EDINBURGH TRAM INQUIRY

NOTE TO WITNESS – AILSA MCGREGOR

The original evidence submission Note covered the following matters:

- The Procurement Strategy
- Design
  - SDS contract
  - Parsons Brinckerhoff
  - Requirements Definition Phase
  - Preliminary Design
  - Detailed Design
  - Approvals Process
  - Draft Final Business Case
  - Delays
- Utilities
- Governance
- Final thoughts

Introduction

My name is Ailsa McGregor. I am a Chartered Quantity Surveyor and Project Manager. I was employed by the new Project Director of TIE Limited in August 2006, to manage the System Design Services (SDS) contract (c£23.5m value) on behalf of TIE Ltd, as their Interim Project Manager, working full time on a contract for service in the TIE office in Edinburgh for a period of 3 to 6 months. **Refer to ETI Document TIE00000514.**

From August 2006, I was responsible for the day to day management and co-ordination between TIE-SDS on the SDS contract, across the multi-functional teams and stakeholders on the Project. I was employed by the new TIE Project Director, Mr Andy Harper and reporting to Trudi Craggs, Director of Approvals and Consents, who was seconded from Dundas and Wilson (D&W). My role did not include the technical engineering design matters. These were managed by the TIE in-house technical design team and the Technical Support Services (TSS) contract. TIE's Design Manager, Mr Gavin Murray, was responsible for managing the SDS engineering design matters, the in-house technical design team and TSS. TIE's Commercial Manager, Mr Jim Cahill was responsible for the SDS commercial management.

SDS was a multi-functional design consortia team led by Parsons Brinckerhoff (PB) with Halcrow, Corderoy, Ian White Associates, Quill Power Communications and Steer Gleave Davies (SGD). Some SDS staff were co-located in the TIE office whilst some of the SDS staff were operating out of other UK and global offices.

In spring 2006, there were changes at TIE senior management level and on the Project. The Project Director Mr Ian Kendall and the Commercial Director Mr Gerry Henderson left the Project, Mr Willie Gallagher became TIE Chairman/CEO and Mr Andy Harper started as the new Project Director. The TIE Chairman/CEO and the new Project Director restructured the Project and re-defined roles and responsibilities across the teams to improve the performance of the Project.

In December 2006, Mr Andy Harper left the Project and a new Project Director Mr Mathew Crosse started in January 2007 and he reprioritised and restructured teams across the Project.

In spring 2007, my role changed to Interim Project Controls Manager, developing and managing the Change Control process and team across the Project and the negotiation of the changes on the SDS contract and the claims between TIE and SDS. There were multiple reporting lines to Mathew Crosse and Trudi Craggs on SDS matters, Geoff Gilbert Interim Commercial Director on commercial and claim matters and Susan Clark, MUDFA Directors on SDS-MUDFA matters and a number of other managers and stakeholders across the Project.

During this period of change, the governance arrangements were changing at TIE and a number of partner organisations. Three technical engineering directors, Mr Steven Bell, Mr David Crawley and Mr Tony Glazebrook, started on the Tram Project to lead the SDS design, the TIE in-house design team and Infraco matters, working with Mathew Crosse and TSS. SDS were also going through a period of change and restructuring their teams, bringing in Steve Reynolds as Project Director in spring 2007, above David Hutchison, Alan Dolan and Jason Chandler. There were also changes in governance at TIE, TEL and CEC all undergoing some restructuring and changes to key persons and parties involved in the Project.

By August 2007, the preparatory on-site works for the Multiple Utility Diversion Framework Agreement (MUDFA) and the Gogar Depot enabling works were on site and started, the Tram Cars (Tramco) and Infrastructure Contractors (Infraco) were at final procurement negotiation stage and the SDS contract was in the detail design phase with the date for the future novation to the Infraco preferred bidder, still to be determined. At this stage in the Project, there were a number of key and critical design issues still impacting on the SDS designs, Tram network and the Tram Project, when I left the Project in August 2007.

A: Introduction and initial impressions

In general:

1. Between what dates were you employed by TIE?

   From August 2006 to August 2007.

2. What was your job title and what were your duties and responsibilities?

   My Job Title was Interim Project Manager for the System Design Services (SDS) contract (c£23.5m value) for TIE. I became TIE's Named Representative in the SDS contract, from end August 2006 until March 2007. I was responsible for the management of the SDS contract (circa £23.5m) on behalf of Tie Limited; **[Refer to ETI Document TIE00000514_0001- 0004 and TIE00000493_0001-0004)].**

   My duties involved the day to day management and co-ordination of the SDS Contract with SDS and the key stakeholders.

   I was responsible for the day to day management and co-ordination of the SDS contract, on behalf of TIE, with SDS, the key stakeholders and the multi-functional teams. I was reporting to Trudi Craggs, Director of Approvals and Consents, who was seconded from Dundas and Wilson (D&W), and employed by the new TIE Project Director, Mr Andy Harper.

   My role did not include the technical engineering design matters, review of the PD or DD. These were managed by the TIE in-house technical design team and the shadow design team, Technical Support Services (TSS), who were a consortium of consultants led by Scott Wilson. The TIE in-house Design Manager, Mr Gavin Murray, was responsible for managing and reviewing the SDS designs, the in-house technical design team and the shadow design team TSS. They were responsible for managing and reviewing the technical design and engineering matters. TIE's Commercial Manager, Mr Jim Cahill was responsible for the commercial management of SDS.

SDS was a consortium of Design Companies Parsons Brinckerhoff (PB), Halcrow, Corderoys, Ian White Associates, Quill Power Communications and Steer Gleave Davies (SGD). The SDS lead design organisation was Parsons Brinckerhoff (PB).

When I arrived on the Project in August 2006, the relationship between TIE and SDS was not good. The TIE in-house design team and TSS had failed to review the preliminary design within the timescales set out in the SDS contract. There were commercial issues and payments were overdue to SDS from TIE. (Refer to TIE00073022 - SDS PM report Sept 2006).

From March 2007 to August 2007, my role was the Interim Project Controls Manager for TIE. My duties involved the day to day management and co-ordination of the Project Controls and Change control processes and team in TIE. I was responsible for managing, co-ordinating and communicating the project controls, change control processes and changes on the TIE contracts, managing the change logs, reporting the changes to the Directors for approval and the TIE claims against SDS.

3. What qualifications relevant to your roles in this project do you hold? What was the principal subject in your BSc Degree?

I have the following qualifications:

i. BSc (Hons)
ii. MBA
iii. MRICS
iv. MCMI
v. PRINCE2 Practitioner in Project Management
vi. Diploma in Construction Health and Safety (with Distinction)

I am Chartered Quantity Surveyor and Project Manager. I was elected as a full member of the Royal Institution of Chartered Surveyors in 1990 (MRICS), a full Member of Chartered Management Institute (MCMI) in 2009 and an Associate of the Institute of Management Consultancy in 2002, which merged with the Chartered Management Institute.

My first degree is a Bachelor of Science with second class honours division 1 (BSc (Hons) 2'1) in Quantity Surveying and Construction Economics, from the University of Salford, awarded in 1988. My second degree is a Masters in Business Administration (MBA) from the Open University, awarded in 2012.

I have the following additional qualifications:

- Prince2 Practitioner in Project Management (2004 - 2015)
- Diploma in Construction Health and Safety with Distinction (1997)
- BTEC Level 7 Advanced Professional Award (2015)
- Post Graduate Certificate in Development Management(2014)
- Gateway Reviewer (2003 to 2009)
- DELF Diploma in French (1997)

4. When you joined TIE what was your previous experience of design, management and major projects?

I am a Chartered Surveyor and Project Manager with more than 25 years experience in the Industry, in the commercial and project management of major public and private sector construction and service projects, from inception to completion.

I trained with Sir Robert McAlpine in Glasgow, WH Hutchison Quantity Surveyors and Walter Lawrence Project Management in London, starting as a trainee and progressing to a Chartered Surveyor in 1990, in the minimum 3 year training period, which was required by the Royal Institution of Chartered Surveyors, at that time.

I worked for Walter Lawrence Project Management for 4 years (1989 - 1992) in London, initially as commercial surveyor and laterally as commercial manager on major construction and design and build projects in London and the South East. I was responsible for the overall commercial management of a number of Management and Design and Build Projects from cost planning, negotiation of the project, procurement and management of the consultants and supply chain, management of design development process, contract management to agreement of the final accounts with the Clients, consultants and supply chain. I worked for Blair Joinery Manufacturing (1992 - 1993) as Estimating Manager.

I worked for Team Kier in Scotland (1994 to 1998) as regional Commercial and Projects Manager. I was responsible for the overall commercial and project management of the Design & Build and Design Manage and Construct and PFI major Projects, from cost planning, estimating, negotiation of the project, procurement and management of the consultants and supply chain, design management and development, contract project management to agreement of the final accounts with the Clients, consultants and supply chain (values £5m to £65m) and claims. This included managing the pre-construction design process and the contract management during the construction to the agreement of the final accounts.

From 1998 to 2003, I worked for 5 years for a large Surveying and Project Management consultancy in Scotland, where I set up the PPP department, progressing from Project Manager to Director level. I was responsible for the setting up, project management and delivery of major complex PPP projects (DBFO) across sectors for public and private sector clients from business case development, requirements definition, design development, cost planning, procurement and contract negotiation, through construction to services commencement and Facilities management services (values £15m to £300m) and managing the team.

In 2003, I set up a Chartered Surveying and Management Consultancy company, providing project management, commercial management and management consultancy services to public and private sector clients across sectors on major projects in UK & EMEA (values £1m to £600m) and partnering with other specialist Consultancy companies to support their business requirements to Clients.

In 2016, I started working for a large public sector organisation in Scotland as Commercial and Contracts Manager.

5. Doc CEC01792024 is an e-mail from you to Geoff Gilbert and Susan Clark dated 13 March 2007 entitled SDS and MUDFA contract in which you refer to "my new role". Was that new role as Project Control Manager? How did it come about?

Yes, the new role was as TIE Interim Project Controls Manager. My initial Interim Project Management role was for 3 to 6 months **(refer to ETI document TIE00000514).**

Mr Andy Harper left the Project in December 2006 and a new Project Director Mr Mathew Crosse started in January 2007 with a new team, reprioritised and restructured existing teams. Three new engineering technical directors started to manage SDS and Infraco procurement.

From March 2007 to August 2007, my role changed into Interim Project Controls Manager for TIE. My duties involved the day to day management and co-ordination of the Project Controls and Change control processes and team in TIE. I was responsible for managing, co-ordinating and communicating the project controls, developing and managing the Change Control processes and changes on the TIE contracts, managing the change logs, escalating and reporting the changes to the Directors for approval and the negotiation on the SDS contract and the TIE claims against SDS. There were multiple reporting lines to Mathew Crosse and his three technical Directors and Trudi Craggs on SDS matters, Geoff Gilbert Interim Commercial Director on commercial and claim matters and

Susan Clark, MUDFA Directors on SDS-MUDFA matters and a number of other managers and stakeholders across the Project.

During this period of change, the governance arrangements were changing at TIE and a number of partner organisations. Three engineering technical directors joined the TIE Tram Project, Mr Steven Bell, Mr David Crawley and Mr Tony Glazebrook, working with Mathew Crosse (MC), Susan Clarke (SC) and Geoff Gilbert (GG). SDS were also going through a period of change and restructuring their teams, bringing in Steve Reynolds as Project Director in spring 2007, above David Hutchison, Alan Dolan and Jason Chandler. There were also changes in governance at TIE, TEL and CEC all undergoing some restructuring and changes to key persons and parties involved in the Project.

In respect of ETI doc ref CEC01792024 in my new role, I identified that there were contractual and alignment issues (4 key issues) between the SDS and MUDFA contracts, which were constraining the effective operation of the SDS/AMIS/TIE contracts and these were escalated to the TIE Director (SC), TIE Commercial Director (GG) and the Tram Director (MC) and colleague.

The four key issues that I identified were:

- Aligning of SDS and Mudfa contract schedule 1; the design requirements were different in the two contracts;
- Alignment of the change control processes in SDS and Mudfa contract; the timescales were different in both contracts.
- Design Gap between SDS and what AMIS require to procure the materials for the Mudfa contract
- Mudfa Specific issues related to the Bills of Quantities, which do not reflect the SDS designs.

I also highlighted that these issues were constraining the effective operation of the SDS/AMIS/TIE contracts and that we, TIE, needed SDS to sign up to Schedule 1 in Mudfa contract, AMIS construction rates fixed

or to agree an appropriate schedule of rates. I highlighted that these matters required to be addressed prior to the commencement of the construction phase, or these issues would expose TIE to unreasonable risks since TIE was responsible for managing the SDS and Mudfa contracts.

6. Who did you report to, and who reported to you, in each role?

Project Controls was cross functional across the whole Project. There were multiple reporting lines to Project Director, Mathew Crosse, the three technical Directors and Trudi Craggs on SDS matters, Geoff Gilbert Interim Commercial Director on commercial and claim matters and Susan Clark, the MUDFA Directors on SDS-MUDFA matters, Alastair Sim on JRC matters and a number of other managers and stakeholders across the Project on project controls and change control matters.

The Projects Controls Team reported to me.

7. In general, what would you say went well with the project and what did not go well?

The Edinburgh Tram Project was a large high value (circa £550m) complex infrastructure Project with multiple contracts (SDS, Mudfa, Infraco, Tramco, SGD, JRC, and Transdev), internal and external stakeholders and the tram lines (Line 1 (Line 1a, Line 1b), Line 2 and Line 3) originally planned. The Tram Bills had passed through Parliament and were awaiting royal assent, which was achieved in April 2006. City of Edinburgh Council (CEC) had set up TIE as an arms length company to deliver the Project with corporate governance through the Boards, further scrutiny from CEC, Transport for Edinburgh Limited (TEL) Board and strategic governance and funding from Transport Scotland (TS).

The Project systems, people and organisational structures were in place. Corporate Governance, Project Management, Risk Management, Cost Management and HR systems and processes including the Document

Control System were in place and operational in 2006/2007. Communications plans and Stakeholder management strategies were in place. Funding of £545m was in place. (£500m TS Scotgov and £45m CEC). The key SDS contract had been procured in 2005 and the Mudfa contract in 2006. There were lots of skilled and experienced professionals and support staff working on the Project.

Prior to my commencement on the Project, there were issues between TIE and SDS, before the award / start of the contract, at Procurement stage, Requirements Definition Phase (RDP) and at Preliminary Design Phase (PDP). The SDS procurement process had taken 3 months longer than planned. Before the award / start of the SDS contract, there were issues on the parent company guarantee and late requests from SDS for changes to the contract conditions. SDS had signed the contract 2 weeks later than planned. From the start of the SDS contract, SDS were slow to resource the Project, resulting in delays to key deliverables, in the RDP, which impacted on the quality of the documents produced by SDS. Soon after the contract was signed, I believe disputes commenced between TIE and SDS on the programme, key milestones and deliverables and it appeared that the relationships were not good between TIE and SDS, from the historical records. (Refer to **WED00000616** documents TIE – DLA – SDS email chains 1st September to 12th September 2005.

When I joined the Project in August 2006, the relationships between TIE and SDS were not good. There were a number of design and network issues causing blockages to the Project as well as commercial issues and communications had broken down between some TIE – SDS staff. SDS had submitted the Preliminary Design (PD) at the end of June 2006, to achieve a milestone deliverable. I was advised by the TIE Design Manager Mr Gavin Murray & TSS that the PD submitted by SDS was not complete, only partial. It appeared that SDS were keen to demonstrate that they had achieved progress by submitting PD. I believe that SDS were trying to achieve the contractual milestone, which triggered a significant payment milestone. At the end of July 2006, TIE & TSS had not

completed the review of the PD and were still reviewing and assessing the deliverables in August 2006, to ascertain what was acceptable/ unacceptable, what was missing and what information still needed to be submitted by SDS. This was also in the context of key organisational changes at TIE with the Project Director, Commercial Director and other key persons leaving TIE and a new TIE Board Chairman CEO, a new Project Director arriving in April / May 2006, followed by a new Commercial Director.

