expressly contemplated by the Settlement Agreement. Thus, whilst these changes were known about, they could not be priced with any degree of accuracy. Schedule Part E to the Settlement Agreement list these changes. Thus, in this list items in respect of Siemens works (Systems and Trackwork) are listed as follows:

- 219.1 'Target EXC1-Excluded from the On Street Works Contract Price, value preliminarily Estimated, subject to detailed Estimate when detailed design information is available'; and
- 219.2 'Target EXC2-Excluded from the On Street Works Contract Price, due to insufficient design information, subject to detailed Estimate when detailed design and scope information is available';
220. Also, the enabling works in respect of the Edinburgh Gateway were contemplated by the Mar Hall 'Heads of Terms Following Mediation' which provided at paragraph 6.2 that an additional price and Programme would be agreed in respect of the required works and added to the 'Total Price' for the Off-Street works.
221. In respect of the Schedule Part 45 changes (On-Street) the Siemens portion of the post mediation changes were valued at £910K. Again, this is not considered excessive.
222. The Siemens share of the £9.8m increase in the Contract Price pursuant to Clause 80 was £3.09m. The most significant item in this total was the sum of £3.296m paid to Siemens as part of the '22 Week Time Bank' cost engineering Programme saving (tCO 620). Thereafter, the next most significant item was the sum of £1.689m due to Siemens in respect of tCO 529. This related to the costs due to Infraco as a result of the prolongation of the Works due to the revision in the Contract Programme from Revision 3A to Revision 4. This entitlement was recognised as part of the Settlement Agreement-paragraph 3.1(a)(iii) [Question 137 (b)].
223. Other major Changes after Mediation included:
- 223.1 PMC-0014, £290k, Edinburgh Gateway, future proofing;
- 223.2 PMC-0019, £289k, Future proofing New Ingleston limited;
- 223.3 PMC-0097, £782k, Floating Slab Design & Construction;
- 223.4 PMC-0053, £436k, York-Place temp. Tramstop;

- 223.5 PMC-0074, -£1.1m, De-scope of TRW materials (Omission);
- 223.6 PMC-0210, -£189k, De scope West-St.Andrew Sq. TLC (Omission); and
- 223.7 PMC-0279, -£199k, De scope Jct. 22&26. TLC (Omission).
224. The additional sums paid to Siemens pursuant to Clause 80 were off-set by savings/omissions of £1.1m in cancellation of trackwork materials and £1.579m in respect of immunisation pain/share agreement (tCO 721).

22 week Programme saving

225. I have been asked to comment upon what the Inquiry has referred to as a disagreement between CEC and the Consortium as to whether the Consortium was entitled to an incentive payment after potential savings had been identified to the Programme.
226. In February 2012, following a cost engineering exercise undertaken in co-operation with CEC/T&T, the Consortium agreed to a relaxation on traffic management restrictions and working during the August and Christmas Embargos. In addition to an anticipated 22 week saving in the Programme Rev. 4 completion date of 08 July 2014, this exercise generated a saving in prolongation costs of £12.9m. It was understood by both CEC and the Consortium that this cost saving would be shared equally between the parties and that the Consortium would receive a payment of £6.45Million from the Client. The 22 weeks were later utilised by the client by drawing down the time from a 'time bank' and no further claims were brought forward by the Consortium in this regard. It must be noted though that also the Infraco Contract contained a provision for sharing cost benefits supported by the Consortium equally between the parties.
227. Following protracted discussions with T&T, agreement was reached directly between CEC and the Consortium and on 18 October 2012 CEC issued a tie Change Order (tCO 620) authorising payment to BBS of the sum of £6.45 Million at agreed intervals. This represents an agreed lump sum settlement and includes for all disruption costs arising 'On Street' during the 22 week

period. The good working relationship between BSS and CEC was integral in reaching this agreement.

228. My understanding was that the 22 week time bank ultimately did not create any direct savings in monetary terms for the customer, but had the 22-week time-bank not been agreed there would certainly have been a time and cost impact because the agreed completion dates would have slipped further for reasons not attributable to the consortium [Question 138 (a)].

Utilities

229. BB would be better placed to comment on the nature of the utility diversion works required at this stage [Question 139 (a)]. The MUDFA works were commissioned by CEC and it would be for CEC to respond as to why these works were still required at this stage in the Project [Question 139 (b)]. As stated previously, a Programme specialist would need to analyse the extent to which any delay and cost was caused by the utility works. It seems apparent that the MUDFA contact had not achieved the completion of the MUDFA works as had been anticipated [Question 139 (c)]. BB would be better able to comment as it had more visibility of the problems on site [Question 139 (d)].

Memorandum of Understanding

230. A non-binding memorandum of understanding was entered into between CEC, BB and Siemens on 8 October 2012 (CEC01933565). This was entered into to give expression to the parties' intention to bring the contract to a close; and to close out claims swiftly within three months of the end of the Project. The parties were planning for the end of the contract and co-operating to resolve outstanding matters mutually. This was again, part of the trust building exercise between the parties. [Question 140 (a)] The result of this was that within three months of the completion date, all outstanding matters were settled and the final account agreed. [Question 140 (b)].

Final Costs (BBS breakdown)

231. I have been referred to document [CEC01999946] which is a summary of payment certificates which would usually have been sent to the Consortium. It contains a synopsis of the Consortium's applications for payment, the cumulative value, the certification of Colin Smith and any differences between the two amounts [Question 141 (a)]. I do not know if there was later version of this document, as I did not prepare it. [Question 141 (b)] However, it does not appear to go up to the end of the project, and there would, in any event, be a final account statement.
232. The entries shown on the document, can be explained as follows [Question 141 (c)]:
- 232.1 Mobilisation (c)(i)- These were payments to the Consortium at the beginning of the Infraco contract to effectively 'mobilise' the project;
- 232.2 Preliminaries (c)(ii) - These were payments covering the Consortium's time-related costs throughout the duration of the project;
- 232.3 Network Rail Immunisation and SDS Interface (c)(iii) - These amounts were payment for Siemens' obligations in respect of protecting the Network Rail infrastructure from any electrical interference caused by the tramway, and for its design management obligations with regard to the interface with SDS;
- 232.4 Milestones (c)(iv) – These were payments tied to completion of specified activities and construction work elements;
- 232.5 Additional works (c)(v) (SDS application for payment; pre-mediation change; post-mediation change) - This related to amounts to be forwarded from the Consortium to SDS and the value of pre-mediation and post-mediation change.
- 232.6 HG Certificates (c)(vi) - These primarily related to re-mobilisation. There were payments to Siemens for vesting all the materials in the client post Mar Hall.
233. The payments shown on document CEC01999946 summarise the amount applied for against the contractual milestones. This is a summary showing the cumulative values, whereas the payment schedule would provide more

detail. The milestones schedule provides a full breakdown of the contract price.

234. I have been asked how the payments shown on document [CEC01999946] relate to an Infracost report produced by Turner & Townsend [WED00000092_3]. I have not seen this Turner & Townsend report before and am not able to say how these documents relate to each other. The summary numbers appear to be similar but I do not know what the Turner & Townsend report comprises of, or what its purpose was [Question 141 (f)].
235. Even by looking at the payment certificates, conclusions could not be drawn as to the increase in cost attributable to change and delay in the Project. Each individual Notice of Change would have to be analysed to ascertain the cause for issuing each Notice [Question 141 (g)].

End of Construction Works

236. I left the Project at the end of May 2015, a year after the completion of Section D [Question 142]. I had stayed beyond the completion of Section D to support the first defect and maintenance phase and to dissolve the Project office. These activities were completed and handed over to the maintenance group, and there was therefore nothing left for me to do [Question 142].
237. With regard to ongoing obligations, there is a maintenance regime within the Infracost contract that needs to be followed. Siemens are responsible for the maintenance of the sections that Siemens built during the project [Question 143]. BB has similar obligations in respect of its works [Question 143]. There was a defects liability period of two years after Section D completion which ended in May 2016. There remains an obligation to rectify any latent defects. There may be some ongoing parent company guarantee obligations largely until the end of the latent defects related obligations. [Question 143].

Governance and Project Management

- 237.1 I believe that the governance structure that had been implemented after Mar Hall (between CEC, the Consortium, CAF and the stakeholders) was one of

the key elements to successfully completing the project on the revised budget and slightly ahead of the revised timescale [Question 144 (a)].

237.2 Having regard to the various organisations and their senior personnel, Sue Bruce, the incoming chief executive of CEC had a key role in bringing the parties back together. Colin Smith who was appointed as the Independent Certifier managed to hold together many loose ends and did an effective job of managing the stakeholders and maintaining control of the project. I did not have much contact with Transport Scotland, and had no contact with TEL, so could not comment on these organisations. Turner & Townsend were very professional and seemed to me to have done a good job [Question 144 (b)].

237.3 In my view, tie was dysfunctional and I refer to my earlier comments regarding the behaviours I observed [Question 144 (c)].

237.4 With regard to the performance of the main contractors, Siemens had a very professional core team, with a number of highly experienced professionals in their field working on the Project. BB was a very professional organisation which I found to be remarkable given that it was building up its business in the UK at that time, and had not previously had a significant presence [Question 144 (d)].

237.5 In respect of any project management or governance failings, I believe that from the outset tie's budget was particularly constricted. As also previously stated, the designs were not completed and this led to additional costs being incurred. In respect of governance, I do not believe the change process was managed well by tie during the first stage of the project and this process was indeed a stumbling block at the beginning. Changes were not accepted, prices disputed and there was no ability to expedite by issuing an instruction to proceed with costs to be determined afterwards. This was very unusual [Question 144 (e)].

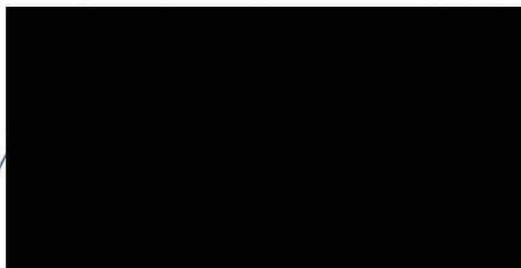
Final comments

238. I believe this project was one of the most complex and high-risk projects I have experienced [Question 145 (a)]. From Siemens' perspective, one of my

tasks was to carry out risk evaluations on a regular basis. On the basis of the contractual risk alone, the potential damages arising out of the contract could have been immense in the event of termination in comparison to the size of the project. The Infraco contract itself was also a highly complex, bespoke contract and difficult to manage [Question 145 (a)]. Problematic issues could have been avoided by [Question 145 (c)]:

- 238.1 implementing a contractual mechanism in instructing the works to proceed pending agreement of the price of any change;
- 238.2 having an expedited change management process;
- 238.3 using a standard form contract;
- 238.4 more stringent management of the Programme on the part of tie, having regard to third party influences, e.g. MUDFA for which the Consortium was not responsible for;
- 238.5 Clear project governance structures (as introduced after Mar Hall) involving empowered senior personnel from the relevant stakeholders.

Tehran, 04 October 2017



Witness Name: Axel Eickhorn
Statement No: [First]

THE EDINBURGH TRAM INQUIRY

Exhibit AE1

Witness Name: Axel Eickhorn
Statement No: [First]

THE EDINBURGH TRAM INQUIRY

Exhibit AE2

Witness Name: Axel Eickhorn
Statement No: [First]

THE EDINBURGH TRAM INQUIRY

Exhibit AE3



Our ref: 25.1.201/KDR/6860

Bilfinger Berger-Siemens- CAF Consortium

29 September 2010

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

tie limited
CityPoint
65 Haymarket Terrace
Edinburgh
EH12 5HD

Phone: [REDACTED]

Fax: [REDACTED]

For the attention of Steven Bell – Tram Project Director

Dear Sirs,

**Edinburgh Tram Network Infraco
Infraco Contract: Cessation of all "goodwill" Works**

We refer to our letter dated 22 September 2010 (25.1.201/KDR/6790) in which we advised that we would write to you separately in regard to Infraco's position on works which we are not obliged to carry out under the Infraco Contract.

As you are aware, we have been carrying out certain works which are the subject of INTCs on a goodwill basis and without prejudice to our contractual rights. This was on the understanding that tie would proceed to agree Estimates and issue tie Change Orders in respect of the work in question. We have seen little movement or commitment by tie to achieve this. We are not required to carry out works which are the subject of an INTC in advance of receipt of a tie Change Order or an agreed Estimate.

Accordingly, we advise that forthwith we will cease works associated with the list of INTCs enclosed with this letter in respect of which no tie Change Order or agreed Estimate exists.

Yours faithfully

[REDACTED]
M Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium

cc: D. Darcy
G. Wakeford
R. Walker
M. Flynn
A. Campos
M Berrozpe
A. Urriza

Edinburgh Tram Network

List of INTCs (Infraco Letter reference 25.1.201/KDR/6860)

INTC	Description
54	TNC007 : St Andrew Square Public Realm Works as CEC specification [Draft]. Site forming extended area over Infraco contract. Issued with drawings & Specification Volume 2 Part 7.
64	TNC009 : Ocean Terminal Revised Finishes
66a	Revised Specification (RBS) Gogarburn Tramstop version 2
74a	Sewer Diversion, Gogar Landfill
96	Shandwick Place CEC preferential Treatments
103	IFC Drawing Changes - A8 Underpass
106	IFC Drawing Change Murrayfield Stadium RTW
107	IFC Drawing Change Bankhead RTW
108	IFC Drawing Change Gyle Stop RTW
109	IFC Drawing Change Murrayfield Underpass
110	IFC Drawing Change South Gyle Access Bridge
147	IFC Drawings Change Murrayfield Training Pitches Retaining Wall
148	IFC Drawing Change Balgreen Road Underbridge
152	IFC Drawing changes Vertical and horizontal Alignment Section 5 Sheets 1 to 26
154	IFC Drawing changes OLE Section 5 sheets 1 to 13
156	IFC Drawing changes Tramstops Balgreen Edinburgh Park Saughton and South Gyle
167a	Further changes to wanderers clubhouse building at Murrayfield
167B	Further changes to wanderers clubhouse building at Murrayfield - additional radiators
170	Demolition and alteration of existing building at Cathedral Lane
199	IFC Drawing changes - Balgreen bridges 22 and 22a
203c	Hard Landscaping
203f	Soil Nailing and Soil Reinforcement Works
203h1	Drainage BDDI to IFC Change
203h2	Drainage including Depot Pumping Station, manhole and rising main
203k1	Piling to OLE Poles - IFC Drawings
203k2	Increase in number of OLE bases
203q	IFC issue drawings for earthing and bonding
203s	IFC drawing changes - revised spec Kaba Doors
203v	IFC drawing change to drainage rev 6
204	IFC Drawing changes - Roads , Streetlightning , Drainage Section 5B
205	IFC Drawing changes - Roads , Streetlightning , Drainage Section 5C
210	IFC Drawing changes - Road ,Street Lighting,Landscaping and Drainage Section 1B
211	IFC Drawing changes - Haymarket Tram Stop
212	IFC Drawing changes - Roads and Street Lighting,Landscaping and Drainage Section 2A
213	IFC Drawing changes - Haymarket Station Substation
215	Demolition and alteration of existing Bus Depot at Leith Walk

Edinburgh Tram Network

List of INTCs (Infraco Letter reference 25.1.201/KDR/6860)

INTC	Description
232	IFC Drawing Changes - Section 1C road design
240	Removal and Reinstatement of BT Phone Box
258	Accommodation Works Future Proofing on behalf of New Ingliston Limited and Highland Properties Limited (Scotland).
262	IFC Drawing Changes - Section 5B - Track Drainage
262b	IFC Drawing Changes - Section 5B - Track Drainage
264A	IFC Drawing Changes - Earthworks lowering Lindsay Road
264B	IFC drawings and specification for work chainages 100000 to 100600 - section 1A4
277	Airport Tramstop Canopy tie in options.
290	CAF - Air Supply
316B	Section 1D - IFC Drawing Changes drainage Plate 24 only
335	IFC Drawing Changes - Track Drainage Section 5C
359	Haymarket Junction- Underground Chamber at Clifton Terrace
374b	Gogar Landfill Area surcharging and monitoring of surcharge
374c	Gogar Landfill Area soil nailing and reinforced earth
374D	Gogar Landfill area - Trckform Change
380	Amend OHLE fixings at Depot Access Bridge
404	Section 5B - Drainage Ditches
405	Additional Retaining Wall at Tower Bridge Pumping Station
411	IFC Drawing Changes - Trackform
415	Depot Pumping Station, manhole and rising main
417	BAA Dualling Future Proofing (Eastfield Avenue)
424a	Revised IFC HRL Drawings Section 7 - Road Scheme layout
424b	Revised IFC HRL Drawings Section 7 - Gogar farm Road layout
424c	Revised IFC HRL Drawings Section 7 - Ingilston Park and Ride Tram stop access and car park
424d	Revised IFC HRL Drawings Section 7 - junction 210 traffic signal (additional civil works)
424e	Revised IFC HRL Drawings Section 7 -road footway realignment
433	Traffic management at Verity House Access Road
441	Site Wide Contamination
471	IFC drawing changes - Section 5B - Ducting and Cable Routes
493	Base Date Design to Issued for Construction Drawings - Murrayfield Stadium Tram Stop
494	IFC drawing changes - Section 5A - Ducting and Cable Routes
495	IFC drawing changes - Section 5C - Ducting and Cable Routes
496	IFC drawing changes - Section 1A - Ducting and Cable Routes
498	IFC issue drawings for Bus Lane and Tram only zones - Systemwide
504	Additional lighting columns at Carrick Knowe Bridge
510	IFC drawing changes - Section 7 - Ducting and Cable Routes

Edinburgh Tram Network

List of INTCs (Infraco Letter reference 25.1.201/KDR/6860)

INTC	Description
511	Russell Road Retaining Wall 4 - piling obstructions - alternative design required.
515	Floating Slab in City Centre
520	Traffic Management to accommodate re-introduction of buses
521	Disaster recovery Centre
523	A8 Underpass - support and protect BT equipment
528	IFC Drawing changes - Roads , Streetlightning , Drainage Section 5A
544	Additional parapet upstand on deck of Carrick Knowe bridge
545	Remove Bus Shelter in George Street
555	5B Bus Gate protection or diversion of existing services
559	A8 Underpass Scottish Gas Main Diversion
588	Special trackform construction at shallow depth obstructions
590	Section 2A - CBR Verification Results - TQ 1518
593	Revisions to OLE bases - Section 2A
594	IFC drawing changes - Section 2A - Ducting and Cable Routes
611	Bus Gate existing drainage
613	W8 Baird Drive RTW - contaminated material
628	Removal of materials from Port of Leith Housing Association land at the Casino
629	IFC Drawing changes for Section 2 Track Drainage
631	OLE Pole foundations - BDDi - IFC - Section 7
653	Badger Sett removal
657	Jane Street Radio Mast - Feasibility Study and Site Share Application
674	Edinburgh Park Station Tramstop

**Edinburgh Tram Network
Bilfinger Siemens Consortium**



SIEMENS

BILFINGER

Edinburgh Tram Network, Bilfinger Siemens Consortium
9 Lochside Avenue, Edinburgh, EH12 9DJ

The City of Edinburgh Council
9 Lochside Avenue
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Bilfinger Berger Civil-EDI			
Date Sent	11 JUN 2014 11:17		
File Number			
Action			
Distribution			

Our Reference: ETN(BS)CEC&ABC#061496
Your Reference:

**For the attention of Andy Scott
Director of Project Delivery – Edinburgh Tram**

**Edinburgh Tram Network Infraco Contract
Moving of Surplus Materials from Broxburn Depot**

04 June 2014

Dear Andy,

We enclose a copy of the Inventory for the surplus materials, parts and equipment that were moved, by Siemens on behalf of, and under instruction from, CEC, from the Broxburn Warehouse to Gogar Depot, Pansy Walk Yard/Depot, Bangor Road Bus Depot and Seafield Bus Depot.