There were also a number of key design issues along the network which related to the charettes and critical design issues (refer to document WED00000617 critical issues register 26 April 2007). These charettes and critical design issues were complex and were impacting on SDS ability to complete the design as they related to key bridges and structures, junctions and interchanges on the route and stakeholder issues and matters out with TIE (i.e. Network Rail, SRU, Forth Ports and Edinburgh Airport) and in some cases out with the Tram Bills demarcation zone (LOD). Third party agreements were needed to access commercial landowner's property to undertake surveys and ascertain requirements before designs could be progressed. These matters collectively delayed the Project as they needed considerably more time to resolve the engineering design issues than had been planned in the Tram Project Programme.

It took several months providing more information to TIE in-house design team and TSS for SDS to be in a position to complete the Preliminary Design milestone to TIE's requirements. TIE and the Technical Support Services (TSS) then reviewed the design documents and provided a report with comments to SDS in December 2006. In March/April 2007 SDS reached a completed Preliminary Design phase. SDS had commenced the Detail Design (DD) stage in Autumn 2006, during this period, the overlap of Preliminary Design close-out phase and Detail Design added to the complexity of the issues and matters arising on the Project.

8. What was your impression when you first became involved in the tram project of TIE and TEL personnel, their external advisors, the contractors then working on the project and, generally, the state of preparation of the project? Did you consider that TIE had a sufficient number of employees in the design team with sufficient engineering and project management expertise to manage the design (including the various interfaces)?

It was a large complex project, from Edinburgh Airport, through the City centre to Leith, with complex corporate governance arrangements and a lot of internal and external stakeholders. When I started on the Project, in August 2006 in the open plan shared office, it was difficult to know who worked for TIE/TEL and who worked for CEC, TSS, Transdev or SDS.

I was employed by the new TIE Project Director Mr Andy Harper, who was an effective leader and I reported to Trudi Craggs the Director of Approvals and Consents, who was a senior associate lawyer, seconded from Dundas and Wilson, who was managing the TIE team and sharing her knowledge. She had been involved in the development of the Tram Parliamentary Bills process through the Scottish Parliament and as such she had the detailed specialist knowledge on the Tram Bills and what was permissible under the Tram Bills and LOD. Like any large major Project or office, there were professional and support staff with a range of skill sets, professional experience and, specialist expertise, working and undertaking different roles on the Project.

The key point to note is that when I started on the Project in August 2006, the SDS were behind programme, TIE had failed to review the SDS Preliminary Design within the timescales set out in the contract, there were design issues and commercial issues as payments were due to SDS. Communications had broken down between some TIE and SDS colleagues and a number of changes to the senior management team had impacted on the Project and the TIE – SDS relationships. A new Board Chairman CEO and Project Director had arrived and they had been

restructuring the Project and engaging with the stakeholders and teams across the Project.

TIE was not designing the Edinburgh Tram Network. They had procured SDS to design the Edinburgh Tram Network; through the SDS output based contractual arrangements (refer to CEC.00756972 SDS contract schedule 1). The intent was for TIE to pass the design liability and design, approvals and consents risks to SDS. The SDS design team would at a later date be novated to the Infraco contractor, who would be responsible for completing the design and construction of the Tram network with the associated design and construction risks. Under the output based contractual arrangements, with transfer of risks to SDS, I believe, TIE did not need to employ a fully resourced in-house design team and to employ a fully resourced shadow design team (TSS) to review the designs. TIE needed expertise in system wide cross functional integration and delivery with technical experts and specialists from TSS, and they needed effective project managers, commercial managers and decision makers to lead and manage the complex system wide contracts, the risks, the interfaces, the interdependencies, the multiple facets and the stakeholders on the Project and not to work ineffectively in silos. The multi stakeholder charettes workshops brought the key external stakeholders together to assist SDS to develop design solutions for the key structures, junctions and interchanges impacted by the design charettes. I believe the Project had a lot of bespoke non standard contracts (refer to CEC01859952), Transdev Operator, SDS, Mudfa, Infraco, JRC, Tramco, and Third party land agreements, Planning CPO's, TROs/TTROs, Network Rail (Haymarket & Waverley and trainlines) agreements, EARL, Airport, Leith/Forth Ports, Princes Street Festival and Lothian Buses agreements. There were multiple interfaces, interdependencies and alignments required with all the TIE contracts and the internal and external stakeholders. Some of the interfaces were managed well and had few issues whilst others related to the design charettes and critical issues had multiple stakeholders, complex issues, risk and uncertainty and greater impacts on the alignment of the contracts.

These required redesign, intensive design charettes workshops and considerably more time than was included in the Tram Project Programme, leading to delays and disruption.

During this period, the governance arrangements were changing at TIE and a number of partner organisations. Mr Andy Harper left the Project in December 2006 and a new Project Director Mr Mathew Crosse started in January 2007 and he reprioritised and restructured teams. Mr Steven Bell was on the Tram Project in December 2006, Mr David Crawley and Mr Tony Glazebrook joined in January 2007, as technical engineering directors, working with Mathew Crosse and the other directors, Gavin Murray and TSS. SDS were also going through a period of change and restructuring their teams, bringing in Steve Reynolds as Project Director in spring 2007, above David Hutchison, Alan Dolan and Jason Chandler. There were also changes in governance at TIE, TEL and CEC all undergoing some restructuring and changes to key persons and parties involved in the Project.

I did not have much interface with TEL, my only comment is that the governance arrangements were complex and TIE, CEC, TEL, LB, TS ScotGov were all involved. We had regular visits from the CEC and TS ScotGov. There were a high number of FOISA requests from members of the public in relation to the Project Funding, Governance, costs, timescales and the impact of the Project on the transport network and Edinburgh city centre.

9. How were working relationships within TIE, and between TIE and other bodies and organisations e.g. the contractors, CEC, etc?

The day to day management of the Project was by TIE. CEC were involved at Board level and in the statutory approvals and consents, planning, CPO's, TROs, TTRO's and the Business case. Some relationships with stakeholders were good productive relationships whilst some relationships were fragile, ineffective and much less collaborative, in

some cases, even before the contracts were signed the relationships had deteriorated and they deteriorated further after contract signature (SDS, and Mudfa). DLA prepared the contracts and D&W were embedded in the Project providing the day to day management direction and advice to TIE and CEC.

TIE had appointed TSS to review the SDS designs but the SDS contract had no obligations set out for an independent reviewer. The review process was prolongated and required additional resources from TSS, to review the SDS designs., The Mudfa team set up in a different TIE office at Leith and concentrated on managing their Mudfa contract on site, separate from the main TIE offices, with a contractual approach on contractual interfaces and SDS deliverables rather than adopting a partnering ethos for the requirements set out in both of the contracts.

A key issue for the Project was the reprioritising of the sections of the routes in the Mudfa contract, which were different to the design section priorities in the SDS contract, thus creating issues and conflicts between the parties. At the same time the TIE Infraco procurement team were also changing the priorities in the Infraco procurement process for the Bidders without consulting SDS or understanding the impact of the system wide changes. Thus creating more issues for SDS, delays, disruption and cost increases to the Project. Working in partnership collaboratively with TIE SDS, MUDFA and others to achieve solutions would have been more productive, as the interfaces were inseparable. The other key factor was that the critical design issues and charettes were system wide and impacted on the whole Tram network and not just on the SDS design contract. (Refer to Document WED00000617 critical issues, CEC0178334 and CEC0178335 - Mudfa – SDS comparison to support this response).

CEC0178334 and CEC0178335 should be CEC01786334 and CEC01786335

10. Overall, how well did people within the project work as a team?

The individual people and teams worked well in their own functional areas

some working in silos with the cross functional and system wide issues created blockages as they were complex matters needing a 'system wide approach' out with the individuals/teams roles and responsibilities. There were a lot of professional and support staff changes on the Project and with these staff changes the history and knowledge of the Project was lost. There was insufficient communications, handovers or reports or lessons learned.

In August 2006 when I joined, after the TIE governance changes, there was a culture of few TIE staff volunteering information and many choosing to blame SDS for all the delays and problems with the Project. The Project was complex, with multiple interfaces, dependencies and stakeholders, all requiring cross functional team work, good communications and multiple layer co-ordination. It was a challenging project and some individuals/teams worked in silos, so cross functional teamwork and system wide integration could have been improved. There was a culture in some of the teams in TIE to take no responsibility and to take no accountability for the Project status and to blame SDS for all the delays, problems and issues. In some cases, SDS were the source of the delays and issues, however there were many areas where TIE could have improved the situation by being more proactive with external stakeholders and third parties, sharing knowledge more effectively and working collaboratively with SDS to assist them in developing solutions and meeting their obligations. TIE was not good at making decisions on the system wide critical design and charettes issues due to the complexity of these matters and when a decision was made it was sometimes changed at a later date by CEC, due to other priorities within CEC taking precedence over the Project (i.e. reprioritisation of sections of the route (i.e. Princes Street) was driven by CEC and Mudfa teams not TIE-SDS teams).

11. When did you leave TIE and why? Doc **CEC01629699** includes a handover note that may be of assistance in considering this question. Do you know who took over your role as Project Control Manager? What were your views on design,

TIE as an organisation and the project more generally when you left?

I left TIE in August 2007 to work on another Project. I believed the Project would be stopped in June 2007. Before I left TIE, on the 20th August 2007, I had a number of handover meetings with Directors and key persons. I prepared a close out handover report (CEC01629699 - email (20.8.17 18.43pm) and attached two reports, the Handover Report – Changes and Project Controls Report(CEC01629701) and the Tie Claim Aug 07 Report (CEC0162700). These were issued to TIE Directors.

The Handover Project Controls Report sets out the status of the Changes on the Project at 20th August 2007. The TIE August Claim report sets out the summary of the TIE claim against SDS. I believe it sets out the key matters which were impacting on the SDS contract and design works. From the historical records, I identified 20 key relevant events on the SDS programme and the SDS design contract. At this stage in the Project in August 2007, concurrent delays had been incurred to activities at the RD, PD and DD phases. There were still unresolved critical issues impacting key structures, junctions and interchanges on the tram route. Costs were increasing and escalating, as a result of increasing risks from concurrent delays to the SDS programme, design changes & changes to scope of works, reprioritisation of the routes and changes to route alignment arising from the critical design and charettes issues.

The Project Controls report (CEC01629701 and CEC01629699 email 20.8.17 18.42pm) was prepared following meetings with the Project Director, Mathew Crosse, Susan Clark and Commercial Director Geoff Gilbert. The Project Controls report sets out and summarised the status of the Change Logs and changes for each of the change types (Board, JRC, SDS, and MUDFA) on the Tram Project up to the end July 2007. Hard copies of this report and of the Change Logs along with links to where the electronic copies of documents were located on the TIE IT system were provided to the Directors and managers.

- Tram Board Change Log V1 –COM Project Controls 187
  - CRB 1-16, 21 and 24 approved
  - CRB17, 18, 19, 20 and 24 paperwork to be raised

- Joint Revenue Contract (JRC) Log V1 29.6.07
  - 8 changes approved

- System Design Services (SDS) Log V2 327 and System Design Services Change Requests v1 COM Project Controls 299
  - See attached spreadsheet for status

- MUDFA log held and managed by MUDFA team in different office at Leith

In Spring 2007, SDS intimated that they intended to submit a claim in the order of £3m to TIE. I was instructed by the Commercial Director, Mr Geoff Gilbert, in conjunction with the Project Director Mathew Crosse and Susan Clark to review historical documents and to prepare a claim against SDS, primarily as SDS had intimated their intention to prepare a claim against TIE and also because there had been a number of issues and concurrent delays from the start of the SDS contract in 2005. There were critical design issues, related to the design of the structures, key junctions and interchanges on the route and delays to surveys. Regular meetings were held and updates on the claim and relevant events were provided to the Directors.

I met with the Commercial Director on 23rd July and emailed a summary of the relevant events after the meeting. The TIE claim August 07 report (CEC01629700) summarised the status of the findings at that time, from reviewing the historical documents, issues and delays related to the SDS contract through the key stages from the original Contract Award, the Requirements Definition, the Preliminary Design stage to the Detail Design stage in August 2007.

I believe that my evidence submitted in the form of the emails and the reports are a true contemporaneous record of the status of Project Controls (CEC01629701) and changes on the Tram Project in August 2007 and the status and key relevant matters relating to the TIE SDS claim in August 2007

(CEC01629700).

Both the Handover report (CEC01629701) and attachments and the TIE-Claim August 07 (CEC01629700) identify that the Project had a number of changes and that these were increasing on a monthly basis, costs were increasing, there were still critical design issues and charettes impacting on the key structures, junctions and interchanges. The Mudfa contract had started on site, the depot contract had started on site and the Infraco and Tramco procurements were 'work in progress' but based on incomplete designs, a set of assumptions and risks which were changing, timescales and re-prioritisations for key sectors, which were being changed by TIE/ CEC and would impact on both Tramco and Infraco procurements and contracts.

The Infraco Invitation to Negotiate (ITN) tender documents were prepared by TSS, the TIE commercial director and procurement team with legal support from DLA and design by SDS. I believe that the Infraco ITN was issued with insufficient due diligence and dialogue with the SDS team and risk assessment. This resulted in initial incomplete ITN being issued to Infraco and delays to procurement and more ITN Technical Questions (TQ's) as a result of the quality issues. I believe it would have been beneficial to all parties, if more time had been taken to undertake early market engagement on the planned procurement approach to the Infraco works and take this market information into account to attract more Bidders and give them a flexible structured approach and more realistic bidding period. To improve the overall quality, to take cognisance of the system wide design interfaces, the critical design issues / charettes issues impacting the route, and the TIE-SDS design matters and associated risks / uncertainty, at the time. To improve and to finalise the ITN documents, ensuring that as far as reasonable practicable they were 'back to back' and compatible with the already signed SDS and Mudfa contracts, prior to issue. A collaborative approach based on early market engagement with the Bidders, more realistic structure with flexibility and longer tender periods to reflect the complexity, risk and uncertainty of the Project, to improve quality of the bids, management of risks, uncertainty, costs, changes and issues.

B: The Procurement Strategy

A procurement strategy for the tram project was devised whereby separate contracts would be entered into for each of the design, utility diversion, infrastructure construction and tram vehicle works, with novation of the design and tram vehicle contracts to the infrastructure contractor on completion of the infrastructure contract (compared with a conventional design and build contract).

1. What are your observations in general about TIE's procurement strategy and the way it was implemented? Have you seen this contract structure used elsewhere? How else could it have been approached?

   I started on the Project in August 2006, I was not provided with a copy of the TIE procurement strategy. I was advised that the procurement strategy was based on the other Tram Projects.

   I was provided with an analysis of the TIE suite of Contracts by DLA (refer to Evidence Document CEC01859952). This document identified the structure, approach and complexity of the planned suite of TIE contracts and the interfaces, inter-dependencies and alignment between the key TIE contracts on the Project.

   There was a planned suite of TIE bespoke contracts (CEC01859952) on the Project for the design of the network (SDS), tramcars (Tramco), utility diversions (Mudfa), traffic modelling (JRC), construction and maintenance (Infraco), the operator (Transdev) and Technical Support Services (TSS) contract.