The Inventory is divided to match these locations and it lists what was dispatched from Broxburn Warehouse and what was received at each of these Depots. We also confirm that the master spreadsheet, which is the basis for the attached Inventory, was emailed to Willie Delaney on 12 May 2014. There are also two hard copies available with our Ian Cramond for uplift by CEC when required.

Please be advised that the materials listed in the Inventory are the property of CEC and that title in the same vested in CEC upon the terms and in the manner prescribed in MoV4 and in the Vesting Certificate attached thereto. Further, please be advised that the materials are required to be insured by way of the OCIP Insurances taken out and maintained in full force and effect for the required term.

We further confirm that the storage locations identified above are in the possession and control of CEC and that CEC shall be responsible for access to and security of the same.

**Bilfinger Construction UK Limited
Registered Office**

100 Barbirolli Square
Manchester
M2 3AB

Company Registration No. 2418086
Registered in England and Wales

**Siemens plc
Registered Office**
Sir William Siemens Square
Frimley
Camberley
Surrey

GU16 8QD
Company Registration No. 727817
Registered in England and Wales

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**Edinburgh Tram Network
Bilfinger Siemens Consortium**



SIEMENS

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Page 2 of 2

Yours sincerely,



Martin Förder
Consortium Project Director

M

cc. Axel Eickhorn, Ian Cramond, Susanne Fersch, Patrick Scully

Enc: 140328_Surplus_Materials_Broxburn_Depot.zip

Our ref: 25.1.201/MFo/8706

30 August 2011

City of Edinburgh Council
Waverly Court
4 East Market St
Edinburgh
EH8 8BG

Bilfinger Berger–Siemens– CAF
Consortium

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

Phone:

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For the attention of Sue Bruce – Chief Executive Officer

Dear Madam,

**Edinburgh Tram Network Infraco
Infraco Contract – Extension to Funding Deadline**

We note that the full Council Meeting of the City of Edinburgh Council on 25 August 2011 did not approve the proposed funding package for the negotiated and agreed St. Andrew Square/York Place option. This option is reflected in the amended Infraco Contract through the agreed Settlement Agreement and associated documents which are very close to agreement to facilitate execution.

We would like to highlight that we are deeply concerned that CEC may not be able to fulfill the commitments as outlined in the Heads of Terms agreed during the Mediation process on 12 March 2011 and further reflected in the executed MoV 4 dated 10 June 2011.

The Parties have previously agreed that CEC shall confirm that sufficient funds are available in order that CEC / tie are able to meet all its obligations under the amended Infraco Contract by 5 pm on 1 September 2011. In order to give CEC the opportunity to confirm the funding we hereby offer to extend the funding deadline to 5 pm on 2 September 2011. Failing this confirmation, the Infraco Contract shall automatically terminate at 5pm on 2 September 2011 and the agreed compensation amounts shall be paid by CEC to each of Bilfinger Berger Civil UK Limited and Siemens plc.

Separate to the funding confirmation a formal extension of MoV 4 is required to avoid the cessation of the Prioritised Works by the end of this week.

The consequences of the Council's decision to implement the further descoped option from the Airport to Haymarket need to be considered fully, these include but are not limited to the following:

- The termination at Haymarket is not defined and a turnback design strategy will be required
- The scope of the works under the Infraco Contract has to be re-defined
- The effects on the programme have to be analysed however, a delay cannot be avoided
- Mobilisation to commence the works will be delayed which will have further consequences on costs including subcontractor prices
- The re-defined scope will result in an increase in the price and an appropriate compensation will need to be agreed for the non executed works between Haymarket and St. Andrew Square/York Place.

Bilfinger Berger Civil UK Limited Registered Office: 3rd Floor Braywick Gate, Braywick Road, Maidenhead, Berkshire, SL6 1DA.

Registered in England & Wales Company No: 2418086

Siemens plc Registered Office: Sir William Siemens Square Frimley Camberley Surrey GU16 8QD Registered in England & Wales Company No: 727817

Construcciones Y Auxiliar de Ferrocarriles S.A. Registered Office Jose Maria Iturriz 26, 20200 Beasain, Gipuzkoa. Registered in Spain. CIF: A-20001020

We have forged an atmosphere of trust and cooperation since Mediation and in order that we can achieve our common goal to provide the people of Edinburgh with a modern transport system, we urge you to provide us with a funding confirmation by 5 pm on Friday 2 September 2011.

Notwithstanding the above, we respectfully advise that the Parties remain bound by the provisions of the Mar Hall Confidentiality Agreement and the confidentiality undertakings contained within the Infraco Contract.

Yours faithfully,



M Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium

cc: Dr Keysberg
Dr Schneppendahl
Antonio Campos
Alfred Brandenburger
Colin Smith

THE EDINBURGH TRAM INQUIRY

Supplemental Witness Statement
of Axel Eickhorn

1. I have been referred to three documents which I understand have been produced by Siemens to the Inquiry which are attached as **Exhibits AE4, AE5** and **AE6**. **AE4** is an Appendix to the Project Phoenix Proposal showing the breakdown of prices between the Consortium parties. **AE5** has in its first column the figures taken from the Appendix contained in **AE4**. The second column of **AE5** states how the discount applied as a result of the negotiated settlement is to be borne by each of the parties. The third document is an internal Siemens spreadsheet in respect of the agreed Off Street Works Price (the total for this matches the Siemens share of the Off Street Works Price in **AE5**), The purpose of **AE6** is to allocate that agreed Off Street Works price to different departments within Siemens. This would have been produced after the mediation. However, it does not provide a breakdown of what the negotiated discount agreed at Mar Hall reflected.
2. I have also been asked to explain the differences between **AE6** and SIE00000113. These were probably different iterations of the same document. SIE00000113 does not contain a file name which would be an inherent part of being able to identify what the file related to. SIE00000113 appears to have been produced at an early stage, shortly after Mar Hall, whereas **Exhibit AE6** appears to be a later iteration. SIE00000113 also would have been a document for Siemens internal allocation purposes only.

STATEMENT OF TRUTH

I believe that the facts stated in the Supplemental Witness Statement are true.

Signed:



Dated.....

20-Nov-2017

Name: Axel Eickhorn

Position: Vice President Finance

Address: Siemens SSK



Tehran, Iran

Witness Name: Axel Eickhorn
Statement No: 2

THE EDINBURGH TRAM INQUIRY

Exhibit AE4

Witness Name: Axel Eickhorn
Statement No: 2

THE EDINBURGH TRAM INQUIRY

Exhibit AE5

Witness Name: Axel Eickhorn
Statement No: 2

THE EDINBURGH TRAM INQUIRY

Exhibit AE6

Witness Name: Axel Eickhorn

Statement No: third

Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

The Second Supplemental Witness Statement of Axel Eickhorn

I, Axel Eickhorn, will say as follows:

Introduction

1. I refer to my witness statements dated 4 October 2017 and 20 November 2017, both of which have been submitted to the Edinburgh Tram Inquiry (the "Inquiry").
2. During my oral evidence to the Inquiry, there were several matters upon which I was questioned by the Inquiry which needed further investigation in order to provide a helpful and meaningful response. Accordingly, the purpose of this second supplemental witness statement is to provide the Inquiry with further information on:
 - 2.1 the development of and rationale behind the pricing proposed by Siemens Plc ("Siemens") for the completion of its works from the Construction Works Price (as defined in the Infraco Contract **(CEC00036952)** in Schedule Part 4 **(USB0000032)**) through the Project Carlisle 1 **(CEC00183919)**, Project Carlisle 2 **(TIE00667410)** and Project Phoenix **(BFB00053258)** settlement proposals to the heads of terms agreed on or around 10 March 2011 **(CEC02084685)** between Siemens, Bilfinger Berger UK Limited ("Bilfinger") and tie Limited ("tie") at the Mar Hall mediation and subsequently, the settlement agreement dated 15 September 2011 **(CEC02085585)** (the "Settlement Agreement").
 - 2.2 the vesting of materials and equipment to the City of Edinburgh Council ("CEC").
 - 2.3 Siemens' mobilisation of its workforce following execution of the Infraco Contract in May 2008.