   The SDS contract was an output based bespoke design services contractual structure with key milestones and staged deliverables, transfer of design and delivery risks to the SDS consortium of private sector design providers, led by Parsons Brinckerhoff. In the case of the SDS contract the designer was responsible for the design of the Tram route and obtaining all necessary

approvals and consents and in the process, managing the risks. The contract was based on outputs and staged deliverables, with key milestone dates by which SDS had to achieve the Requirements Definition (RD), Preliminary Design (PD) and Detail Design (DD) Phases of the Project. The delivery of the outputs triggered the payment mechanism in the contract. TIE would only pay for the SDS design work when the output had been achieved at the key milestone.

From CEC01859952, Mudfa was bespoke contract based on the ICE 7th edition agreement for the utility diversions construction works with BOQ scope of works with lump sum milestone payments. The design requirements were by others under the SDS contract. Infraco was for the completion of design (by others under the SDS contract) and the construction of the Tramway with a maintenance agreement, based on the BOQ, design and scope of works available in ITN.

From CEC01859952, the plan for the Infraco contract was a bespoke contract with design and delivery of the Trams, system integration and maintenance for 3 years construction with 6 years or 30/35 years if there was PFI funding available. In part 15 the plan indicated lump sum milestone payments, BOQ and fixed operating costs as the basis. I do not know what was actually delivered and realised through the Infraco ITN and procurement process, as I was not involved in the Infraco procurement, negotiations or the construction process.

The Tram Project had a disaggregated traditional procurement approach as the contracts were procured and negotiated separately rather than as one integrated SPV. The risks and uncertainty associated with the Tram system designs, the gaps, interfaces and interdependencies had increased across the TIE contracts.

The planned TIE suite of bespoke contracts were large and complex and as such they required specialist skills and knowledge to manage the complex contracts, understand the risks, uncertainty, the obligations of the parties, the

stakeholders and the complex interfaces, interdependencies and gaps arising between the contracts. As well as knowledge and understanding of the impact of changes to design risks and uncertainty from one contract to the other TIE contracts. Contracts, which are all disaggregated, procured and negotiated separately, on different timelines and with different parties negotiating and awarding the contracts, will all have different risk profiles, priorities, milestone dates and T&C's. The gaps, interfaces, interdependencies, issues and timescales will require more management resources, during the contract management phase of the Project to manage the contracts. The changes to the Project programme and prioritisation of the route network sectors, the critical design issues and charettes issues were all impacting on the Project at the time, the contracts were being procured. In 2007, it was clear, that some changes would be required to the TIE contracts to align them and ensure that they were all compatible and deliverable. These interfaces and alignment matters were identified several times at my level and escalated several times to senior management for actions and decisions. (Refer to CEC01786335 document – SDS Scope – Mudfa contract and CEC01859952).

The PPP approach to large infrastructures has not been successful in London, with the Metronet PPP, Tubelines PPP and Croydon Tram all being in sourced at significant cost to the Public sector.

In the last few years, there has been new research undertaken on why large infrastructure projects are delivered late and significantly over budget (Oxford University, University College London and Imperial College London). Oxford University's, Said Business School, Professor Flyvbjerg and colleagues have published research on how to improve infrastructure delivery with new approaches to delivery which embrace innovation and flexibility from the outset of the Projects to control and manage change and costs over the life of the Project. These approaches have been successfully used at Heathrow T5, Crossrail and on London 2012. The new approach is based on innovative, flexible partnering arrangements with the sharing of risks and more flexible incentivised cost plus contract arrangements, to manage and control the risks and uncertainty, embrace new technology, innovation to drive sustainable

solutions and more effectively manage changes and costs over the project life.

2. What was your understanding of the main features of the procurement strategy?

My understanding of the main features of the procurement strategy was that a suite of bespoke contracts had been developed (SDS, MUDFA, Infraco, Tramco, JRC, Transdev) for the Project, The TIE route to market was that they would all be procured and negotiated separately through a disaggregated, contract by contract procurement approach. I believe they thought this approach would result in reducing risks and costs.

The Transdev operator contract was procured and signed first, followed by the SDS design contract, the TSS contract and the Mudfa Utilities contract. The Infraco construction contract and the Tramco tram vehicles contracts were still in procurement in August 2007, when I left the Project. I believe the plan was for the early involvement of the designer and the operator on the Tram Project and the novation of the SDS designer and design risks to Infraco, before the Infraco contract award. In my opinion, this increased the risks associated with the designs, the uncertainty, the gaps, the interfaces and the interdependencies across the TIE suite of contracts and the overall Tram system integration.

The Procurement Strategy was developed by others, prior to my involvement in the Project. I was not involved in the Procurement process for any of the TIE Contracts.

3. What was your understanding of the importance of achieving (i) a "fixed" price for the infrastructure contract (and what did you understand the term "fixed" to mean) and (ii) a transfer of design risks to the private sector?

The TIE Commercial Director, Geoff Gilbert, was responsible for managing

the Infraco procurement process. I was not party to the discussions or his definitions of 'a fixed price for the infrastructure contract'. The definitions should be included in the Infraco ITN, and these definitions are important to this context and the Infraco procurement process.

In my opinion, the meaning of 'fixed price' in this context is ambiguous (refer to CEC01859952) and I would need to refer you to the definitions in the Infraco contract for the Infraco context meaning and to those involved in the Infraco procurement process.

My view of a 'fixed price contract' is a contract, where the price and scope are agreed and fixed between the parties before entering into the contract, before the contract award and before the construction starts. The fixed price contract would be based on agreed scope and the price would be fully inclusive of all costs, overheads, profit, risks, inflation, labour, plant and materials required to execute the contract. I believe that they are generally reserved for simple contracts of short duration, where the scope is known from the outset and it will not change during the contract period. In my opinion, the Infraco contract was complex, with many potential areas for scope changes in construction from SDS and MUDFA. There was a high level of risk and uncertainty from the outset with gaps, interfaces and inter-dependencies between the contracts. As well as the likelihood of scope changes and variations during construction and the high risks of unplanned unforeseen works from the outset, due to the context of the Project delivery through Edinburgh city centre.

My understanding was that the Infraco contract was 'to complete the design and to construct the tramway based on the scope of works set out in the ITN'. TIE's intent was to pass the design and construction risks to the Infraco private sector consortium of contractors, by novation of SDS to the Infraco contractor. In this concept the SDS design risks would transfers to the Infraco contractor and their contract, subject to the Infraco contractor accepting all the SDS risks or negotiating design risk adjustments, into their contract T&C's during the Infraco procurement process.

In August 2007, the Project change log set out the changes to the Project and the SDS contract. At this point in time, there were SDS design issues with key structures, junctions and interchanges still being developed. TIE had issued a number of changes to SDS between October 2006 and August 2007. The initial Infraco bids were based on earlier versions of the SDS designs and the design prioritisations were also changing. It was highly likely that these design issues would result in further changes to the route designs, increased risks and associated cost increases and delays to the approvals and consents. At some stage in the Infraco procurement process, pre award and pre-construction, the SDS, Mudfa and Infraco scope and contracts would need to be aligned. In my opinion there are no major projects, where changes to the scope of works, have not been encountered , so it is highly unlikely that the complex Tram Project would be 'fixed price' for the duration of the construction phase with no changes to the contract value.

Refer to Evidence document WED00000614 TIE risk plan for November 06 which sets out the key risks on the Project. The risk plan was complex with high (red), medium (amber) and low (green) risks transferred to SDS, some risks were shared between the parties and some risks remained with the TIE/CEC, as they were best placed to manage these risks.

In August 2007, there were a number of critical issues impacting the SDS contract which related to critical design matters and charettes issues (refer to Evidence document WED00000617) which related to critical structures, junctions and interchanges, in the control of others, out with the Project, and in some cases out with the Tram Bills demarcation lines (LOD). It is highly unlikely that the design risks for these matters could be transferred similarly there were some Mudfa risks which were in the control of the Utility companies (i.e. where the utilities diversions were actually located and providing their record drawings). This was not the SDS designers' risks nor was the unforeseen underground matters, which always arise on construction projects particularly in historic cities and are generally shared risks.

The Project was a complex programme of projects and as such the interfaces and interdependencies between the TIE contracts were very complex, especially between SDS, Mudfa and Infraco and these interfaces and interdependencies were likely to give rise to changes during the design and construction phases. In light of the interface issues between the Mudfa and SDS contracts highlighted in the question 5 above and the ETI document **CEC01792024 and CEC01786335.**

I was not involved or responsible for the Infraco procurement process or the Infraco construction works. I was not involved or responsible for the Mudfa procurement and I was not managing the Mudfa construction works. I was not involved or responsible for the Tramco procurement process and I was not managing the Tramco works. I was not involved in the SDS or JRC procurement. I was not involved in the TSS procurement process.

4. In your opinion, who had overall control over and oversight of the implementation of the procurement strategy?

In my opinion, overall control and oversight of the procurement strategy was provided by the Tram Project Board, who had delegated authority to deliver the Project from CEC and TEL. DLA were TIE's legal advisers on the procurement strategy.

In my opinion, Project delivery and implementation was under the control of the TIE Project Director who was responsible for delivery of the Project as a whole. He was supported by the other TIE Directors, MUDFA Director and the Commercial Director on implementation of the procurement strategy. The Board would have reviewed and approved the procurement strategy, in line with governance arrangements and delegated authority rules, at the time the strategy was developed. (Refer to ETI doc CEC01355258 for Board approval of the procurement strategy (section 06.04)

C: Design – SDS Contract

The SDS (System Design Services) Contract was entered into between TIE and Parsons Brinckerhoff (PB) in September 2005.

It was hoped that the "early involvement of the designer would reduce the planning and estimating risks that bidders for the infrastructure contract are exposed to and so will contribute to eliminating the substantial risk premium they would charge", TIE Board Meeting papers dated 20 June 2005 [**TRS00008522** page 66].

By way of overview:

1. What was your understanding, after you joined TIE of the extent to which detailed design would be completed, and statutory consents and approvals obtained, before the infrastructure contract was signed?

   The SDS contract programme was re-baselined in April 2006. The SDS programme of 29th June 2006 set out the planned dates for the SDS Design deliverables and completion of the SDS design contract at that date by sector. The Programme did not have a date for novation of SDS to Infraco. The SDS Programme indicated that the construction period was last Qtr 2007 to last Qtr 2009. The detail design approvals and consents would need to be completed before the novation of SDS to Infraco, before contract award and before construction started. The Programme indicated that the Infraco construction works were planned to start on last Qtr 2007. It would be reasonable to assume, from the Programme, that the novation of SDS to Infraco was planned to take place around September 2007. The SDS programme would only be expected to have an indicative date for novation as the 'date of SDS novation' was part of the Infraco ITN procurement process, which started in October 2006; It was unclear, when, Infraco would accept novation of the SDS design team and the design risks, which would transfer to the Infraco contract.

   The approvals process for SDS detail designs included the early submission

of detail designs to 'CEC for the prior approval process', which included a period of 40 days consultation, followed by 40 days for CEC prior approvals period. The Tie approval period for the SDS detail design, in the SDS contract was 20 days, the same as the period for Preliminary Design.

There were also areas of the Tram network, which required separate planning applications and these had different approvals periods, for example for the works at the SRU rugby training pitches. The third party agreement consents, Network Rail, Edinburgh Airport, and SRU all had different approval periods.

Note that the tram route and sector priorities in the SDS contract were changed as a direct result of the charettes and the critical design issues. Note also that TIE procurement team (during the Infraco procurement from October 2006 onwards) Geoff Gilbert, instructed SDS to accelerate 3 key structures, the Water of Leith, Roseburn Viaduct and the Murrayfield Underpass structures. Note that the SDS utility design priorities were different to the Mudfa utilities contract priorities, which were developed and changed by Susan Clark and the Mudfa team.

The plan, from the outset was that the SDS detail designs, approvals and consents would be substantially completed by SDS, before they were novated to the Infraco contractor. The exact date for the novation was not identified in the SDS contract or the SDS Programme. All the necessary planning approvals would need to be in place for the construction works to commence on the relevant programmed sector, after the planned start of the Infraco contract and construction in late 2007.

The TIE Director of Approvals and Consents was responsible for the approvals and consents programme, managing the key stakeholders, third party agreements, interfaces and associated risks.

I was not involved in the Infraco procurement. This was led and managed by the TIE Commercial Director and the procurement team. There were many meetings during the Infraco Procurement process and the procurement team

managed the flow of information and data to and from the Bidders and key stakeholders, including SDS throughout the process.

2. Which body or organisation was primarily responsible for managing and obtaining the views and agreement of the different stakeholders (e.g. CEC, the Statutory Utility Companies and other third parties)?

TIE, was responsible for delivering the Edinburgh Tram Network. TIE was responsible for managing the Project and obtaining the views and agreement of the different stakeholders under the TIE suite of contracts.

The TIE Project Director Mathew Crosse had overall responsibility for Project delivery and system integration. Susan Clark and the MUDFA team were responsible for delivering the MUDFA contract. Trudi Craggs Director of Approvals and Consents was managing the third party agreements consents and team. The Commercial Director Geoff Gilbert was managing the Infraco Procurement, cost estimates and commercial management. Steven Bell, Director, was managing the Infraco Procurement and technical engineering. The Finance Director was managing the delivery of the Business Case, assisted by Mr Alastair Sim who was managing the Business Case Traffic modelling and the third party land agreements. David Powell was managing the Tramco procurement.

CEC were responsible for the statutory approvals and consents, the land acquisition programme and compulsory purchases. TIE/CEC were responsible for the third party agreements consents.

SDS was responsible for the design of the Edinburgh Tram Network. This included identifying the existing utilities on the route, undertaking surveys (SDS-Halcrow), managing the utility design information from the utility companies and developing the designs for utilities diversions in accordance with the SDS contract requirements. The Utility companies were responsible for identifying the existing utility routes and providing the

existing 'as built drawings'. SDS were responsible for designing the utilities diversions outside the Tram network route.

3. Which body or organisation was primarily responsible for ensuring that the design proceeded to programme?

SDS was a consortium of designers (Parsons Brinckerhoff, Halcrow, Ian White Associates, Cordoroys, Quill Power Communications, Steer Gleave Davies (SGD). The SDS design consortium was led by Parsons Brinckerhoff, who were primarily responsible for the management and delivery of the design for the Tramway, under the SDS design contract, in accordance with the key project milestones for Requirements Definition, Preliminary Design and Detail Design, set out in the SDS contract.

As TIE's SDS Interim Project Manager, I was responsible for managing the SDS contract, the TIE-SDS interfaces and reporting actual v planned progress against the key milestones and deliverables. The TIE Project Director, Technical Directors and TIE in-house design team were managing the Preliminary Design (PD) and Detail Design (DD) process and reviews, the complex design matters, the design charettes with CEC, SDS Directors and the key stakeholders. TIE's shadow design team TSS reviewed the SDS contract programmes, analysed the work breakdowns, earned values and reported progress on sector by sector basis to me. The programmes were on Primavera and were very large and complex. Only a few members of TIE/TSS and SDS staff had access to the primavera software. The key issue was that the programme was regularly re-baselined by SDS, dates changed, which did not assist TIE in the analysis of progress and as such key deliverables dates shifted.

4. What was your understanding of the main difficulties and delays that arose with design and the main causes of these difficulties and delays?