Confidential

TRI00000276_0001

Siemens' price proposals

The Construction Works Price

3. The development of Siemens' share of the price to complete the works for the Edinburgh Tram project is summarised in **Table 1** below. This table shows both the movement in the Siemens' price (column 3) and of the Service Commencement Date (Section D) (column 4).
4. The "Service Commencement Date" (Section D) is the first day that the Edinburgh Tram line would be operational and available for use by the public. Between the civil works being completed, and the Service Commencement Date, Siemens role was to carry out system testing to ensure the tram was safe to use. Any delays to the Service Commencement Date meant that Siemens had to maintain its site presence for longer in order to complete these testing works and accordingly, such delays would increase Siemens costs.
5. The slippage of the Service Commencement Date therefore had a material impact on the price proposals submitted by Siemens, as did, to a lesser extent, the revisions to Siemens' scope of works.

Table 1

Date of document	Stage	Siemens' price for the completion of its works	Service Commencement Date	Completion of Airport to Haymarket Key Date	Completion Airport to York Place Key Date
14/05/2008	Original Contract	£101,679,003	16/07/2011	09/11/2010	N/a
29/07/2010	Project Carlisle 1	£126,901,621	19/11/2012	22/05/2012	N/a
11/09/2010	Project Carlisle 2	£118,601,221	18/12/2012	21/06/2012	N/a
24/02/2011	Project Phoenix	£136,881,719	22/09/2013	11/03/2013	N/a
15/09/2011	Settlement Agreement	£125,881,719	08/07/2014	21/08/2013	09/01/2014 (on-street works priced separately)

Project Carlisle 1

6. The Project Carlisle 1 settlement proposal was submitted to tie on 29 July 2010. This proposal was based upon a more limited scope of works than envisaged in the Infraco Contract and allowed for the Edinburgh Tram line from the Edinburgh Airport to a Terminus Point (to be defined) at the east end of Princes Street.
7. The key dates from the Project Carlisle 1 programme are reproduced below in **Table 2**.

Table 2

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Project Carlisle Programme		588d	12-Jul-10	19-Nov-12	0d
KEY DATES		426d	10-Mar-11	19-Nov-12	0d
1000	Deliver/ handover of all Siemens material to tie	0d		10-Mar-11*	0d
313	Section Completion A	0d		24-May-11	375d
314	Section Completion B	0d		15-Sep-11	296d
281	Construction Completion Phase 1a Edinburgh Airport to Haymarket	0d		22-May-12	1d
315	Section Completion C	0d		20-Aug-12	65d
310	Commencement of Revenue Service Phase 1a Edinburgh Airport to Haymarket	0d		19-Nov-12	0d
325	Section Completion D	0d		19-Nov-12	0d
COMMISSIONING PHASE EDINBURGH AIRPORT TO HAYMARKET		129d	22-May-12	18-Nov-12	0d

8. The Section Completion C date is the date on which Siemens was to commence its systems testing and commissioning works, which works had to be completed by the Service Commencement Date (the Section Completion D date). As is clear from the table above, the proposed Service Commencement Date in Project Carlisle 1 was 19 November 2012, almost 16 months later than the original Service Commencement Date envisaged in the Infraco Contract of 16 July 2011.
9. Accordingly, Siemens' prolongation costs would be further increased under Project Carlisle 1 than they would under the Infraco Contract as Siemens would be required to employ staff and lease accommodation and materials (and other similar costs) for the additional time required to complete the construction works and the testing and commissioning phase. This was therefore accounted for as part of the price proposed by Siemens for the purposes of Project Carlisle 1.
10. Siemens proposed share of the Guaranteed Maximum Price for Project Carlisle 1 was £126,901,621. The breakdown of this price is contained at Appendix 1.2 of the Project Carlisle 1 proposal, which is reproduced in **Table 3** below.

**ETN - Edinburgh Tram Network
Project Carlisle - Pricing**

date: 29-07-2010

Overall Summary

Original Contract Value - Original CPA Split	£96.917.006,78
Deductions Project Carlisle - Airport to Terminal Point	-£3.704.441,04
Additional Costs Project Carlisle - Airport to Terminal Point ¹	£26.005.861,69
CPA Project Carlisle - Airport to Terminal Point	£119.218.427,43
Change Orders	£5.308.309,69
Additional GMP Carlisle components	£2.374.883,46
Total GMP Project Carlisle ²	£126.901.620,58

Table 3

11. I should explain that Siemens' share of the original Construction Works Price is £101,679,003 in the Infraco Contract (as can be seen in **Table 1**). This sum however included estimated amounts in respect of Value Engineering works and Provisional Sums (which were subject to amendment by way of the change mechanism contained in Schedule Part 4 of the Infraco Contract).
12. Siemens' share of the original contract price, when excluding Value Engineering and Provisional Sums, was £96,917,007 (please see Appendix A of Schedule Part 4 of the Infraco Contract). The breakdown of this figure can be seen at document **CEC00555849**.
13. When preparing pricing proposals for settlement offers, including Project Carlisle 1, Siemens did not include estimated amounts in respect of Value Engineering and Provisional Sums as one of the main purposes of the proposals was to try to give tie cost certainty as far as possible.
14. Accordingly, the base price used for Siemens calculations of its settlement proposals was the £96,917,007. Siemens then added on the costs which it was proposing to fix for the Provisional Sums and Value Engineering to demonstrate clearly the fixed cost proposed for these works.
 - 14.1 An example of this can be seen from the "Additional GMP Carlisle Components" line item of £2,374,883. This line item includes the sum of £2,087,086 for Urban Traffic Control measures. However, the Urban Traffic Control measures previously formed part of the "Provisional Sums" listed in Schedule Part 4, for which an estimated figure was included as part of the Siemens' share of the original Construction Works Price of £101,679,003.

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15. The works comprising the line items in **Table 3** are detailed on pages 30 to 33 of the Project Carlisle 1 submission but in summary:
- 15.1 the “*Deductions Project Carlisle – Airport to Terminal Point*” figure represents the amount that Siemens deducted from its initial proposed price as a consequence of the reduced scope for the works proposed under Project Carlisle 1; and
- 15.2 the “*Additional Costs Project Carlisle – Airport to Terminal Point*” mostly relate to the additional costs incurred by Siemens as a consequence of the prolongation of the works, and consequential extended site presence (as described above).

Project Carlisle 2 pricing proposal

16. The revised Project Carlisle 1 proposal, known as the Project Carlisle 2 proposal, was submitted to tie on 11 September 2010. This proposal was based upon a further revised scope for the Edinburgh Tram line which started at Edinburgh Airport but which unlike Project Carlisle 1 excluded works east of Haymarket.
17. The key dates from the Project Carlisle 2 programme are reproduced below in **Table 4**.

Table 4

Activity ID	Activity Name	Original Duration	Start	Finish	Total Floet
Project Carlisle Programme _short to HAY (100912)		571d	03-Sep-10	18-Dec-12	0d
KEY DATES		447d	10-Mar-11	18-Dec-12	0d
1000	Deliver/ handover of all Siemens material to tie	0d		10-Mar-11*	0d
313	Section Completion A	0d		09-Jun-11	381d
314	Section Completion B	0d		20-Dec-11	245d
281	Construction Completion Phase 1a Edinburgh Airport to Hayma...	0d		21-Jun-12	0d
315	Section Completion C	0d		19-Sep-12	0d
310	Commencement of Revenue Service Phase 1a Edinburgh Airpo...	0d		18-Dec-12	0d
325	Section Completion D	0d		18-Dec-12	0d
COMMISSIONING PHASE EDINBURGH AIRPORT TO HAYMARKET		128d	21-Jun-12	18-Dec-12	0d

18. The proposed Service Commencement Date (the Section Completion D date) in Project Carlisle 2 was 18 December 2012, which is some 17 months later than the original Service Commencement Date in the Infraco Contract of 16 July 2011. Accordingly, this would result in Siemens incurring prolongation costs for an additional 17 months in order to complete the Edinburgh tram project.
19. At **Exhibit AE1**, I have appended an expanded version of a table which featured in the Project Carlisle 2 proposal submitted to tie, which clearly indicates that the additional costs Siemens would incur were mainly down to this prolongation of Siemens’ site presence. In particular, please refer to the “EOT” column for the “Additional Cost Project Carlisle – Airport to Haymarket” which shows that an additional £20,612,906 would be incurred by Siemens as a result of the slippage of the Service Commencement Date.

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20. The Siemens' share of the Guaranteed Maximum Price for Project Carlisle 2 was proposed as £118,601,221. The breakdown of this price is contained at page 29 and Appendix 1.2 of the Project Carlisle 2, which is reproduced in **Table 5** below.

Table 5

		Carlisle
Siemens UK	UK Project Management	13,324,667
Siemens UK	UK System Engineering	3,001,626
Siemens UK and BAM	Trackwork	43,471,285
Siemens UK	UK Depot Workshop	2,028,342
Siemens UK	UK Electrification	6,003,202
Siemens UK	Infrastructure	3,165,035
Siemens UK	Insurance, Bonds and Financial Guarantees	1,712,358
Siemens UK	Control & Information	5,111,939
Siemens UK	Communications	5,009,483
Siemens AG	Electrification, Automation and Depot Equipment	29,688,648
	Change Orders	5,123,140
	Additional Carlisle Components	941,496
Overall Project	Total	118,601,221

21. Counsel for the Inquiry commented during my oral evidence that it is difficult to compare Siemens' breakdown of price for Project Carlisle 2 with the breakdown that Siemens provided for Project Carlisle 1.
22. To assist the Inquiry, I reproduce below in **Table 6** a summary of the internal calculation that was used by Siemens at the time to prepare the revised price proposal for Project Carlisle 2. At **Exhibit AE2**, I have appended the document from which Table 6 has been extracted, dated 10 September 2011.