My understanding of the main difficulties and delays that arose with design and the main causes of these difficulties and delays are

summarised in the Table 1 below:

Table 1 - Main Difficulties and Delays with design	Cause of Difficulty
1. The SDS design contract was signed on the 19th September 2005, approximately 3 months later than planned, due to prolongation of the SDS procurement process. SDS delayed signing the SDS contract (refer to WED00000616)	TIE & their advisers responsible for the procurement process delays. SDS – 2 week delay due to SDS late changes to contract T&C's and Parent company guarantee
2. SDS took much longer than originally planned to resource the Project (refer to DOC PBH00003564).	SDS capacity issue resourcing project
3. The Requirements Definition Phase was delivered 1 month later than planned and the review and resubmission process took a further two months.	SDS - I -3 months. This was SDS capacity Issues with resourcing the Project which impacted on quality of the RDP documents.
4. The Preliminary Design started later than planned due to the delays to the Requirements Definition Phase.	SDS - Due to initial delays to RDP period impacting on start of Preliminary design and it took longer than planned with concurrent delays.
5. The charettes and critical design issues impacting on key structures, junctions and interchanges along the route and need to engage with external stakeholders out side TIE/CEC on these matters. i.e. Network Rail, SRU, Edinburgh Airport. Leading to concurrent delays.	TIE/CEC/SDS/external stakeholders The causes were alignment issues & road layouts at key structures (SRU), key junctions (Haymarket, Princes Street, St Andrews Square) and interchanges (Haymarket, St Andrews Sq) and the constraints of Tram Bills demarcation lines, impact was concurrent delays on various sections of the route.
6. The re-prioritisation of key structures for the Infraco procurement process.	TIE / Infraco -This impacted on SDS design deliverables Programme
7. The re-prioritisation of the Mudfa contract requirements.	TIE MUDFA - This impacted on the SDS utilities design deliverables programme

The critical design issues and charettes impacted on the ability of SDS to conclude sectors and reach key design milestones. A number of these complex design issues related to key structures, junctions and interchanges along the network route and required 'options' to be developed and discussed with multiple external stakeholders and third parties, before the preferred design option could be progressed. Notwithstanding this, most of the early delays were attributable to SDS.

Refer to the CEC01629701 – Close Out / Handover Report and CEC01629700 - TIE Claim August 2007 dated 20th August 2007 and Critical Design Issues (WED00000617).

In Table 2 - CEC01629700 - Tie – SDS claim Aug 2007, highlighted the early delays to the SDS contract from contract signing in September 2005 to submission of Preliminary Design in June 2006. The contract programmes included planned hours based on Line 1, Line 2, and Line 1 and line 2 combined programmes. The total hours included in the SDS bid were as follows:

Tram Network	**Total Hours (Planned Value)**	**Relevant Period**
Line 1	204,375	27th April 2005 to 28th February 2007
Line 2	106,275	27th April 2005 to 28th February 2007
Line 1 & 2 combined	269,775 (this included a combined reduction of 40,875 hours, c15%)	27th April 2005 to 25th October 2007 completion date

The estimated resources planned by SDS were considerably different to the actual resources deployed (earned value) throughout the SDS contract.

SDS delivered the initial Requirements Definition Phase (RDP) documents, in December 2005, which was 1 month later than planned. RDP Documents were submitted by SDS to TIE. TIE, TSS and Transdev all reviewed the RDP documents in January 2006. In their opinion, the quality of the SDS documents were considered to be below the required standards, generic and not Edinburgh Tram Project Specific.

I believe, the Records of Review were issued to SDS on 19th January 2006 for SDS to resubmit. SDS had to revise the documents from 20th January 2006 and resubmit these to TIE/TSS for further review. The record of review at end February 2006 identified that some of the documents required 3 submissions and three records of review. This caused a further delay to the Project of 2 months for the resubmissions of the SDS Documents and the TIE, TSS and Transdev second and third review of the documents.

I believe, in January 2006 - Line 1 and Line 2 changed to Line 1a and 1b, with the Granton to Leith loop and the Gogarburn to Newbridge branch deleted. The RDP milestone completion certificate was issued at the end of January 2007, on satisfactory completion of the Trackform Technology Review Document. The majority of the RDP phase was completed at the end of February 2006, several months before I joined the Project.

From the records, the Preliminary design was submitted by SDS on the 30th June 2006. TIE reviewed the Preliminary Design and the first Records of Review were issued to SDS from late August 2006 and more during September, October and November 2006.

5. What steps were taken to address these difficulties and delays?

Project management progress meetings were held with TIE, SDS, TSS and Transdev. The updated SDS Programme with planned v actual progress was requested based on the re-baselined SDS programme from

the end of April 2006 and end of June 2006 and it was received late.

In December 2006 TSS published the Preliminary Design Review Report (PBH00008726) to validate the SDS Preliminary Design on behalf of TIE. The report overall conclusion (last line executive summary) is *'that the bulk of the Preliminary Design submission' is acceptable'*. From this Report (2 Design Process, section 2.2 – Process):

PBH00008726 should be CEC01810576

- Paragraph 1, identifies that *'the documentation was distributed by the Tie Design Management team to respective reviewers'.*
- Paragraph 2, identifies that *'Despite the means in place to control the process, it appears that there was some confusion regarding the co-ordination of the feedback to SDS. The problem was typified by the loss of review sheets and lack of ownership of some of the comments made, particularly on drawings'.*
- Paragraph 4 identifies that *'By mid October it became apparent that the overall review process was in somewhat disarray and required to be closed out with SDS'.*

I believe regular project management progress meetings and engineering design meetings were held with SDS and to close out the Preliminary Design issues it was agreed that SDS would prepare an actions spreadsheet with all the issues identified, in the report and with the timescales for resolution of these issues. SDS agreed to prepare this for 22 Dec 2006 and it was finally received in January 2007. During January and February 2007 meetings were held and SDS updated documents, drawings and schedules to close out the issues. SDS achieved the Preliminary Design milestone later than originally planned. SDS commenced the detail design after submitting the Preliminary Design, but before closing out the Preliminary design phase.

High level meetings between TIE Chairman/CEO and the SDS Parsons Brinckerhoff Directors in New York in October and November 2006 resulted in SDS action plans (refer to CEC01797353 SDS action plan and

SDS Greg Ayres to TIE Willie Gallagher meeting note 7 November 2006).

6. Were these steps successful (and if not why not)?

The critical issues log and the design charettes assisted in progressing the Preliminary Design and the Detail Design. The continual meetings, ongoing dialogue and management of SDS and the deliverables were improving. However, SDS continued to agree dates and then not achieve the deliverables or all the deliverables in accordance with the agreements. SDS would then update/revise the dates in the SDS programme, which made it difficult to analyse the actual impact of the concurrent delays. At the High level meetings between TIE Chairman and Project Directors and the SDS Directors, they agreed action plans (refer to CEC01797353 and SDS Greg Ayres to TIE Willie Gallagher meeting note 7 November 2006) but SDS failed to achieve the deliverables by the dates agreed in the action plan.

7. Were these steps sufficient (and if not why not)?

The critical issues and design charettes were causing blockages and concurrent delays to the SDS design development process. These matters were complex and many related to key structures, major junctions and interchanges (i.e. Haymarket Interchange, Balgreen, Gogar, Murrayfield) on the route, multiple stakeholders and third parties out with TIE/CEC i.e. Network Rail, Edinburgh Airport, SRU, RBS and in some cases out with the TRAM Bill demarcation lines. These were issues which SDS could not be expected to solve on their own without TIE & CEC's assistance and the engagement from the relevant key stakeholders and third parties. These critical issues and charettes were fundamental to the delays to the Preliminary Design and Detail Design. They were not the sole responsibility of SDS as they involved TIE & CEC and many external stakeholders such as Network Rail, Edinburgh Airport, SRU, RBS and

third parties agreements and consents. Some of these matters were under the control of TIE/CEC and their advisers.

8. What was the design programme when you joined TIE? What changes were made and why? Did you consider that the design programme was realistic? To what extent was the design programme driven by the procurement programme and/or by grant/funding timescales?

Refer to the SDS Programme dated 29 June 2006. This was the SDS programme in place, when I started in August 2006. It had been re-baselined by SDS in April 2006 (refer to CEC01701162, p4 section 1.0), before I started on the Project.

Some changes were agreed to the SDS programme to take into account the impact of the critical design issues and charettes and the requirements to re-prioritise the design of 3-5 key structures (Murrayfield area Water of Leith Bridge, Roseburn Viaduct, Murrayfield Underpass and Edinburgh Park Viaduct and A8 underpass) for the Infraco procurement and to re-prioritise the some of the sectors on the route, to enable the structures to be accelerated. There were also changes in the priorities to key sectors, namely Princes Street, which were driven by CEC and some changes to sector priorities driven by the Mudfa team.

It was a system wide contract programme for the SDS design and included the key milestone dates, procurement dates and approvals dates.

9. The provisions of your report entitled "Tram Project Improvements" [Doc **CEC01799542**] dated 17 January 2007 appear to go wider than the SDS Contract. What was the origin of this report, particularly in relation to the strengths and weaknesses of TIE in section 6 and TSS in section 7. Can you say who instructed the preparation of this report and what was the response within TIE to it? Were the recommendations implemented and if not why not?

In January 2007, the new Project Director, Mathew Crosse commenced working for TIE. He instructed me to prepare the report in the format of a gateway review, as I was a gateway reviewer. The issues and improvements were identified from meetings and communicating with key staff and asking their views at the time and then summarised them in the report. As TIE's interim SDS Project Manager working on the day to day issues with SDS, I had been involved in the high level critical issues discussions with SDS directors and TIE and implementation of the agreements which were made before the previous Project Director (AH) left the Project. Refer to Evidence Document CEC01797353– SDS actions plan Nov 2006.

At this point in time (January 2007), three technical engineering directors started on the Tram Project, SDS was bringing in a new director above the existing directors and managers. It also became apparent that there were a number of wider strategic issues which were impacting on the Project, many were system wide and in some cases outside TIE's control, the design charettes, structures and critical issues. CEC and Network rail needed to discuss the charettes options and structures with their stakeholders and this needed time and placed some of the design options, Haymarket Interchange on hold, this was after agreements had been reached at the joint meetings, thus impacting on SDS, Mudfa and all the TIE procurements processes for Tramco & Infraco.

10. The report recognises that there were failings by TIE including lack of planning in the "design team". Is that the design team in TIE or PB? It notes that TIE did not expect PB to deliver the preliminary design on 30 June 2006. Why was that? What was the significance of that date and do you know what efforts were made by TIE to try to secure delivery?

The report was requested by the new Project Director to provide a summary of the current and historical organisational and operational issues which were hampering the effective delivery of the Project. The report sets out potential Project Improvements which could be implemented across the

Tram Project as a whole to enhance the prospects of delivering a successful Tram Project. I had collated the information and issues from discussions with the key parties in TIE's offices and summarised it in the report.

CEC01792289 should be CEC01810576

Note that the CEC01792289 - TSS Preliminary Design Review Report published 6th December 2006, section 2 Design Process, acknowledges that there were issues with the TIE in-house design team / TSS preliminary design review process i.e. *'there was some confusion regarding co-ordination of feedback to SDS', 'by mid-October the overall review process was in somewhat disarray'.*

After I started on the Project in August 2006, it was evident that the Project had already been restructured with the governance arrangements changing and key staff leaving, with a new Board Chairman/CEO and Project Director arriving. The Project had incurred delays, design issues and cost increases, as well as TIE not reviewing the Preliminary design within the timescales set out in the SDS contract.

11. In respect of the lack of planning and why TIE was not ready nor what efforts were made to secure delivery.

Refer to TIE's Project Director Mr Andrew Harper or TIE's in-house Design Manager or TSS for information on the lack of planning for the Preliminary Design Review, as this was prior to my involvement in the Project. The PD submission would trigger a significant payment milestone in the SDS contract.

When I started in August 2006, I was advised that TIE was not ready to receive the SDS PD at the end of June 2006. They had not planned or resourced the design review period during the summer holidays in July 2006, as they apparently did not expect SDS to submit the PD. The TIE Design Manager, TSS Manager and Transdev were all involved in the RD and the PD stage. The lack of planning highlighted that communications had broken down between SDS and TIE. The in-house design team TIE/TSS

perspective was that SDS had not submitted a complete PD design and had not achieved the key PD deliverable.

SDS commenced the detail design (DD) after the PD submission and continued to liaise with TIE on PD matters. This created confusion between the parties involved in the technical engineering design reviews.

12. Were your recommendations acted on and did they lead to improvements? If so what?

The recommendations were not acted on at the time. Refer to Project Director Mathew Crosse on the reasons why the recommendations were not implemented.

13. It appears that as far back as November 2005 TIE had issues with Brinckerhoff (PB)?

There were issues from the start of the SDS contract in September 2005. Refer to document PBH00003564 in next section Part D and documents WED00000616 and WED00000615 – TIE, SDS, and DLA email chains September 2005.

D: Design - Parsons Brinckerhoff

1. What were your views on the performance of Parsons and concerns about the SDS Programme (doc **PBH00003564** – letter from David Hutchison of PB to Ian Kendall of TIE dated 11 November 2005). Were you aware of these challenges when you joined TIE and at that time were you applying your mind to how they might be addressed?

I joined TIE in August 2006, I was not aware of any of the details or the key issues between TIE and SDS or the Project issues at that point in time. Subsequently, I was advised that there had been a number of changes to key persons and that the TIE Project Director and Commercial Director had left. It became apparent, after I had started on the Project, that the TIE governance arrangements had already been restructured with a new TIE Board Chairman CEO and new Project Director leading the Project.

The Project had incurred delays (3 months+) from before the start of the SDS contract in 2005, during the procurement phase, although it was apparent that most of these delays were in TIE's control and were primarily not attributable to SDS. The RDP and PD delays were attributable to SDS.

The SDS letter dated 11th November 2005 (doc PBH00003564) indicates that there were delays to the Requirements Definition Phase. In this letter it states that *'TIE asked PB to report on the action's PB is taking to address TIE's concerns with the SDS Programme'.* SDS had signed the contract on 19th September 2005, two weeks later than planned and 8 weeks into the contract, TIE were raising concerns with the quality of the SDS programme and progress.

In the 2nd bullet point SDS state that *'the SDS programme will support the key milestones attached to TIE letter dated 31 October 2005'.*

In the 4th bullet point, SDS are stating that they will complete *'the logic of the programme to ensure that activities are linked and scheduled dates are*

correct in accordance with your (TIE's) revised programme of key milestone dates'.

In the 6th bullet point, SDS were agreeing *'to satisfy TIEs requirements for cost and resource loading the programme'.*

In the last bullet point 7, SDS state that *'further development will commence on 16th November 2005 on surveys, consents, TTROs. Cost estimates, approvals and preliminary and detail design activities'.*

At this stage, SDS were proposing ways to further develop the Programme to meet TIE's requirements and to deploy specialist resources to configure P3e version 4.1 on a PB computer in Edinburgh office. Due to the SDS resource capacity issues, the quality of the submitted Requirements Definition deliverables was impacted. Delays were incurred resubmitting RDP documents. This RDP time delay was never recovered on the Project,

More delays were incurred during the Preliminary Design Phase, which resulted in Project programme delays, increased costs and issues with the delivery of the SDS contract between TIE and SDS.