Table 6

**ETN - Edinburgh Tram Network
Project Carlisle - revised Pricing**

date: 11-Sep-2010

Overall Summary

Original Contract Value - Original CPA Split	£96,917,006.78
Deductions Project Carlisle - Airport to Haymarket	-£4,993,320.56
Additional Costs Project Carlisle - Airport to Haymarket ¹	£20,612,906.46
CPA Project Carlisle - Airport to Haymarket	£112,536,592.68
Change Orders	£5,123,140.01
Additional GMP Carlisle components	£941,495.76
Total GMP Project Carlisle ²	£118,601,228.45

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23. As can be seen in **Table 6**, the price proposed by Siemens for Project Carlisle 2 was prepared using the same methodology for its calculations as in Project Carlisle 1. Project Carlisle 2 however proposed a reduced price on the basis that the works included in the proposal did not extend beyond Haymarket.
24. The "Additional GMP Carlisle components" line item in **Table 6** includes costs for Urban Traffic Control measures as it did in the Project Carlisle 1 proposal. However, the costs of the Urban Traffic Control measures for Project Carlisle 2 were much less than in Project Carlisle 1 as the scope of the proposal only covered Off-Street Works and not On-Street Works (which was where much of the Urban Traffic Control measure cost would be incurred given the number and complexity of junctions in the On-Street section of the track).
25. Further, as the Project Carlisle 2 proposal did not include the On-Street Works, Siemens was able to fix its costs with more certainty (as these works were impacted by a much lesser degree by the delayed MUDFA works which mostly affected the On-Street Works) and so less risk needed to be factored in to the cost proposed. This allowed Siemens to reduce its price for Project Carlisle 2.
26. Counsel to the Inquiry questioned me on the amount Siemens included in its settlement proposals in respect of system-wide costs. To explain, the system-wide costs mostly related to design and project management costs. At the point in time that Siemens was preparing its price for Project Carlisle 1 and Project Carlisle 2, much of these system-wide costs had already been committed or incurred, and the design works had mostly been completed. Consequently, the total value of the system-wide costs does not directly correlate to the scope of the works to be completed under the settlement proposals, and a reduction in scope would certainly not necessitate a proportionate reduction in the value of the system-wide costs. This can be seen from the table at **Exhibit AE3** which shows the allocation of system-wide costs in respect of the 'Original CPA Split' and the two Project Carlisle proposals.

The Project Phoenix proposal

27. The Project Phoenix proposal was submitted to tie on 24 February 2011 (**BFB00053258**). This proposal was based upon a truncated route between Edinburgh Airport and Haymarket Viaduct.
28. The key dates from the Project Phoenix programme are reproduced below in **Table 7**.

Table 7

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Project Phoenix Proposal rev 2		613	31-Mar-11	22-Sep-13	0
KEY DATES		612	31-Mar-11	22-Sep-13	0
1000	PROJECT PHOENIX - Signed Agreement	0		31-Mar-11*	0
1050	Re - mobilisation	20	31-Mar-11	29-Apr-11	14
1100	Deliver/ handover of all Siemens material to tie	0		12-Sep-11*	0
313	Section Completion A	0		16-Dec-11	412
314	Section Completion B	0		24-Sep-12	225
281	Construction Completion Phase 1a Edinburgh Airport to Haymarket	0		11-Mar-13	10
315	Section Completion C	0		24-Jun-13	0
310	Commencement of Revenue Service Phase 1a Edinburgh Airport to Haymarket	0		22-Sep-13	0
325	Section Completion D	0		22-Sep-13	0
COMMISSIONING PHASE EDINBURGH AIRPORT TO HAYMARKE		125	25-Mar-13	22-Sep-13	0

29. As can be seen from **Table 7**, the Service Commencement Date (Section Completion D) is 22 September 2013, which is around 26 months later than the Service Commencement Date of 16 July 2011 in the Infraco Contract. As with the previous proposals, Siemens would therefore incur prolongation costs for an additional 26 months in order to complete its works on the Edinburgh Tram line.
30. Siemens' share of the Project Phoenix price proposal was £136,881,719 and a breakdown of this sum is contained at Appendix 1.2 of the Project Phoenix Proposal which is reproduced in **Table 8** below.

Table 8**Overall Summary**

Siemens Transport Solutions (UK)	£84,967,487.47	
Project Management		£17,599,044.51
Overall Project Management		£4,795,055.92
Commercial/Contract Management & Legal		£5,237,597.37
SCE/Scheduling		£2,311,844.41
PM/		£745,757.03
Site Management		£2,701,385.78
Technical Contract Management		£807,404.00
Track Work		£48,753,566.44
System Engineering		£3,710,675.95
Depot Workshop Equipment		£2,230,573.11
Core HVLV		£1,997,897.20
Infrastructure		£3,516,934.84
Storage		£1,954,240.00
Security		£320,398.00
IT Infrastructure		£585,186.64
Site offices temp		£171,284.01
Other -office costs		£485,826.19
Inclusions for Insurance, Bonds, Guarantees		£372,666.88
Finance Costs		£3,129,591.54
Risk		3656577
Subcontracts:		
Rail Automation UK	£11,484,175.13	
Telecomms (FTN York)		£5,059,277.30
Control & Information (Ashby ,Transmission)		£6,424,898.83
Electrification UK	£6,130,889.31	
Traffic Solutions UK	£1,900,353.40	
Siemens AG (Germany)	£30,153,187.24	
Subtotal	£134,716,092.55	
Changes	£2,165,626.82	
Total	£136,881,719.37	

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31. As it is clear from **Table 8**, a different methodology was adopted to prepare the Project Phoenix proposal than was used to prepare the previous Project Carlisle proposals (which proposals were based on a system of additions and omissions from the original contract value base figure).
32. Notwithstanding that a different methodology was used, it is my view that by comparing the proposals' prices allocated to the various elements of the Siemens scope, a meaningful comparison can be undertaken by any individual reasonably familiar with the details of the Edinburgh Tram project.
33. For the benefit of the Inquiry, I have therefore prepared and included a comparison at **Table 9** below.

Table 9

On-Shore/Off-Shore/System	Carlisle Price	Comparable Phoenix Price	Price movement
Siemens Transport Solutions [UK]:			
UK Project Management	13,324,667	17,599,045	4,274,378
UK System Engineering	3,001,626	3,710,676	709,050
Trackwork	43,471,285	48,753,566	5,282,281
UK Depot Workshop	2,028,342	2,230,573	202,231
UK Electrification	6,003,202	6,130,889	127,687
Infrastructure	3,185,035	3,516,935	331,900
Insurance, Bonds and Financial Guarantees	1,712,358	372,687	-1,339,671
Rail Automation:			
Control & Information	5,111,939	5,059,277	-52,662
Communications	5,009,483	6,424,898	1,415,415
Siemens AG:			
Electrification, Automation and Depot Equipment	29,688,648	30,153,187	464,539
	112,536,585	123,951,733	11,415,148
Change Orders	5,123,140	2,165,627	- 2,957,513
Additional Carlisle Components	941,496	-	- 941,496
Core HVLV		1,997,897	1,997,897
Traffic Solutions		1,980,353	1,980,353
Finance costs		3,129,592	3,129,592
Risk		3,656,517	3,656,517
Overall Project Price	118,601,221	136,881,719	18,280,498

34. It is important to highlight that in the period between submission of the Project Carlisle 2 and Project Phoenix proposals, virtually all aspects of the works for the Edinburgh Tram line were adversely affected by the ongoing disputes between the parties regarding the interpretation and implementation of the Infraco Contract.
35. During this period, there had also been a cessation of all the "goodwill works" (which mostly fell within Bilfinger's scope of works), and work on the Edinburgh Tram Project had effectively halted. Consequently, as part of the Project Phoenix Proposal there was an express recognition of the need to remobilise site

resources and an acknowledgement of a consequential impact of the delays that had been experienced on the programme.

36. Therefore, whilst there was only a five-month gap between submission of the Carlisle 2 and the Project Phoenix proposals, the revised programme underpinning Project Phoenix was much more extensive than in Project Carlisle 2 and required Siemens to be on site for a further nine months. Therefore, the time interval alone between Project Carlisle 2 and Project Phoenix proposals is not the dominant reason for the increase in price between these two proposals.
37. The comparison shown in **Table 9** illustrates how these prolongation costs increased the Siemens' price for each of its relevant business units. The table also shows an increase in the trackwork price, which increase was also predominantly a consequence of the extended project duration which necessitated a longer site presence for Siemens' sub-contractor, BAM Rail BV.
38. In addition to Siemens prolongation costs, Siemens also had to factor in the following into its pricing submission for Project Phoenix:
 39. the number of Pricing Assumptions were significantly reduced in Project Phoenix to provide more price certainty for tie. This inevitably meant more risk had to be factored into the price proposed by Siemens to take account the risk that Siemens' itself was exposed to in incurring higher costs than envisaged; and
 40. there were significant increases in the provisions for finance and risk costs. The increase for finance costs reflected the extent of ongoing under-payment from tie to Infracore, which meant Siemens had to finance its cash flow deficit. Siemens had paid out for materials. Further, Siemens was exposed to adverse currency fluctuations until payment was received from tie. Siemens had to pay to hedge against this risk, which arrangement needed to be extended given the extension of time proposed for the project.