When I started in August 2006, I was provided with a copy of the SDS contract to read. I was briefed on the TIE SDS contract, brief history and the key issues by the new Project Director Mr Andy Harper and the Director of Approvals and Consents, Trudi Craggs. I was aware that the contract programme was embedded in the SDS contract. It was not the agreed programme as the original dates had slipped 3 months due to the procurement process delays. I was advised the programme had been re-baselined in April 2006, before I started but my understanding was that this had not been formally agreed with TIE but had been promoted by SDS, so the status was unclear. In fact when I started there was very little engagement from many within TIE and my instructions and directions were from the new Project Director and my line manager Trudi Craggs. The relationship between many SDS and TIE staff was not good and communications in many

cases had ceased. SDS was aggressively demanding the Payments for Preliminary Design (as this was a trigger for a large milestone payment in the contract. The SDS Payment Application No 10 (WED0000194) SDS cumulative Value of Work Done (VOWD) indicated £7.05m with £3.19m in value up to end of June 2006. SDS were aggressively demanding the payment certification in my first few weeks on the Project. Even although I had just started with TIE they were pressurising me to certify the Preliminary Design and release the payments. The issues were escalated to the Project Director for decisions as the Preliminary Design review was the responsibility of the TIE in-house design team and TSS. It was at this stage that it became clear that TIE had not met it's obligations under the SDS contract for review of the Preliminary Designs within the 20 days set out in the contract. Refer to evidence TIE00073022 - TIE SDS PM report September 2006.

I only became aware of the extent of the issues at the SDS procurement stage, the start of the SDS contract and the RDP stage, when I was instructed to review the historical records and prepare the claim against SDS from March 2007.

2. By October 2006, concerns regarding the SDS contract were seen as a "key risk to delivery of the Final Business Case" [doc **TIE00059601** – TPB Minutes of Meeting of Members, 23 October 2006].

(a) Do you agree?

The Final Business Case was managed by the Finance Director and the JRC contract manager / traffic modelling manager, Alastair Sim. I was not on the TPB. I was not involved in preparing the FBC.

No, I do not agree that SDS was the only key risk to the delivery of the Final Business Case. From reading the document TIE00059601, item 06.13.6 Primary Risk Register, the following statements support my views:

- Bill Reeves states that he 'was surprised that non compliance of the methodology with the Stag was not recorded as a risk'
- Mr Andy Harper states that *'the Business Case is ontrack for completion on time';*
- Infraco Bidders are also raised as a risk *'due to the timescales they are working to*

and quality of SDS specification'

- There is also statement that the *'detailed cost information for assessing the affordability of the Bids would not be available until January 2007'*
- SDS performance highlighted with *'both resource and quality of work being questioned'*
- In 6.13.2 Mr Andy Holmes requested that the *'Infraco documentation be amended to address wider area traffic disruption impact'*

It was not just SDS who were responsible for providing information for the Full Business Case, a key part was the traffic modelling. There were three traffic models. It should be noted that the same contractor Steer Gleave Davies (SGD) were the traffic modelling providers on the SDS and the JRC contracts. There were traffic modelling and run time modelling issues, on the JRC contract (SGD). Refer to TPB reports (doc CEC01355258, p17 – Risk Register (High red risks) '*JRC model is insufficiently robust to support the Business Case'*

There were also a number of issues with the development of the FBC, the operating costs, patronage levels, benefits and revenues needed to stack up and the tram needed to be faster than the bus. The key design critical issues, the charettes, the structures, key junctions and interchanges on the routes, the changed prioritisation and the increased times for construction, all impacted on the FBC, as well as the SDS design issues.

The FBC was predicated on the defined transport network modelling inputs from SDS-JRC contracts. There were issues with the traffic modelling (runtime and junction modelling due to critical design issues and charettes design issues) in the SDS and JRC contracts. There was a contractual requirement on the SDS Provider to be jointly and severally liable for the development of the SDS-JRC Modelling Suite. Refer to CEC01629699 and CEC01629701 - close out report on Project Controls dated 20th August 2007 with the details of the changes to both the JRC and SDS contracts.

(b) What actions had been taken to manage this risk?

Risk was managed through the TIE risk management plan (refer to WED00000614 - TIE Risk management plan November 06) with regular update reports. This version of the risk register identifies a number of high risks under the 'Business Case' for SDS, MUDFA, Infraco and JRC. In this November 2006 risk plan, there are a number of risks relevant to the business case i.e., Risks 263, 264, 266, 267, 268, 269, 273, 276, 280, 294 and 288. SDS, TIE and JRC team were meeting regularly and additional traffic modelling was undertaken by the parties.

There were changes to the JRC contract, refer to my close out report August 2007:

- JRC changes to contract CNJ001 to CNJ009, total value of £953,462;
    - CNJ006 business case modelling & appraisal 6th November 2006, value £204,013.
    - CNJ007 Modelling of TTRO's for Mudfa works, 6th Feb 2007, value £27,138.
    - CNJ008, traffic modelling impact, 24th January 2007 at £385,400 with note that additional funding was required for this change order.
- The Tram Board change Order CRB018 Runtime modelling, estimated value of £56,000 for SDS updating the operations and performance specification in accordance with Employers Requirements was not approved but in the change control system for approval.
- SDS changes CNS003 and CNS004 fro traffic modelling were withdrawn
- SDS changes CNS038 (SDS letter Sept/Oct 2006 & TIE letter 10.4.07) for additional traffic modelling, SDS claimed £463,632 and it was agreed at £240,000

(c) Those minutes highlighted major concerns in relation to both SDS resource and the quality of the work they were producing. In your opinion, did TIE effectively deal with these concerns? What did you do to address these concerns? Did you

receive any support or assistance?

The traffic modelling was managed by Mr Alastair Sim under the JRC contract. Meetings had been set up with the Project Director, Trudi Craggs, SDS and SGD and the key issues had been identified and escalated to the TIE Directors. Changes had been issued to alleviate some of the issues. The traffic modelling was complex and changes were agreed as an outcome of the meetings. I had escalated the issue to Mr Andy Harper, Trudi Craggs and Alastair Sim. The Project Director had escalated the matters to Mr Willie Gallagher who had set up a meeting in October 2006 and a further meeting in November 2006 with the SDS New York Directors. (Refer to SDS action plan - CEC01797353 and SDS Greg Ayres to TIE Willie Gallagher meeting note 7 November 2006).

There were a number of critical issues across the network route with multiple stakeholders, who all needed time to discuss the matters internally in their own organisations, to consider the risks and impacts of the potential options before making any key decisions on changes to tram route alignments/ road layouts. The EARL project was still on at this stage, Network Rail, Edinburgh Airport and SRU all had different approval processes, priorities and timescales. These were all outside of TIE's/CEC's control and impacting on the Project.

The initial delays to the procurement, before the start of the SDS contract and to the SDS Requirements Definition phase, were all on the critical path. The impact of these concurrent delays, since they were on the critical path was that all the interdependent activities on the critical path were also delayed. There was no acceleration to the programme instead it was re-baselined by SDS. The SDS Preliminary Design was later than planned and TIE encountered delays in reviewing the designs, this impacted on the Infraco procurement, which was extended. The MUDFA contract was delayed since the surveys and Utilities companies had taken longer than planned to establish the 'as built' drawings with the location of all the utilities. There were gaps in the TIE suite of contracts, there were changing prioritisations to the

route, the costs were increasing, there were funding gaps, the bus was faster than the tram and there were issues with third party agreements.

The TROs and TTROs process was delayed, traffic modelling and runtime modelling needed to be remodelled for the ETN junctions and route changes.

Due to the prolongation of the procurement process and issues before contract award (WED00000616), the SDS contract had started 3 months late in September 2005 rather than the originally planned June 2005. The Requirements Definition started later than planned and incurred delays; the Preliminary Design was later than planned. The Detail Design would be later than planned even if there were no changes to the designs and there were no critical design issues or charettes due to the RDP and PD delays. The charettes process took much longer than originally planned. The SDS directors made agreements with the TIE Chairman Mr Willie Gallagher and the Project Director, Mr Andy Harper (CEC 01797353 - refer to the SDS action plan); however SDS did not deliver to the agreed action plan. SDS also planned to work through Christmas holidays and TIE was asked to open the offices. It was disappointing to report that only one or two SDS and TIE staff attended and most did not attend the TIE office during the holidays, although they may have been working on deliverables elsewhere in the UK. This caused further delays to the SDS deliverables and the Project.

4. It is understood that PB staff working on the Tram Project were located at a number of different offices throughout the UK – see organisation chart (doc **TIE00207152)**. What impact if any did this have on the Project?

Working across geographical and cross functional boundaries, impacted on the communications, relationships, flow of information to and from SDS and TIE, the timescales, the quality of the deliverables and the design review. SDS had offices around the world with teams that specialised in particular aspects of the engineering designs, who were working on different time zones and codes. Managing issues with these remote teams and information flow

was challenging and added complexity to the Project.

5. PB appears to have co-located with TIE in October 2006. Who in PB co-located? Did this mean that PB staffs working on the Project were no longer located as shown on the organisation chart? Did this result in improved performance? If not why?

When I started on the Tram project in August 2006, the key SDS team were co-located in the TIE office. The office move and co-located and shifted the location of various teams into functional areas zones rather than SDS and TIE dedicated corners of the offices. This assisted in improving communications and work-flow but did not resolve all the design issues. In relation to the organisational chart I would hope that the chart was up to date and reflected those people who were working on the Project and based at TIEs offices and those in the other SDS offices.

There was a separate office at Leith for the TIE Mudfa team, co-located with their contractor AMIS. This arrangement created some barriers to communications for SDS, TIE and other stakeholders.

6. There appears to be a view that TIE failed to manage the design contract – see doc **CEC01355258** (TPB Papers 23 October 2006 - page 4 of 7 of the Progress Report) which records that TIE had to "control and manage the contract more effectively". Do you agree with that sentiment, even in hindsight?

TIE had issues managing the lead provider in the SDS design contract (Parsons Brinckerhoff) during the procurement pre award clarifications phase, before the contract was signed in September 2005. (Refer to WED00000616 TIE, SDS and DLA email chain September 2005). SDS were seeking significant late material changes to the contract T&C's and had issues with the Parent company guarantee. I believe, from the records that, TIE / DLA were refusing to accept the late change requests. This protracted the procurement process, delayed the award of the contract and delayed the signing of the SDS contract by 2 weeks as the parties met and resolved the issues. In hindsight, it is evident that these

matters impacted on the relationship and trust between SDS and TIE.

The contract was signed in late September 2005. SDS was slow to resource the Project during the Requirements Definition Phase to December 2005 and during the Preliminary Design Phase in early 2006. SDS was struggling to meet the contract resourcing levels/earned value.

There were delays to the surveys, project utilities, changes and interfaces with EARL, cost increases and delays to the overall Project. In spring 2006, the Project Director, and the Commercial Director, left the Project. They were responsible for the control and management of SDS from procurement, through Requirements Definition to Preliminary Design stage, along with TIE in-house engineering design team and TSS. The new TIE Board Chairman/CEO and Project Director restructured the Project, as a result of the delays and SDS issues.

When I started in August 2006, TIE had failed to review the SDS Preliminary Design, received on the 30th June 2006, within the timescales set in the contract (20 days). Refer to my TIE00073022 SDS PM report (Sept 2006). The TIE in-house Engineering Design Manager and TSS were responsible for the technical engineering design reviews.

In addition, if TIE had been controlling and managing the SDS contract effectively up to end of July 2006, then there would not have been a requirement for the Director to employ an Interim Project Manager for the SDS contract, in August 2006.

After I started on the Project, I implemented the project management processes, issues log, identifying, recording and escalating the key SDS design (issues which had not previously been collated and set out in an issues log). My initial issues logs developed into the critical design issues log in October 2006 to April 2007 - Refer to document WED00000617 - the critical issues logs.

My escalation of the SDS design issues resulted in the TIE Project Director and TIE Chairman /CEO meeting the SDS directors to address the concerns CEC01797353. These issues related to technical engineering design matters, which were the responsibility of the TIE in-house design team and TSS.

The TPB on 23 October 2006 highlighted that:

- 'A number of preliminary design issues required to be resolved and protocols established to close out these issues. It is TIE's intention to draw a line under the past events and set out what we require in preliminary design and overall programme requirements to completion of the project
- Control and manage the contract more effectively
- Prioritisation of SDS contract works and their approach to building fixings for the Overhead line electrification (OLE) and detailed design programme.
- Separate team for MUDFA Utility diversion works

The issues between TIE and SDS started before the contract was signed. SDS were not the design team who had designed the Edinburgh Tram route concept and taken the Tram Bills through the Scottish Parliament and did not have a prior working relationship with TIE. They did not have the knowledge of the draft Tram Bills and planned Tram networks.

Just after the contract is signed in September 2005, the records indicate that TIE and SDS are in dispute on what the agreed programme was, the milestone dates and deliverables.

From the records, TIE and SDS did not start the SDS contract with a collaborative partnering approach (refer to WED00000616 and WED00000615) and they failed to build the relationship and trust between the parties, which impacted on the management and control of the risks issues and the interfaces with the TIE suite of contracts.

I joined TIE in August 2006 reporting to Trudi Craggs and the new Project Director, Mr Andy Harper who had restructured the project and was starting to build confidence and relationships across the Project. I started to build on these improving communications, trust and the relationships with TIE/SDS. However there was little support in TIE, except from the Project Director, Mr Andy Harper and Development and Approvals Director, Trudi Craggs, who were my line managers. The culture in TIE at this time was to blame SDS for all the issues, even those matters which were out with SDS's control.

TIE's in-house engineering design team were not good at managing, co-ordinating or controlling the high volume and complexity of technical engineering design issues arising across the network. They were not good at keeping records of review or making decisions on the cross functional system wide issues, structures and key interchanges. They were slow to process and escalate the issues and interfaces with Network Rail, Edinburgh Airport SRU and the Earl project. They tended to work in technical silos and were not commercial. (Refer to CEC01792289 - the TSS Preliminary Design Review Report 6th December 2006, section 2 – design process and CEC00073022)

CEC01792289 should be CEC01810576

The TIE in-house design team and TSS shadow design team were responsible for reviewing the SDS designs. TIE had procured TSS as their shadow design team but there was no reference to a shadow design team in the SDS contract.

7. Where do you think the principal failings lay – with TIE or with SDS or with both, and why? What should have been done differently?

It would appear from WED00000615 and WED00000616 that the relationship between TIE and SDS were on the brink and adversarial before the contract was signed in September 2005.

It would have been better if TIE had updated the programme, the milestones

and key deliverables, before the contract was signed rather than including an out of date programme in the contract and expecting SDS to provide and update it post contract award. It would also have been better if SDS had consulted their USA parent company, on the contract T&C's and parent company guarantee issues before submitting their initial SDS tender. The commercial discount offered for combined line 1 and line 2, to win the SDS tender, of 40,875 hours (circa 15%), would also appear to have stretched SDS resources. It may be the reason for resource capacity issues and may not have been the best commercial strategy on such a complex major high risk design contract with long programme duration.

8. Doc **CEC01807896** is an e-mail exchange dated 28 and 29 August 2006 initiated by your e-mail proposing that all communications with SDS should be directed through you. Was this your decision or someone else's, and if someone else who? Why was this considered necessary?

It was good project management practice, to manage, control and co-ordinate communications through the Project Managers at SDS and TIE. As the interim SDS Project Manager, I was responsible for managing the contract (except the technical design) and I was the main point of contract for the SDS Contract. I was to become the named TIE representative in the contract.

It was necessary to implement controls and protocols to manage and co-ordinate the flow of communications to and from TIE/SDS so that the information/data went to the right people in TIE/TSS for action. It was also necessary to highlight the controls and protocols mechanisms and communicate these to colleagues on a number of occasions. There were multiple communication layers from TIE to SDS. It was SDS Project Manager, who requested that there be one point of contact at TIE as they were finding it difficult to manage the multiple layers of requests from various parties in TIE/TSS team.

It was an SDS contract requirement. The Project Director, Mr Andy Harper had confirmed to SDS that I was to be the TIE key person and representative

for the SDS contract, except TIE in-house design team matters. It was considered necessary at the time as SDS were receiving multiple requests from multiple parties in TIE and we needed to improve the management, control and co-ordination of the information flow and the responses.