The Mar Hall mediation and the Settlement Agreement price

41. At the Mar Hall mediation, Siemens and Bilfinger agreed an Off-Street Works price of £362,500,000. This sum was based on completion of a similar scope and programme of works as detailed in the Project Phoenix Proposal, which did not include the On-Street Works. This price did however include the Prioritised Works (including the Princes Street Remedial Works) and the Secondary Phase 1a design (which did not form part of Project Phoenix).
42. No specific programme for the works was agreed at Mar Hall, albeit that the parties undertook to agree an optimum programme and that the Prioritised Works would commence on or before 1 May 2011.

43. Subsequently as part of the Settlement Agreement, a programme of works was agreed between the parties namely Programme Rev 3a.
44. The key dates in Programme 3a are reproduced in **Table 10** below.

Table 10

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Programme following Mediation 8-12 March 2011 rev 3a 110628		778	31-Mar-11	20-May-14	0
KEY DATES		766	15-Apr-11	20-May-14	0
1060	Sign MOV for carrying out the Prioritised Works	0		15-Apr-11*	0
1070	Re - mobilisation - Prioritised Works	10	15-Apr-11	03-May-11	99
1000	Sign MOV in Respect of Off Street Works (Other than Prioritised Works) and the On Street Works	0		01-Jul-11*	0
1050	Re - mobilisation	44	01-Jul-11	02-Sep-11	0
313	Section Completion A	0		16-Dec-11*	0
1100	Deliver/ handover of all remaining Siemens material to tie	0		10-Jan-12*	0
314	Section Completion B	0		07-Feb-13*	0
281	Construction Completion Phase 1a Edinburgh Airport to Haymarket	0		29-Jul-13	103
291	Construction Completion Edinburgh Airport to York Place	0		21-Nov-13	0
345	Section Completion C	0		19-Feb-14	0
310	Commencement of Revenue Service Phase 1a Edinburgh Airport to York Place	0		20-May-14	0
335	Section Completion D	0		20-May-14	0
COMMISSIONING PHASE AIRPORT TO YORK PLACE		118	22-Nov-13	20-May-14	0

45. I should point out that it took a further six / seven months to formalise the agreement reached at Mar Hall on the Off-Street Works Price and the revised programme based on programme rev 3a into the Settlement Agreement. The cost of this delay was absorbed by Siemens for the Off-Street works and Siemens did not seek to renegotiate the Off-Street Works price when concluding the Settlement Agreement. The impact of the change in the Section D completion date for the full line to Picardy Place (which now included the On-Street works) was reflected in the price for the On-Street sections. In this regard I would like to emphasize that the critical path of the programme was driven by the On-Street works. Hence, the addition of the on-street works inevitably pushed out the overall Section D completion date and consequently whilst the cost of the physical construction works was not significantly affected, the overall cost of the project was impacted by this programme change, due to the arising prolongation costs.
46. Further, as the Inquiry may note, the Service Commencement Date for the Settlement Agreement is shown in **Table 1** as 8 July 2014 and not 20 May 2014 as shown in **Table 10** above. This is because shortly before the Settlement Agreement was concluded, a further change in the programme was agreed. Instead of delaying the conclusion of the Settlement Agreement to take into account this change, the parties agreed that a change order under Schedule Part 4 would be raised to formalise the change in timetable after the Settlement Agreement had been concluded.

47. Siemens' share of this Off-Street Works Price agreed at Mar Hall and finalised in the Settlement Agreement was £125,881,719. This represented a commercial discount of £11,000,000 given that Siemens' Project Phoenix price for a comparable scope of works amounted to £136,881,719. Siemens made significant concessions at the Mar Hall mediation, which in my view, resulted in Siemens offering a better price for the Off-Street Works than originally offered in the Project Carlisle 2 proposal, despite Siemens being required to attend site for a longer period of time and agreeing to carry out additional works such as the Princes Street Remedial Works and the Secondary Phase 1a design.
48. For completeness, the Settlement Agreement also included a Target Price for the On-Street Works based on agreed rates. I will not explain the basis of Siemens' pricing for this Target Cost for the On-Street Works, as I have already gone into detail on this subject in my witness statement dated 4 October 2017.

Vesting of Materials and Equipment to CEC

49. As part of Minute of Variation 4 dated 20 May 2011 (**CEC01731817**), Siemens agreed to hand over and transfer title of certain material and equipment to the CEC.
50. One of the reasons that Minute of Variation 4 was entered into was that the material in question had been paid for by Siemens and already used in the construction of the tram line or was held in storage. However, Siemens had not been paid for this material by tie as payment depended on completion of milestones which were continually delayed given the issues affecting the project and the disputes that arose. Accordingly, Minute of Variation 4 was entered into to accelerate payment to allow Siemens to recover the costs it had incurred. The parties' negotiations in this regard commenced almost a year earlier with a request from Siemens (**CEC01927619**).
51. Accordingly and as explained during my oral evidence to the Inquiry, that the bulk of the materials that were transferred to the CEC as part of Minute of Variation 4 had already been used in what is known as Initial Phase 1a.
52. I was asked to indicate by the Inquiry what proportion, roughly, had already been used in construction and what was left in storage. Having had time to reflect and investigate, I estimate that around 90% of the materials handed over and transferred to CEC had already been used in the construction of the Edinburgh Tram line. Additionally, it should be noted that after conclusion of the Settlement Agreement, Siemens worked with the CEC to reduce costs in respect of materials e.g. by agreeing beneficial terms for the cancellation of further orders which were no longer required given the agreed revised scope. I append at **Exhibit AE4** a table which shows the savings that had been achieved from Siemens actions on behalf of CEC.

Mobilisation

53. Finally, as explained in my first witness statement dated 4 October 2017, following execution of the Infraco Contract, Siemens did not delay in mobilising its workforce, and instructed its sub-contractor BAM Rail BV to commence the sub-contracted works almost immediately thereafter on 22 May 2008.
54. Since providing my witness statement dated 4 October 2017, I have since obtained a copy of the Instruction to Commence issued by Siemens Transportation Systems to BAM Rail BV, dated 22 May 2008, and enclose a copy of the this document at **Exhibit AE5** to assist the Inquiry.

STATEMENT OF TRUTH

I believe that the facts in this second supplementary witness statement are true.

Signed:

Axel Eickhorn

Date:

Tehran, 18-Mar-2018

Witness Name: Axel Eickhorn
Statement No: third
Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

Exhibit AE1

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		CPA	Spread risk	Install	EOT	Carlisle
Siemens UK	Total Personnel Costs	6,558,856	500,000		5,648,479	12,707,335
	Total Services Plan	151,326				151,326
	Total Material Plan	466,005				466,005
	UK Project Management	7,176,187	500,000	0	5,648,479	13,324,667
Siemens UK	UK System Engineering	2,278,266		0	723,360	3,001,626
Siemens UK and BAM	Trackwork	34,137,072	1,500,000	-1,755,765	9,589,978	43,471,285
Siemens UK	UK Depot Workshop	1,771,081		0	257,261	2,028,342
Siemens UK	UK Electrification	5,543,941	459,261	0	0	6,003,202
Siemens UK	Infrastructure	588,362	1,000,000		1,596,673	3,185,035
Siemens UK	Insurance, Bonds and Financial Guarantees	4,854,804	-3,459,261		316,815	1,712,358
Siemens UK	Control & Information	5,268,070		-156,131	0	5,111,939
Siemens UK	Communications	5,051,809		-422,483	380,157	5,009,483
Siemens AG	Electrification, Automation and Depot Equipment	30,247,407		-2,658,942	2,100,183	29,688,648
	Change Orders	33,453,189		1,755,765	6,444,868	5,123,140
	Additional Carlisle Components	29,333,420		295,169	3,318,408	941,496
Overall Project	Total	96,916,999	-	- 4,993,321	20,612,906	118,601,221

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Witness Name: Axel Eickhorn
Statement No: third
Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

Exhibit AE2

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TRI00000276_0016



ETN - Edinburgh Tram Network Project Carlisle - revised Pricing

date: 11-Sep-2010

Overall Summary

Original Contract Value - Original CPA Split	£96,917,006.78
Deductions Project Carlisle - Airport to Haymarket	-£4,993,320.56
Additional Costs Project Carlisle - Airport to Haymarket ¹	£20,612,906.46
CPA Project Carlisle - Airport to Haymarket	£112,536,592.68
Change Orders	£5,123,140.01
Additional GMP Carlisle components	£941,495.76
Total GMP Project Carlisle ²	£118,601,228.45

¹) Total amount of the Offshore Euro price is: € 3'822.327,56.
Offshore Euro rates are converted to GBP at the rate: 0,83333 (GBP/EUR).
We reserve the right to adjust the exchange rate (Euro to GBP) on the issue date of the Change Order

²) We reserve the right to adjust the total GMP Project Carlisle should the payment schedule to be agreed between the parties result in additional / unanticipated capital financing costs and / or charges.



ETN - Edinburgh Tram Network date: 11-Sep-2010

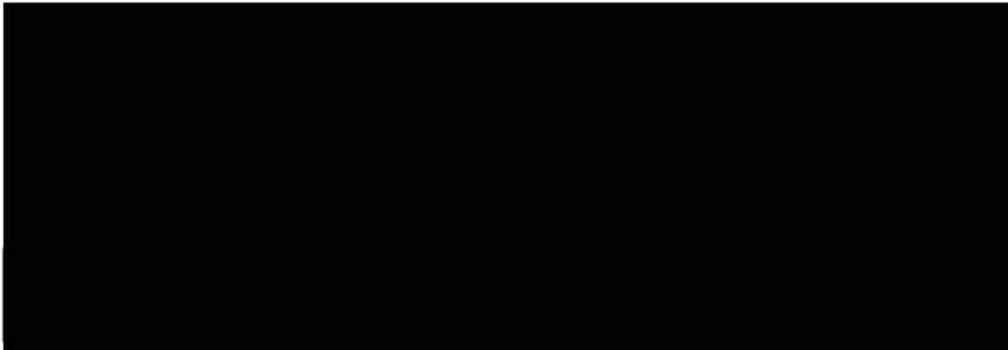
Project Carlisle - revised Pricing

Original contract value - Original CPA Split		STS York Telecons GBP	Transmission GBP	STS NAMT Tram Control GBP	STC Traffic Signals GBP	SL TPE & OHLE GBP	Services TRW GBP	STS TR Depot GBP	STS DL PM & Periles GBP	BAM TRW GBP	
System Wide											
Amount of:-											
Professional											
Design											
Accommodation Works											
Tram Supply											
Testing & Commissioning											
Supervisory Control & Comms Systems											
Spares											
Third Party Works											
Amount of System Wide											
Section A - Airport to Haymarket											
Amount of:-											
Professional											
Design											
Track and Formation											
Tramstop & Equipment											
Depot											
Highways											
Buildings											
Interchanges											
Structures											
Supervisory Control & Comms Systems											
Tramstop Equipment											
OHL & Sub-stations											
Spares											
Risk											
Amount of Section A - Airport to Haymarket											
Section B - Haymarket to Newhaven											
Amount of:-											
Professional											
Design											
Track and Formation											
Tramstop & Equipment											
Highways											
Buildings											
Interchanges											
Structures											
Supervisory Control & Comms Systems											
Tramstop Equipment											
OHL & Sub-stations											
Spares											
Risk											
Amount of Section B - Haymarket to Newhaven											
Original contract value - Original CPA Split											



ETN - Edinburgh Tram Network date: 11-Sep-2010

Deductions installation project Carlisle - Airport to Haymarket		STS Yarn Telecoms GBP	Telecoms GBP	STS RA MT Tram Control GBP	STC Traffic Signals GBP	EL TPS & D/L GBP	Siemens TRW GBP	STS TK Depot GBP	STS DE PM & Prelims GBP	BAN TRW GBP
System Wide										
Amount of:-										
	Preliminaries									
	Design									
	Accommodation Works									
	Tram Supply									
	Testing & Commissioning									
	Supervisory Control & Commo Systems									
	Spare									
	Third Party Works									
	Amount of System Wide									
Section A - Airport to Haymarket										
Amount of:-										
	Preliminaries									
	Design									
	Track and Formation									
	Tramstop & Equipment									
	Depot									
	Highways									
	Buildings									
	Interchanges									
	Structures									
	Supervisory Control & Commo Systems									
	Tramstop Equipment									
	OH & Sub-stations									
	Spare									
	Risk									
	Amount of Section A - Airport to Haymarket									
Section B - Haymarket to Newhaven										
Amount of:-										
	Preliminaries									
	Design									
	Track and Formation									
	Tramstop & Equipment									
	Highways									
	Buildings									
	Interchanges									
	Structures									
	Supervisory Control & Commo Systems									
	Tramstop Equipment									
	OH & Sub-stations									
	Spare									
	Risk									
	Amount of Section B - Haymarket to Newhaven									
Deductions installation project Carlisle - Airport to Haymarket										



date: 11-Sep-2010

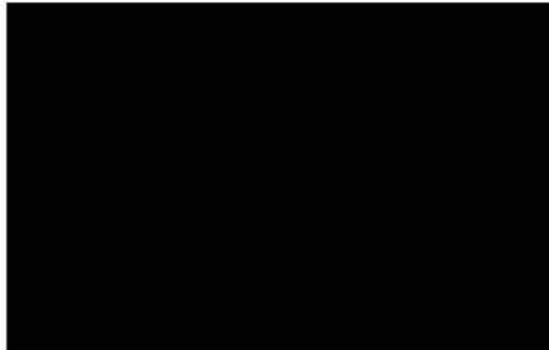
Deductions material & equipment project Carlisle - Airport to Haymarket

System Wide	
Amount of:-	
Preliminaries	
Design	
Accommodation Works	
Train Supply	
Testing & Commissioning	
Supervisory Control & Comms Systems	
Spare	
Third Party Works	
Amount of System Wide	

Section A - Airport to Haymarket	
Amount of:-	
Preliminaries	
Design	
Track and Formation	
Tramstop & Equipment	
Depot	
Highways	
Buildings	
Interchanges	
Structures	
Supervisory Control & Comms Systems	
Tramstop Equipment	
OH & Sub-stations	
Spare	
Risk	
Amount of Section A - Airport to Haymarket	

Section B - Haymarket to Newhaven	
Amount of:-	
Preliminaries	
Design	
Track and Formation	
Tramstop & Equipment	
Highways	
Buildings	
Interchanges	
Structures	
Supervisory Control & Comms Systems	
Tramstop Equipment	
OH & Sub-stations	
Spare	
Risk	
Amount of Section B - Haymarket to Newhaven	

Deductions material & equipment project Carlisle - Airport to Haymarket





ETN - Edinburgh Tram Network date: 11-Sep-2010

AIR - HAY

TRW Sec. B
Material

Price Project Carlisle excluding financing costs, EoT#1 and already approved Changes - Airport to Haymarket

STC York Telecons GBP	Transmission GBP	STC RA MT Team Control GBP	STC Traffic Signals GBP	EL TFS & ONLS GBP	Siemens TRW GBP	STC TK Dept GBP	STC DE FM & Polems GBP	BAM TRW GBP
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System Wide	
Amount of:	
Preliminaries	
Design	
Accommodation Works	
Tram Supply	
Testing & Commissioning	
Supervisory Control & Comms Systems	
Spines	
Third Party Works	
Amount of System Wide	

Section A - Airport to Haymarket	
Amount of:	
Preliminaries	
Design	
Track and Formation	
Timetables & Equipment	
Depot	
Highways	
Buildings	
Interchanges	
Structures	
Supervisory Control & Comms Systems	
Tramstop Equipment	
OH & Sub-stations	
Spines	
Risk	
Amount of Section A - Airport to Haymarket	

Section B - Haymarket to Newhaven	
Amount of:	
Preliminaries	
Design	
Track and Formation	
Timetables & Equipment	
Highways	
Buildings	
Interchanges	
Structures	
Supervisory Control & Comms Systems	
Tramstop Equipment	
OH & Sub-stations	
Spines	
Risk	
Amount of Section B - Haymarket to Newhaven	

Price Project Carlisle excluding financing costs EoT#1 and already approved Changes - Airport to Haymarket

POC costs to date (Aug 2010)	World Mgm. Eng./Design Mat. Inst. others
	SAG Mgm. Eng./Design Mat. Inst. others
	SAG Mgm. Eng./Design Mat. Inst. others
	Splc Mgm. Eng./Design Mat. Inst. others

World Mgm. Eng./Design Mat. Inst. others
SAG Mgm. Eng./Design Mat. Inst. others
SAG Mgm. Eng./Design Mat. Inst. others
Splc Mgm. Eng./Design Mat. Inst. others

World Mgm. Eng./Design Mat. Inst. others
SAG Mgm. Eng./Design Mat. Inst. others
SAG Mgm. Eng./Design Mat. Inst. others
Splc Mgm. Eng./Design Mat. Inst. others

Project Office
Design
Accommodation Works
Highways
System Integration
Communications Systems
Control and Information Systems
Track Subcontractor
Electrification Equipment and Design
Tram Control Equipment and Design
Traffic Control
Depot
Interchanges
Structures
Supervisory Control & Comms Systems
Tramstop Equipment
Design
Track and Formation
Timetables & Equipment
Highways
Buildings
Interchanges
Structures
Supervisory Control & Comms Systems
Tramstop Equipment
OH & Sub-stations
Spines
Risk