9. How did members of your team react to this proposal?

Some TIE staff wanted to continue their existing ways of working and lines of communications, whilst others were fine and compliant following the project management processes and co-ordinated communications. Some TIE staff were less compliant and continued to act 'ultra vires' by not following the agreed processes and communications. The MUDFA team decided to set up separate MUDFA specific systems and processes.

10. Doc **CEC01797296** is a draft paper prepared around 13 January 2007 setting out options for addressing the perceived difficulties with PB's performance. Did you have any role in the preparation of this document and was it finalised and issued?

13 January 2007 should be 18 June 2005

No, I did not prepare the document. The document was prepared by the TIE Commercial Director, Mr Geoff Gilbert and his colleague Mr Bob Dawson, the Infraco procurement manager, without consultation with Trudi Craggs or myself. I do not know whether he finalised it or not.

I provided comments to the TIE Commercial Director, Project Director and Director of Approvals and Consents at an internal meeting, to discuss the paper. I believe it was not issued to SDS, as I was not instructed to terminate the SDS contract by TIE.

11. Option 1 is termination of PB's appointment. It is noted that recovery by TIE of its costs from PB "may prove difficult if PB is able to cite areas where **TIE** may have been complicit in the problems". Was it thought that TIE may be "complicit" and if so in what way?

Refer to CEC01629701 - Close out report and CEC01629700 - TIE Claim August 2007 which sets out 20 relevant events with SDS responsible for a

high number of them but not all of them. SDS had encountered delays to the Requirements Definition Phase, resourcing the Project from the start of the contract in September 2005 and this impacted on the quality of the Requirements Definition Documents. Preliminary design had started late due to the critical path delays from the Requirements Definition phase. TIE had failed to review the SDS preliminary design within the timescales set out in the SDS contract. The critical design issues, charettes, structures, key junctions, key interchanges and interfaces with EARL, Network Rail, Edinburgh Airport and SRU were outside the control of SDS and TIE. These collectively caused concurrent delays to the SDS design, whilst potential options were discussed, risks assessed and decisions considered by the external stakeholders. These were on the critical path and caused delays to the Project.

12. "Manage through" was option 4. Was this the option taken? If so why?

I believe, that these were the TIE Commercial Director and the Infraco procurement teams' paper prepared without consultation with the Project Director, Trudi Craggs or myself and not discussed with DLA. TIE Commercial Director to clarify the status/option taken.

As far as I remember it was an internal commercial paper for the, escalation of issues. The driver was the need to reprioritise the key structures at and near SRU Murrayfield, Water of Leith bridge, Roseburn Street Viaduct and Murrayfield Underpass for the Infraco Bidders, which would require Tram Board approval as additional costs would be incurred to accelerate the designs. The outcome was that SDS were instructed by TIE to accelerate the structure designs and the designs were delivered to Infraco during the ITN tender procurement process.

13. PB is a US based company. To what extent were senior management in the USA engaged in the project and to what extent did staff in the UK have discretion as to how the PB contribution to the Project was progressed? Were local PB staff able to make key decisions without reference to senior management elsewhere? How did this arrangement impact on delivery of PB's contribution.

Decision making was devolved to the SDS lead organisation Parsons Brinckerhoff, local Project Director. The SDS Parsons Brinckerhoff management team were involved from the UK and US on the key issues, claims and actions lists. It was a complex contract which started late (refer to WED00000616 and got off track very early on in September 2005.SDS struggled thereafter despite all efforts to make it work. SDS were slow to resource and mobilise the project. It would appear that they may have underestimated the resources required to deliver the Project and the bespoke design work required to deliver the Requirements Definition phase, Preliminary Design and the Detail Design phases across the historic city of Edinburgh.

14. Doc **[CEC01626391]** is an e-mail from you to Geoff Gilbert and others dated 10 May 2007 recording discrepancies between planned and actual start and finish dates and planned and actual hours worked. What were the cause and effect of these discrepancies? Is it a reflection on TIE performance or SDS performance or both? What was done in response to this report?

Table 1: Analysis of Contract Programmes dated 12th May 2005

Line / Sector	Planned Start[1]	Planned Finish	Actual Start +3mths	Planned Finish +3mths
Overall ETN line 1	1.7.06	28.02.07	1.10.06	28.5.07
Overall ETN line 2	1.7.06	28.02.07	1.10.06	28.5.07
Overall ETN line 1& 2	1.7.06	25.10.07	1.10.06	28.1.08

The Programme included in the SDS contract was out of date. The SDS contract programme indicated that the planned start dated was 1st July 2005. There were a number of causes of the programme delays.

- SDS procurement had taken longer than planned. (The procurement was under TIE's management and control)
- SDS had raised late requests for material changes to the contract T&C's and this had delayed the signing of the contract. (The late changes were under SDS management and control)
- The SDS contract was signed 3 months later than planned on 19th September 2005. (both TIE and SDS management and control)
- Mobilisation was two weeks and SDS started the contract on 5th October 2005 (SDS management and control)
- Note that these programme dates were based on the programme with Line 1 and Line 2 (at a later date in the process there were changed to line 1a and 1b).

The effects of the delay from Table 3 in document CEC01629700, were as follows:

- Delayed start to the SDS design contract (TIE and SDS contributed to delays – refer to WED00000616)
- SDS brought their 'Tiger team' into set up the Project
- SDS were slow to resource the Project (SDS management and control)
- SDS planned 53,213 hours for the Requirements Definition Period and the actual hours were 18,309 hours. (circa 1/3rd of the resources planned were deployed to the Project);(SDS management and control)
- SDS planned 51,975 hours for Preliminary Design and the actual hours were 185,347 (circa +350% of the planned resources were deployed), SDS management and control for contract works and TIE for the changes to the planned works (refer to change control log CEC01629699 and CEC01629701).
- SDS planned 164,588 hours for the Detail Design and 66,149 hours had already been deployed at 26 Oct 2006 (circa 40% of planned resources with 12 months detail design works still to complete on the planned programme). SDS management and control for the contract

works and TIE for the changes to the planned works (refer to change control log).

The overall effect and critical issues were that the SDS resources and actual hours worked/earned value (refer SDS Primavera programme outputs) were less than the planned hours in the contract.

The SDS bidding strategy included 40,875 hours discounted off the SDS total planned hours for the Line 1 and Line 2 combined Project.

The start and finish dates for key deliverables regularly changed on the SDS programme. They were not agreed changes by TIE. It was just the SDS approach and the way they recorded actual hours worked/ earned value through the primavera programme. The discrepancies were leading to slippages and delays on the programme and the Project.

I believe that SDS re-baselined the programmes in April 2006, (refer to CEC01791162, p4, section 1.0).

I do not know what Geoff Gilbert did in response to the report. I was continuing with the detailed analysis of SDS historical documents, the claims in my Project Controls Role.(refer to CEC01629700 and CEC01629701)

15. Doc **CEC01629700** is a draft document setting out the basis of a claim by TIE against SDS. This draft is dated August 2007. Did you have any involvement in its preparation given that by this time you were Project Controls Manager rather than SDS manager? Can you comment on the outcome of this claim?

I prepared the report and I carried out the thorough and detailed analysis of the historical data, information and records referenced in the report. (Refer to my CEC01629701 - Close out report and CEC01629700 - TIE claim August 2007).

I was the TIE interim Project Controls Manager and I was still responsible for the negotiation of the commercial changes to the SDS contract with the TIE Commercial Manager up to our delegated authority levels and I was instructed by the Project Director, Commercial Director and Mudfa Director to collate historical data and prepare the claim against SDS.

The historical documents, data, information and records, were reviewed and analysed and I prepared a summary report of the claim on behalf of the TIE Directors (Mathew Crosse, Geoff Gilbert and Susan Clark). In the **CEC01629700** - TIE Aug 2007 claim document, I identify the key issues, drivers and problems from the outset of the SDS contract (refer WED00000616), through the Requirements Definition, Preliminary Design and Detail Design phases and the 20 relevant events impacting on the SDS design and Programme.

When I finished at the end of August 2007, the claim was not agreed. SDS had submitted claims in March and May 2007. The TIE Commercial Director was keen to do a deal with SDS as the plan was to transfer SDS and the design risks to Infraco contractor through the novation of SDS to Infraco. At this point, the Infraco procurement process was still in progress and the Infraco contract was not awarded.

E: Design - Requirements Definition Phase

We understand that the Requirements Definition (RD) Phase took place between September and December 2005.

1. Although before your time, what was your understanding of whether that phase had been completed satisfactorily and whether any problem during that phase had been completed satisfactorily and whether any problems during that phase carried over to later phases?

   Refer to document CEC01629700- TIE Claim August 2007 for the detailed analysis of the SDS contract. Also refer to SDS letter to TIE ref PBH00003564 11 November 2005 in relation to SDS Programme delays. The timeline in Table A below is to assist in my response.

Table A: Relevant Activities to SDS	Timeline
Procurement of the System Design Services Provider commenced	March 2005
Bids submitted by three consortia	May 2005
System Design Services SDS award letter of appointment issued to Parsons Brinckerhoff	6th September 2005
Apparently SDS should have signed the contract on the 6th September 2005 however there was an issue with the parent company guarantee between Parsons Brinkerhoff UK and Parsons Brinkerhoff (US) and this caused a two week delay, before SDS signed the contract.	6th September 2005
The System Design Services (SDS) Agreement and contract signed	19th September 2005
SDS mobilisation / office set up period	From 7th September 2005
SDS start	5th October 2005
TIE SDS RDP workshop	5th October 2005
SDS submit RDP documents for review	December 2005
Tram Bills Line 1 and Line 2 concluded in Scottish Parliament	December 2005

TIE initial review of SDS RDP documents	January 2006
SDS resubmit RDP documents for review	January to March 2006
TIE review SDS RDP revised documents	February to March 2006

The signed SDS agreement included three TIE contract programmes all dated 12th May 2005 (10.42) for the 'Lines One and Two – System Design Services – Outline Design Programme'; one for Line 1, one for Line 2 and one for Lines combined had a start date of 1st July 2005 and a completion date of 27th October 2007. The start dates indicated in these programmes were the 1st July 2005, which was approximately 3 months earlier than the actual start date of 5th October 2005 or from the date the contract was signed of 19th September 2005. It has been assumed, from the historical records and signed contract, that TIE/SDS agreed the durations and sequence set out in this programme and that the dates all shifted by three months due to the procurement delays ($2^{1}/_{2}$ months) and late signing of the contract (2wks). This would need to be verified by TIE or DLA who managed the procurement process.

From the records, SDS started the mobilisation period to set up their Project offices at PB Glasgow office and Halcrow Edinburgh office and to resource the Project in late September 2005. From the records, SDS were slow to resource the Project (52,213 planned hours) and SDS provided about a third of the planned level of resources (18,309 hours / earned value recorded) within the RDP planned timescales, indicated in their resource schedule in the SDS contract. This impacted on the quality of the Requirements Definition Phase documents.

At the start of the SDS contract, during the Requirements Definition Phase, there were three separate and distinct work-streams ongoing within TIE:

- Parliamentary Tram Bill Team (TIE, D&W, Faber Maunsell and Mott Macdonald)
- Design Team Support for Parliamentary Bill (Faber Maunsell, Mott

Macdonald and TIE)

- Procurement and Delivery of SDS and DPOFA (TIE, DLA,TSS)

At the time SDS commenced Requirements Definition Phase, the Tram Line 1 and Line 2 draft Bills were proceeding through the Scottish Parliament. The Tram Line 1 and Line 2 Bills were concluded in December 2005 and received Royal Assent in April 2006. This was during the SDS Requirements Definition Phase from September 2005 to December 2005. The Design Information relating to the development of the Tram Acts and removal of objectors comments were facilitated by TIE's consultants Faber Mausell and Mott Macdonald. Any Design development information was supposed to be fed through to the TIE / SDS procurement and delivery teams to support the Requirements Definition Phase. I was not involved in the Tram Bills process nor asked to review the impact of any changes arising from the Parliamentary Bills process on the SDS contract. From the records, an initial Requirements Definition start up meeting was held on 5th October 2005 between TIE, their advisers and SDS. The historical records indicate SDS were provided with a re-issue of the relevant documents issued to them during the procurement stage, along with some additional documents. SDS were responsible for the review and assessment of the relevant and non relevant information for the development of the SDS design under the contract. TIE facilitated a further workshop to assist in this design development process, as SDS had not been involved in the design work for the Parliamentary Tram Bills. From the records, a number of issues surface which impact on the relationships between SDS and TIE, during this period. In CEC01629700 - the Aug 2007 claim report, Table 3 is an analysis of the contract Programme for the RDP

Phase by Sector, indicating the planned start / finish dates and the actual start/finish dates and delays.

I believe from the records, SDS delivered the initial Requirements Definition Phase (RDP) documents in December 2005, 1 month later than planned. SDS submitted RDP Documents to TIE. TIE, TSS and Transdev reviewed these documents in January 2006. According to the historical records, TIE/TSS/Transdev considered the SDS RDP documents were generic and not Project Specific, in the Records of Review issued to SDS on 19th January 2006 SDS had to resubmit. From the historical records, the quality of the SDS RDP documents, were considered by TIE/TSS/Transdev to be unacceptable and below the required standards.

I believe from the records, SDS had to revise the documents from 20th January 2006 and resubmit these to TIE for further reviews. This caused further delays to the Project of 2 months for the resubmissions of the SDS Requirements Definition Documents and the TIE, TSS and Transdev second and third reviews of these documents. The overall delay to the RDP Phase was 3 months. This time was never recovered on the Project.

The Requirements Definition Phase started late, suffered delays and was apparently delivered late. TIE and SDS appeared to be in dispute on what was agreed in the contract and when it was agreed to be delivered. The SDS recorded hours highlighting that they had not mobilised and deployed the planned required capacity of resources for the Requirements Definition Phase from the start of the SDS contract.

The Requirements Definition Phase was on the critical path and these delays carried over to the Preliminary Design and the Detail Design Phases of the Project.

F: Design - Preliminary Design

We understand that PB submitted a preliminary design to TIE at the end of June 2006. On 6 December 2006 Scott Wilson produced a Preliminary Design Review Validation Report (doc **PBH00026782**). Their Executive Summary stated "our overall conclusion is that the bulk of the preliminary design submission is now either acceptable or acceptable given the responses from SDS".

1. Please can you explain your role and responsibilities in relation to preliminary design? Who did you take over from on this work?

   I was engaged by the new TIE Project Director in August 2006, to manage the System Design Services (SDS) contract (c£23.5m), on behalf of Tie, as their Interim Project Manager for a period of 3 to 6 months.

   I was responsible for the day to day project management and co-ordination of the SDS contract, across multi functional teams and stakeholders, reporting to Trudi Craggs.

   My role did not include the technical engineering design matters, the traffic modelling or the Mudfa Utilities. TIE's in-house Design Manager, Mr Gavin Murray, was responsible for managing TIE's in-house technical design team and the Technical Support Services (TSS) contract, Mr Alastair Sim was responsible for managing the traffic modelling and Mr Alastair Slessor for managing the Utilities. TIE's Commercial Manager, Mr Jim Cahill was responsible for the commercial management of SDS. The previous Project Director, and Commercial Director who had left, had been involved in the management of SDS.

   The SDS contract had a consortium of designers in a multi functional design team led by Parsons Brinckerhoff (PB) with Halcrow, Corderoy, Ian White Associates, Quill Power Communications and SGD with some co-located in our Tie office and some SDS staff operating out of other offices.

SDS had submitted the Preliminary Design to TIE on the 30th June 2006. TIE in-house design team/TSS/Transdev had failed to review the SDS Preliminary Design within the timescales set out in the SDS contract (20 days). This PD stage was before I started on the Project.

When I started, I was reporting to the Tie Project Director, Mr Andy Harper and Trudi Craggs, Director of Approvals and Consents as my line manager.

I received no handover as it was a new role and I was expected to 'hit the ground running'. When I started, Trudi Craggs was managing the contract in the interim period as the previous Project Director and the Commercial Director had left Tie. Another Tie colleague Jim Cahill was managing the commercial aspects of the SDS contract but not the day to day project management.

2. What was the original programme for completion of the Preliminary Design Phase? Was it adhered to and, if not, why not? What were your views on whether the Preliminary Design submission was acceptable? Did any difficulties in the Preliminary Design phase affect the Detailed Design phase?

Refer to evidence document CEC01629700- Tie SDS Claim August 2007 and the SDS contract programme (dated 12th May 2005).

From the records, SDS contract programme dated 12th May 2005, the Preliminary Design for combined Line 1 and 2 (with the +3mths adjusted date) was planned to start on 1st January 2006 and be completed by 28 February 2006. The Preliminary Design review period in the SDS contract was planned as 20 days and from the SDS programme it should have been complete by end of March 2006. (Refer to CEC01629700 TIE-August 2007 claim, Table 2 for detailed analysis of key dates from the contract programme).

I believe in April 2006, Tie and SDS apparently re-baseline the contract programme (refer to CEC01701162, p4, section 1.0). The Preliminary Design Phase should have been completed by 30 March 2006, before I started on the Project. However according to TIE the SDS Preliminary Design submitted on 30 June 2006 was incomplete and the documents were issued on a piece meal basis by SDS thereafter. TIE/TSS technical design teams were reviewing the SDS preliminary designs from July 2006 to December 2006. Eventually in late 2006, following the critical design issues and charettes workshops, the final parts of the Preliminary Designs were submitted to TIE and TSS for review. TSS prepared a report (PBH00026782) on their findings on 6th December 2006 and the report was issued to SDS to provide an action plan to close out Preliminary Design Phase.

Tie in-house design team and TSS needed much longer than planned in the SDS contract to review the preliminary design. The Preliminary Design action plan needed another 3-4 months to resolve the design issues and this resulted in further delays to the Project. With SDS Detail Design starting before the Preliminary Design was closed out, to minimise the impact on the Project critical path.

It must be noted that at this stage in the design process, there were still critical issues, key structures, key junctions and interchanges issues, which needed to be resolved with the wider stakeholders groups outside Tie such as Network Rail, Edinburgh Airport and SRU. These all impacted on the SDS designs and caused delays to these parts of the Project. Some of these may have related to the Tram Bills matters.

I started working on the Project in August 2006, after the SDS Preliminary Designs had been submitted on the 30th June 2006. It was not my role to review the preliminary designs or manage the record of review process. The TIE in-house design manager and TSS were responsible for managing the preliminary design review process in accordance with the SDS contract timescales (20 days).

3. Doc **CEC01794963** includes a letter from PB to TIE dated 26 September 2006 which refers to reprioritisation of the Preliminary Design Process out with the agreed review period. This might suggest that TIE was not complying with the terms of the contract with implications on cost. Do you have any recollection of this occurring, either the change referred to in this letter, or more generally? If so why did it occur? Is this a common occurrence in contracts of this nature?

Doc ID CEC01794964

The challenge here was that TIE created the Technical Support Services (TSS) contract as the shadow design team to assist TIE in-house design team to review the SDS design proposals. TSS were not a party to the SDS contract (SDS-Tie) and they worked to their own systems, processes and timescales and not just TIE's.

I believe, from the records, SDS submitted the Preliminary Design to TIE on the 30th June 2006, at the start of the summer holidays. When I joined in August 2006, there were a number of key staff on annual leave in July/August 2006; this was during the period when the Preliminary Design needed to be reviewed. Unfortunately contract timescales and contract obligations do not cease when staff go on holiday. So TIE in-house technical design team and their TSS partner did not sufficiently plan and deploy the required resources to review the SDS Preliminary Design within the timescales set out in the SDS contract (20 days) or they underestimated the resources required for the review process. It would appear that TIE in-house design team and TSS were reviewing the high volume of SDS design documents on their own timelines. They were on an input based contract and not a set fee for reviewing the Preliminary Design deliverables. The prolongation of the review period resulted in increased costs to the Project.

The SDS contract had the review period (20 days) and the actual review period was months. It was a large complex Project and in my opinion the parties underestimated the time and resources required to design the network and the time and resources required to review the high volume of

design documents, record the reviews and prepare the report on the Preliminary designs. Thereby resulting in delays, disputes on content and quality of the designs, additional resources, increased costs and overall Project delays.

4. Doc **CEC01794969** includes a letter from PB to you dated 26 September 2006 which refers to amendments requested by TIE. The letter highlights the implications in terms of delivery of the programme works. Would this suggest that TIE were at least in part responsible for late delivery of the design due to amendments required by it?

Yes, I consider that this suggests that TIE were at least in part responsible for some of the late delivery of the SDS designs due to amendments required by Tie, such as from the Tram Bills, which achieved Royal Assent only in spring 2006, the design charettes process and from the records (CEC01701162) TIE agreed with SDS to re-baseline the Project Programme in April 2006. Tie and CEC reprioritised the Edinburgh Tram Network (ETN) route and at a later date accelerated the sector key dates for some of the key structures at SRU Murrayfield area to assist the Infraco procurement process. The critical design issues and the charettes delayed the Project as they involved stakeholders outside Tie / CEC such as Network Rail, Edinburgh Airport, and SRU. The charettes required SDS to redesign parts of the ETN route and resubmit the Preliminary Designs, which required SDS to reprogram some of their works. My view has always been that SDS were blamed by some parties in TIE for matters out with their control and in some cases matters in TIE and CEC's control.

5. Your draft monthly report for September 2006 (doc **TIE00073022**) noted various concerns relating to "the prolongation of the PD review process by TIE and the decision to adopt a process that was not consistent with the SDS contract". It would be helpful if you could explain your concerns?

The challenge here was that TIE created the Technical Support Services

(TSS) contract as the shadow design team to support the TIE in-house technical design team to assist Tie and to review the SDS design proposals. TSS was not a party to the SDS contract.

From the records, SDS submitted the Preliminary Design on the 30th June 2006 at the start of the summer holidays. When I joined in August 2006, key staff were or had been on annual leave, during the summer period when the Preliminary Design needed to be reviewed. Unfortunately the SDS contract timescales and contract obligations do not cease when staff go on holiday. So TIE in-house design team and their TSS partners did not plan and deploy the required resources to review the SDS Preliminary Design within the timescales set out in the SDS contract (20 days) or underestimated the resources required for the SDS Preliminary Design review process. It would appear that TIE in-house design team and TSS were reviewing the documents to their processes and timescales. The prolongated review period, resulting in increased costs to Tie. The SDS contract review period was 20 days and the actual review period was months. It was a large complex Project and in my opinion the parties underestimated the resources required to design the network and the resources required for the review of the preliminary designs, the record of reviews and the reports were underestimated. Thereby resulting in additional resources, increased costs, delays, disputes on designs and quality of content and overall Project delays.

Notwithstanding the fact that the submitted SDS designs may not have been complete and may have had some quality issues, my concerns were that the preliminary design review process was not in accordance with Tie's obligations under the SDS contract (20 days). The review process was not productive; it was taking too long, delaying the Project, increasing costs and impacting on other work streams. It was increasing risks and providing SDS with contractual opportunities under their contract to notify TIE of delays/ disruption and to request changes, extension of times and additional costs from TIE.

These concerns were raised in PM monthly report for September 2006 (doc **TIE00073022**) and frequently escalated to my line manager and the Directors. They were also included in the improvement report to the new Project Director in January 2007 (refer to CEC01799542.)

6. Doc **TIE00001882** includes an e-mail from Jason Chandler to Alasdair Slessor and you dated 13 October 2006. He refers to the impact of Charettes changes at key junctions. Could you explain what these changes would have involved and why they would have been made? Were they reasonably anticipated given the significance of the named junctions? Are changes of this nature normal in a construction project of this kind? More generally, to what extent did Charettes changes, in particular, by CEC, cause delay or difficulties in progressing and finalising the design?

The critical issues, key structure and charettes at key junctions and interchanges (Haymarket, Piccardy Place, St Andrews Square, and foot of Leith walk) resulted in realignment of the Edinburgh Tram Network route and road layouts from that set out in the Preliminary Designs. This impacted on the SDS design work breakdowns, the utilities design and co-ordination with the Mudfa contract the Overhead Lines (OHL's) and traffic modelling for these impacted areas. These were complex multi stakeholder design issues which required design options to be developed by SDS and brought back to the table for key stakeholders, to review and discuss before agreeing the preferred options.

Design development is normal in the design process for a construction project; however there were a lot of design issues impacting on this Project. These design issues, involved the reprioritisation of key sections on the ETN, whilst the charettes designs were developed, discussed and agreed with external stakeholders. The effect was that the route was realigned / road layout changed to resolve these matters, resulting in delays, changes and the associated costs increases to the Project

7. Doc **CEC01807934** is an e-mail chain ending with an e-mail from Susan Clark to Alasdair Slessor dated 18 October 2006. This chain suggests that TIE was experiencing problems regarding delivery by SDS, including quality. Would you agree? How was this impacting on MUDFA? What were SDS saying was preventing them progressing the design and what was TIE doing to assist in overcoming any obstacles? Could it have done more?

These documents identify scope gaps between SDS and Mudfa contracts which impacts on the delivery phase (Refer to documents CEC01786334, CEC01786335 and CEC01859952)

There were gaps in alignment of the SDS contract and the Mudfa contract, these included different timescales, priorities and contractual obligations. SDS was not a party to the Mudfa contract between TIE and AMIS, the contractor. The route priorities were different in the SDS and Mudfa contracts. The Mudfa team's expectations of SDS were different to the SDS's contractual obligations under the contracts.

SDS were experiencing delays from the utility companies, in providing the as built records of utilities along the whole tram route. This in turn was delaying the SDS surveys and utility design as they did not have the existing utility routes information. The surveys were complex and access to the services, in live roads, was slowing up the SDS survey programme.

All these factors contributed to the delays and cost increases. The complex matters arising from the critical design & charettes issues and the external stakeholders as well as matters arising from the Tram Bills, all impacted on Tram route alignment. The utilities design could not be concluded if the Tram route alignment or road layout was changing.

There was room for improvement from SDS TIE, CEC and the utility companies, all could have done more to assist. The Tie in-house design team was responsible for managing the technical design issues. The key point is that the utility companies as built records were not always

available when SDS needed them and some were not up to date or accurate. This was out with the control of SDS and Tie. The Mudfa team could have aligned the contracts, extended the design phase and worked more in partnership with SDS and the utility companies, rather than reprioritising and starting the construction phase, before the SDS utility designs were completed. This may have achieved a better outcome.

8. Doc **TIE 00073462** is a letter from David Hutchison at PB to you dated 17 October 2006 in which he explains PB's reasons for not including the cost of transport modelling in the PB tender and why that cost had to be added subsequently. What is you response to this?

These matters were raised at the change control meeting between Tie and SDS on 11th October 2006, at which we discussed the SDS change requests. They relate back to the original SDS procurement process, the post tender clarifications and the late SDS contract T&C changes and what was included in their contract for traffic modelling.

The traffic modelling was complex and it was unclear whether these matters were SDS contract obligations or JRC contract obligations, since Tie had two contracts with traffic modelling, both using Steer Gleave Davies as the sub-consultant.

From document CEC01629700 -TIE-SDS August 2007 claim and WED00000615 TIE email chain dated 25 August 2005, schedule 17 indicates that there is one organisation carrying out SDS-JRC contract scope of works.

I believe there were interface issues between the JRC contract and the SDS contract and they used the SGD runtime models for the FBC.

From the CEC01629701 attached change log dated August 2007, there were a number of changes issued to both SDS and JRC contracts

9. Your monthly report for November 2006 [doc **TIE00074137**] noted that a review of the preliminary design inter-disciplinary check had identified "some major deviation from the SDS procedures. It would appear that rather than achieving appropriate inter-disciplinary solutions issues have been rolled forward to the DD phase of the project. It would be helpful if you could explain that issue and any problems it caused?

SDS developed the plans and procedures for the SDS designs at the Requirements Definition Phase. The process for inter-disciplinary design checks, systems assurance, interface management and systems integration were established. The report identified that SDS had deviated from the plan and had not completed these inter-disciplinary checks at Preliminary Design stage and had moved them into the Detail Design phase. This information would have been advised and provided by the Tie in-house Design Manager Gavin Murray or TSS, who contributed to the technical design matters in the report.

Note that SDS had the charettes and critical design issues impacting on the design for these areas and therefore the systems assurance, interfaces and integration on these parts of the Tram route. SDS had started the Detail Design phase before TIE/ TSS had concluded the comments on the Preliminary Design phase.

G: Design - Detailed Design

1. Please can you explain your role and responsibilities in relation to detailed design?

   The detail designs were reviewed by the TIE in-house design team and TSS/ Transdev, the new TIE Technical Directors and CEC.

   I was not responsible for the review of the SDS Detail Designs.

2. What was the original programme for the Detailed Design phase? Was it adhered to and, if not, why not? What problems arose during the DD phase? What were the causes of these problems? What if any, changes took place to the design process to try and address these problems? Were these steps successful, if not, why not?

   Refer to the SDS Programme and Document CEC01629700 – TIE Claim August 2007)

   The Detail Design started in September 2006 and was not complete when I left in August 2007.

   The Detail design was late due to the original delays to the start of the contract,, delays to the Requirements Definition Phase and delays to the Preliminary Design Phases of the Project. The critical design and charettes issues, which involved external stakeholders out with TIE such as Edinburgh Airport, Network Rail, SRU and others, the reprioritisation of the Tram route and the acceleration of key structures to assist the Infraco procurement process all impacted on the Detail Design Phase of the Project.

   The Project Director and the three TIE technical engineering directors were above the TIE Design Manager/TSS and Transdev working on

SDS and Infraco, to assist in moving forward the critical design issues and charettes blockages with key structures, junctions, alignments and interchanges on the Tram route.

In August 2007, the SDS Detail Design was still not complete and there were still critical design issues and charettes issues with key structures, junctions, alignments and interchanges on the Tram route.

3. You commented on the Detailed Design Review Process issued by Scott Wilson on 21 December 2006 in an e-mail to Ray Millar and others of TSS dated 17 January 2007 [**TIE00002051**]. What was the problem?

The Detail Design review process had been around for several months and should have been agreed at Requirements Definition Phase or early in the Preliminary Design phase, well before the submission of the detail designs by SDS. It had been discussed for several months, since September 2006 and perhaps earlier. SDS had submitted the Preliminary Design at the 30th June 2006. I expected that they would be ready to review it in July 2006 and that the process for review would have been in place before SDS submitted either the Preliminary Designs or the Detail Designs. Since I only joined TIE in August 2006 and the Preliminary Design had been received by TIE/TSS at the end of June 2006, my concern was that to still be discussing the 'process for review' of Detail Design in December 2006, 6 months after receipt of the Preliminary Design and start of the detail design and when the Detail Design was due, was not acceptable. A process already existed in the SDS contract that the Tie in-house design team did not follow. This demonstrated that there were issues with the management of the design review process, the timescales, and insufficient planning. I considered that TIE/ TSS needed to get a process in place and implemented to review the detail designs, rather than taking more time discussing the various process options.