ETN - Edinburgh Tram Network
Project Carlisle - revised Pricing
Change Orders

11-Sep-2010-Sep-2010

Topic	Correspondence / Reference	Price	revised proposal	TCO received	Status	Relevant for Airport-Haymarket	the Carlisle proposal accepted	Siemens position	comment
Various Traffic Signal requirements	INTC-0060, TCO-0022				paid	no	y	ok	
Noise & Vibration survey	INTC-0438, TCO-0083				paid	no	y	ok	
Substation Quotations Scottish Power / Core connections (Connection costs + 17% + 7.4%)	TNC-0014, TCO-0100				ordered, not paid	part wise	y	ok	excl. Leith Sands, Leith Walk & Cathedral Substation
Guided Busway (Rheda City vs. Direct Fixation)	INTC-0421, TCO-0081				partly paid	yes	y	ok	
HV/LV Works -agreed variation (Survey, LV supplies, Engineering + 17% + 7.4%)	TNC-0014, TCO-0100				partly executed, not paid	part wise	y	ok	
TS works (Urban Traffic Control) (Equipment for Jct. 32, 37, 38, 39 (Princes St. Jct.)) (value updated from 270,740 to 338,801 as TIE did not take the 17% + 7.4% markup into account)	TNC-0016, TCO-0103				paid	no	y	ok	
TS works (Urban Traffic Control) (Mobilisation, initial works, Princes Street)	TNC-0016, TCO-0103				paid	no	y	ok	
ETN	INTC-0001				partly invoiced	yes	y	ok	
TS works - Mobilisation and Jct 41	INTC-0060, TCO-0124				paid	no	y	ok	
VE-0015: Roseburn Street Viaduct- Impact from OLE	VE-0015				open	yes	n	goes	
VE-0014: A8 Underpass (height reduction 6m -> 4.5m)	VE-0014				open	yes	n	goes	
Depot Turntable (design)	INTC-0412				open	yes	y	ok	
E&B Checking Impact on: Gogarburn-Bridge	INTC-0111				open	yes	y	ok	
E&B Checking Impact on: Edinburgh Park Station Bridge	INTC-0180				open	yes	n	stays	same topic as above
New Ingleson Limited (TRW & OLE design only)	INTC-0268				open	yes	y	ok	
BAA Dualing Proofing > abortive costs	INTC-0417				open	yes	y	ok	
E&B Checking Impact on: Baird Drive RTW	INTC-0104				open	yes	y	ok	
E&B Checking Impact on: Camicknowe Bridge	INTC-0116				open	yes	y	ok	
Airport canopy (OLE impact)	INTC-0277				open	yes	y	ok	
Sub Station Cathedral Lane: Design-Support	INTC-0281				partly executed, not paid	no	y	ok	not relevant for AIR-HAY
Crawley Tunnel (Princes St.) - Abortive costs for TRW	INTC-0305				executed, not paid	no	n	stays	'bridge' solution design
Gogar Landfill, Trackform Rheda G to Ballast (design)	INTC-0374d				open	yes	n	stays	to avoid piling, BB credit expected
Floating Slab Design	INTC-0615				executed, not paid	no	n	stays	works executed
Reinforced Rheda Track instead of BB improvement layer: (Shallow depth location) - design	INTC-0588				executed, not paid	no	n	stays	to avoid conflicts w/ utilities
OLE related planning consents	INTC-0612				in execution, not paid	part wise	n	stays	misalignment - SDS estimate was - 100k
Trackwork works disruption due to Princes Street works	SV-0112				inoured, not paid	no	n	stays	claim under PSSA
PSSA-TLC disruption costs	SV-0100a				inoured, not paid	no	n	goes	
Design Change Edinburgh Park Station / section 7A	INTC-0162				open	yes	n	stays	awaiting TCO to begin implementation
Roseburn Street Viaduct- Impact from TRW	VE-0015				open	yes	n	goes	VE does not allow design to cost
Depot Turntable (construction)	INTC-0412				open	yes	y	ok	awaiting TCO to begin implementation
HV Scottish Power Connections (Gogar-Depot Change): Maybury Road Overbreak	INTC-0647				executed, not paid	yes	n	stays	part of provisional sum HV/LV connections awaiting TCO to begin implementation
HV Scottish Power Connections: Switching Station location change at Gogar Depot	INTC-0643, TCO-176				open	yes	n	ok	TCO received 07-Sep-2010
HV Ingleson Wayleave Problems	INTC-0644				open	yes	n	stays	part of provisional sum HV/LV connections awaiting TCO to begin implementation
HV Jenners Adol Reinforcement	INTC-0645				open	yes	n	stays	part of provisional sum HV/LV connections awaiting TCO to begin implementation
Total									

£22,301,420.64

£0.00

original CPA adjustment
Siemens' share of Lump Sum Firm and Fixed Price
scope shift to BB Changes Order Income Booked to be booked
current contract Value

Gogar Depot supply (11kv ringmain supply, excluding: depot transformer, cable ducts from boundary	lump sum
Ingleson Park and Rice Substation	lump sum
Leith Sands Substation (North Leith)	lump sum
Leith Walk Substation	lump sum
Cathedral Substation	lump sum
Haymarket terrace Substation	lump sum
Russel Road Substation #1	lump sum
Jenners Depository Substation	lump sum
Barkhead Drive Substation	lump sum



ETN - Edinburgh Tram Network

date: 11-Sep-2010

Project Carlisle - revised Pricing

Additional GMP Carlisle components

Topic	Price
Urban Traffic Light Control Airport to Haymarkt	£653,699.10
OLE pole finials for street lighting	£287,796.67
Total additional GMP components	£941,495.76

		Carlisle
Siemens UK	UK Project Management	13,324,667
Siemens UK	UK System Engineering	3,001,626
Siemens UK and BAM	Trackwork	43,471,285
Siemens UK	UK Depot Workshop	2,028,342
Siemens UK	UK Electrification	6,003,202
Siemens UK	Infrastructure	3,185,035
Siemens UK	Insurance, Bonds and Financial Guarantees	1,712,358
Siemens UK	Control & Information	5,111,939
Siemens UK	Communications	5,009,483
Siemens AG	Electrification, Automation and Depot Equipment	29,688,648
	Change Orders	5,123,140
	Additional Carlisle Components	941,496
Overall Project	Total	118,601,221

Witness name: Axel Eickhorn
Statement No: third
Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

Exhibit AE3

Confidential

TRI00000276_0026

Comparison of Carlisle Proposal`s with Contract Price

Submission		Price for Original Scope				Additional Time & Scope Costs			
Contract/Offer	Date	System Wide Costs	Airport to Haymarket	Haymarket to Newhaven	Sub-Total	Additional Project Carlisle Costs	Additional Project Carlisle Cost Components	Changes	Total
Original Contract	15/05/2008	£41,073,068	£38,390,377	£17,453,562	£96,917,007	N/a	£2,500,000 ¹	£2,261,996 ²	£101,679,003
Project Carlisle	29/07/2010	£40,552,238	£38,390,377	£14,269,950	£93,212,566	£26,005,862	£2,374,883	£5,308,310	£126,901,621
Project Carlisle 2- Revised Proposal	11/09/2010	£40,428,769	£38,390,377	£13,104,540	£91,923,686	£20,612,906	£941,496	£5,123,140	£118,601,229

¹ Construction Work Price included Defined Provisional Sum of £2.5M for Urban Traffic Control which is the principal Project Carlisle Cost Component

² This represents value of Siemens' share of Defined & Undefined Provisional Sums for contemplated changes (less UTC and Identified Value Engineering)

Confidential

Witness name: Axel Eickhorn
Statement No: third
Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

Exhibit AE4

Confidential

TRI00000276_0028

Post Settlement Agreement Savings in respect of Siemens Equipment and Materials

tCO Reference	tCO Description	Siemens
tCO547	Cancellation of trackwork materials York Place to Newhaven;	-1,100,000.00
tCO548	OMIT Siemens work to Tower Place and Victoria Bridge;	-100,000.00
tCO562	OMIT purchase of poles for PID's North of York Place;	-23,740.00
tCO575	OMIT track welding equipment;	-14,420.00
tCO598	Cancel order for OLE poles required for Secondary Phase 1a	-41,789.00
tCO679	Sale of surplus contact wire;	-28,314.00
tCO714	Surplus material reconciliation;	-27,892.00
Total Saving		<u>-1,336,155.00</u>

Note: Values taken from signed Statement of Final Account dated 04/10/2014

Witness Name: Axel Eickhorn
Statement No: third
Dated: 18 March 2018

THE EDINBURGH TRAM INQUIRY

Exhibit AE5

Confidential

TRI00000276_0030

SIEMENS

INSTRUCTION TO COMMENCE

BAM Rail BV,
Stadionstraat 40,
4815 NG Breda,
Netherlands

Dear Sirs

SIEMENS TRANSPORTATION SYSTEMS A DIVISION OF SIEMENS PLC

BAM RAIL BV

CONSTRUCTION OF THE TRACK WORK AND ASSOCIATED WORKS IN CONENCTION WITH THE DESIGN AND CONSTRUCTION OF THE EDINBURGH TRAM NETWORK ("the Sub-Contract Works")

WHEREAS

- a) we, **Siemens Transportation Systems a Division Of Siemens PLC**, a company established under the laws of England (registered number 00727817) having its registered office at Faraday House, Sir William Siemens Square, Frimley, Camberley, GU16 8QD, United Kingdom ("the Contractor") are a member of a consortium consisting of Bilfinger Berger AG, Germany, and the Contractor, (hereinafter collectively referred to as the "Consortium") which concluded a construction agreement, dated 14 May 2008 (hereinafter referred to as the "Infraco Agreement") with **tie Limited** (hereinafter referred to as "tie") for the design and construction of the Edinburgh Tram Network (the "Infraco Works");
- b) the Contractor has entered into a sub-contract with you, **BAM Rail BV**, a company established under the law of the Netherlands and having your registered office located at Stadionstraat 40, 4815 NG Breda, Netherlands (hereinafter referred to as the "Sub-Contractor") to execute the Sub-Contract Works forming part of the Infraco Works dated 21 May 2008 ("the Sub-Contract");
- c) in terms of clause 6 of the Sub-Contract the Contractor is to serve a notice on the Sub-Contractor requiring them to commence the Sub-Contract Works ("the ITC"), and
- d) the Contractor now wishes to serve this ITC;

NOW THEREFORE we hereby serve notice on you that the Contractor is hereby required to commence the Sub-Contract Works with effect from 22 May 2008 ("**the Commencement Date**") and carry out and complete the Sub-Contract Works in accordance with the terms of the Sub-Contract.

Yours faithfully



Andrew Lister
Head of Procurement & Logistics, STS UK

22 May 2008

Siemens Transportation Systems

Ashby Park
Ashby de la Zouch
Leicestershire
LE65 1JD

Tel: +44 (0)1530 258000
Fax: +44 (0)1530 258008

A division of Siemens plc. Registered No. 722817, England
Registered Office: Faraday House, Sir William Siemens Square, Frimley, Camberley, GU16 8QD

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TRI00000276_0031