4. What was the role of Scott Wilson?

They were the lead organisation in the Technical Support Services (TSS) in-house shadow design team and technical support services to assist TIE to review the designs prepared by SDS. SDS was on an output based contract with set milestones and deliverables and TSS was on an input based time charge contract, managed and controlled by TIE inhouse design team.

5. Doc **[CEC01811518]** is an e-mail exchange dated 17 and 18 January 2007 in which you expressed concern about the lack of engagement within TIE on the detailed design process. What was the difficulty here?

It prompted a response from Trudi Craggs in the e-mail chain which might suggest that there was a wider relationship issue? Was there and if so did it impact on the delivery of the Project?

TIE in-house design team and TSS had spent months considering the design review process without a conclusive decision. They did not adopt the process set out in the SDS contract. Before I started in August 2006, TIE had failed to review the SDS Preliminary Design in the timescales set out in the SDS contract (20 days) and my concerns were that spending months considering the design review process rather than prioritising time to resolve the critical design and charettes issues was not effective or productive. These matters were providing SDS with the opportunity to notify TIE of delays, disruption, extension of times and cost increases as a result of TIE not adhering to the obligations set out in the SDS contract, which was impacting on my role as SDS Project manager, as a result of the TIE in-house design team methodology and way they used TSS.

The concerns were also highlighted in the document PBH00026782 - TSS Preliminary Design report dated 6th

December 2006, section 2 design process, states that the

- *'overall review process was in disarray',*
- *'by the loss of review sheets and lack of ownership of some of the comments made on drawings'.*

There were issues between TIE and SDS and as I have mentioned previously in this document some parties in TIE selected to blame SDS for all the issues, when I considered that TIE were a contributing factor to a number of the issues in particular, the critical design issues and charettes and the failure to review the Preliminary Design in the timescales set out in the contract. The TIE in-house design team had a poor working relationship with SDS and I previously indicated that they did not take responsibility for any of the design issues. This impacted on our relationship as the technical design matters were causing delays and impacting on all areas of the Tram Project.

6. Doc **[CEC01670219]** is an e-mail from you to Matthew Crosse and others in TIE dated 27 March 2007. It appears to relate to change requests received from SDS. The main point arising from this e-mail is the fact that the suggestion is that there has been a failure by SDS to comply with the process for it might be inferred that the failure to comply was on the part of both SDS staff and TIE staff. Is that correct and if so what was done to solve the problem? Did it have an effect on delivery of the design?

This related to changes which SDS had not identified to TIE in the timescales set out in the SDS contract i.e. they were late. This was a recurring theme with SDS and the changes were reviewed with SDS and TIE in the 'partnering ethos' required by the Directors, at that point in time.

It should be noted that these changes in CEC01629701 (CRT 143 and CRT147 also related to parts of the Tram route which were subject to

the critical design and design charettes issues. So ineffect they were the matters which were out with SDS's direct control, i.e.CNS060 is on the CEC01629701 -TIE change Log at August 2007 as agreed in principle subject to negotiation/ agreement of the value. In the same document, i.e. CRT143 St Andrew's Square Island Platform is on the list of disputed anticipated change requests from SDS at a value of £78,101. The delegated authority levels required changes to be escalated to the Project Director for review and approval.

H: Design - Approvals Process

1. Doc **CEC02086400** is a letter from David Hutchison to you dated 18 January 2007 reporting on the attitude taken by CEC Planning to prior approval submissions. It appears that CEC was not content with the level of detail provided with the applications.
   1. What was your view on the approach taken by CEC particularly regarding the level of detail?
   2. What was done to provide CEC with the level of detail requested?
   3. If the level of detail couldn't be provided what was done to explain the situation to CEC and how was the issue resolved?

CEC was the statutory planning authority and responsible for the planning process. I was not involved in the CEC approvals and consents process.

From CEC02086400, I believe that CEC were concerned about the compression of the design programme and the impact on the approvals process and processing of planning applications. My view is that CEC were concerned that the programme was not realistic as they did not have capacity of resources available at short notice to meet the 'prior approval' planning process for the volume that was now anticipated in the compressed period, even although they had agreed to expedite the approvals process. Further meetings were held after the meeting on 12th and 20th December 2006 to provide more details to CEC on the 'prior approvals'.

The next CEC concern was in relation to the items which were in the Infraco scope of works, such as the OLE poles and the Tram stop shelters and what they will would look like, since this would impact on CEC's ability to make recommendations to the elected members on the planning issues and matters related to 'prior approval'. In my view the issue was that CEC knew the OLE's and tram stop shelters were in the Infraco procurement and the risk was for Infraco to promote the

products they intended to use. CEC knew that street scape images were important for the elected members, the public and the planning process.

CEC identified that track alignment, road design and traffic management solutions needed to be finalised before the OLE and Tram stops were finalised. They also identify that they would require street lighting, building fixings and pavings to be finalised for the approvals process.

SDS provided additional information on the potential options and images for OLE and tram stop shelters. I believe the, Infraco procurement team were also asked to get the Infraco Bidders to provide information on these elements to CEC.

I was not involved in the 'prior approvals process' with SDS/CEC, the work was led by the TIE Director of Approvals and Consents, Trudi Craggs, D&W for CEC and the TIE Design manager.

2. [Doc **CEC02086399**] is a letter from David Hutchison of PB to you dated 9 February 2007 explaining the reasons for the delay in submission of applications for prior approval to CEC. This refers to "the "approvals vs. procurement" issue".
   1. What was that issue?
   2. Why was there a problem?
   3. How was it resolved?
   4. Who was responsible for the problem?
   5. It seems to be suggested that PB would not be able to progress until TIE resolved the issue. Was that a fair assessment?

   The critical design issues and charettes issues would prevent SDS from completing the design and submitting their designs for approval. And would require TIE and CEC to resolve the critical issues in the required timescales.

The issues related to the track alignment, road design, traffic management solutions, building fixings and pavings which in CEC's opinion needed to be finalised before the OLE and tram stop shelters could be positioned. I believe the 'approvals v procurement' issues related to the fact that the OLE and tram stop shelters were included in the Infraco procurement and an Infraco risk. CEC had previously indicated that they required the designs / images for the planned OLE's and the trams stop shelters, before they would consider issuing the 'prior approvals'.

I was not involved in the 'prior approvals process' with SDS/CEC, the work was led by SDS, the TIE Director of Approvals and Consents, Trudi Craggs, D&W for CEC and the TIE Design manager.

I believe it would appear to be a reasonable assessment that SDS would not be able to progress these matters until TIE-CEC resolved the issues of what was reasonable for the 'prior approvals' process and what was required from the Infraco procurement for the 'prior approvals' process.

I: Design - Draft Final Business Case

A report to Council on 21 December 2006 **[CEC02083466]** recommended approval of the Draft Final Business case **[CEC01821403].**
It was noted that "It is expected that the overall design work to Detailed Design will be 100% complete when the Infraco contract is signed" (p84) and that risks associated with novation would be mitigated by ..."*Detailed design being largely completed prior to award of the Infraco contract" (p86).*

1. How confident were you around that time that Detailed Design would be 100% complete, or largely completed, prior to award of the Infraco contract?

   I believe it was dependent on the outcome of the resolution of the critical design issues and charettes, junctions' alignment and key structures matters. The longer these matters took to resolve with all stakeholders, the greater the delay to the conclusion of DD and the submissions to CEC for approvals and consents. This in turn would impact on the start of the CEC planning and approvals process. It was also dependant on the date of the award of the Infraco contract, the negotiated scope of works and content for the Infraco contract, in terms of what the parties agreed during the procurement process, the risks and the planned date of novation of SDS to Infraco.

2. Do you consider that there was a reasonable basis around that time for asserting that Detailed Design would be 100% complete, or largely completed, prior to award of the Infraco contract based on the procurement programme at the time?

   The intent was that SDS would complete the detail design however in light of the critical issues, charettes and wider issues with the network, TIE/CEC had a responsibility to collaborate with SDS to resolve these critical design issues and charettes blockages issues to mitigate the Project delays. In light of the high number of critical design and charettes issues affecting large parts of the route at that time and the programme delays, then the statement was very optimistic.

J: Design - Delay

The project suffered from delays to designs. This issue appears to have been discussed at board and committee level, for example see doc **[CEC01796735]** – report for reporting period 13 – Sept 2006. Also doc **[CEC01796736]**. These appear to suggest preliminary design and requirements definition nearly on target but detailed design behind (9.2% compared with planned 43%). Also refer to **[CEC01796737]**.

1. Could you talk us though these documents and explain what they are telling us? What response did they generate within CEC, TIE and SDS and what if any remedial action was taken?

These were the Tram Project Dashboards for monthly reporting for SDS, JRC and the Tram Project overall at September 2006. They provide a one page holistic view of the status of the main contacts SDS, JRC and the Tram Project overall with data presented in various formats graphs, pie charts and flag indicators. The dashboard provides an overview, project executive summary of the risks and key issues for the Project and they were prepared by TSS team. I did not input to these reports.

SDS CEC01796735 indicates the status on the SDS contract

i. Gateway 1 - RDP to PD; should have been delivered Dec 06, forecast May 06; Milestone missed and not completed so RED Flag.
ii. Gateway 3 to 16 - The Tram route sectors are all forecast as late due to gateway 1 delays, which were on the critical path.
iii. Detail design is at 9.2% and forecast for this stage was 43%, so SDS is behind programme i.e. they are late.
iv. Summary highlights SDS are late and DD completion forecast for November 2007 and red flag.

Overall Project CEC01796736 indicates the status for the Project overall, with a few on-track areas, a high number of areas of the Project which are behind programme with delays to completion forecast with red flag.

JRC Project CEC01796737 indicates the status on the JRC contract with a few areas delivered to programme, a number of areas delivered late and forecast delays to the programme with red flag.

The format of these reports was changed to the new format for PM monthly reports introduced by the Project Directors.

2. Do you agree that there was significant delay in progressing design and in obtaining statutory approvals and consents?
Yes, I agree that there were delays in progressing the design at the RDP, PD and DD stages of the SDS design and that they impacted on the statutory approvals and consents programme leading to further delays to the Project. I believe that the delays were not all attributable to SDS as some were TIE/CEC whilst others related to third parties outside of TIE/CEC such as SRU, RBS, Edinburgh Airport, Network Rail and Scotrail.

3. When did you first become aware of problems in that regard?

When I started in August 2006, it was clear that the Project had some major design issues, delays, disruption and increased costs. Delays had been incurred from the SDS procurement process delays, late start to the Requirements Definition and poor quality of documents. Further delays were incurred during Preliminary design, which was submitted on 30th June 2006. TIE then encountered delays reviewing the preliminary designs in accordance with the contract. In October 2006, the critical design issues and charettes were impacting on the Project and leading to delays. The problems escalated in November 2006, when the Infraco procurement team reprioritised the SDS design programme for the Infraco procurement process, without consulting SDS. During the pre construction phase of the Mudfa contract, the Mudfa priorities changed which impacted on the sequencing of SDS design deliverables. It was apparent that changes were being instructed on the disaggregated TIE contracts, which were impacting on the other contracts, SDS and the system wide integration, as more gaps and alignment issues

were appearing (CEC01786335 Mudfa SDS alignment and CEC01859952).

4. To the extent not already dealt with in your answers, what was your understanding of the main cause or causes of the delay?

   In September 2005, the SDS contract started 3 months late due to delays in the procurement process and issues before contract award (refer document WED00000616). I believe the SDS programme underestimated resources, timescales were unrealistic, thus contributing to delays at RDP and PD stage which were on the critical path. These were compounded by the critical design issues and charettes, key structures, junctions and interchanges which caused concurrent delays at PD/DD phase, which were not recouped and impacted on the overall Project programme.

5. Again, to the extent not already dealt with in your answers, what was your understanding of the steps taken to try and address these delays and why these steps do not appears to have been successful?

   There were lots of high level meetings held between TIE and SDS design consultancy and lots of promises to deliver by SDS senior management to TIE Directors, as previously intimated, but not realised (Refer document CEC01797353).

6. Doc **CEC01626770** is an e-mail from you to Geoff Gilbert dated 15 May 2007. Under the heading SDS Claim Update there is a suggestion that TIE maintained relevant information on a number of databases. This seemed to be a cause of concern. Did this have an impact on delivery of the project? There is also a reference to the estimated number of hours on the project. Were the reasons for that ever established?

   TIE and SDS had separate and different document control systems. Both systems had different interfaces and numbering systems. These system interfaces increased the time required to transfer and upload documents between TIE and SDS, through the document control system. TIE changed/

upgraded the IT servers/ databases to meet business needs and some historical data was on the old IT servers/ databases.

The hours planned and the hours worked by SDS are very different. The SDS primavera logs these as Earned Value. In RDP and PD phases SDS did not reach the planned hours for the Project and the delays to key milestones and deliverables impacted on the payments and cash flow. As such SDS had not reached the key DD stage at which the designs were complete and ready for handover to the Infraco nor were the design at 'construction' stage. The fact that TIE and SDS had several databases with historical SDS data, made it difficult to locate the historical documents, to ascertain the impact of the delays and disruption to the RD, PD and DD stages. DLA assisted with historical documents and records. Refer to Document CEC01629700- TIE-Aug 2007 claim document, which sets out the 20 relevant events and the key matters which led to the various delays during the initial stages of the SDS design project.

7. The e-mail from you to Tony Glazebrook and Geoff Gilbert dated 19 June 2007 **[CEC01630532]** suggests that the issue of progress with design was a continuing issue. Willie Gallagher had met with Tom O'Neill in New York to progress matters. Was this issue ever resolved? If not what was the problem? Although consideration was given to terminating the contract that was not pursued. Why not? The is reference in para 3 of the e-mail to a need "to understand the contractual issues". Was this ever achieved and if not why? Was this pursued with DLA Piper?

Progress and delays to design deliverables were recurring issues. I was not at the meeting and did not have access to the email or the minutes from the meetings between the TIE CEO and SDS USA Director. In paragraph 3 of the email (CEC01630532) I was seeking directions from the directors on what they had agreed with SDS in relation to changes and claims, the TIE priorities as these may be different to the SDS priorities. The outcome of the Audit review was due at the end of June 2007 and SDS were seeking agreement on changes to mitigate their risks and commercial liabilities in the event that the

Project was not granted approval.

8. There is also reference to the need to get SDS to sign up to Sch 1 to the MUDFA contract (see under heading "MUDFA issues"). Was this recognition of omissions in the MUDFA contract – see under "Utilities" below?

I believe, this has been identified earlier in my statement. I had identified gaps between the SDS contract and the Mudfa contract obligations, which needed to be addressed to prevent further delays and disruptions, as both contracts were progressing with different sector priorities which were causing more gaps and issues rather than assisting in resolving existing issues. I believe from CEC01786334/CEC01786335 and CEC01859952, the Mudfa contract signed in October 2006, was not 'back to back' with the SDS contract which was signed earlier in the process in September 2005.

9. To what extent did the delay in progressing design and in obtaining statutory approvals and consents cause you any concerns (including, in particular, in respect of the knock-on effect on the infrastructure contract and works)?

It was all a concern as delay and disruption increases costs, lowers VFM and impacts on the quality. The issue was that TIE was not ready to start the Mudfa construction works nor the Infraco contract as the SDS design was not complete. The key structures, junctions, interchanges and design charettes and associated utilities designs still remained unresolved and needed to be addressed with external stakeholders, before concluding the Infraco contract or progressing too far on the Mudfa construction works contract.

10. What did you do in response to any such concerns?

I escalated the matters to the TIE Directors and senior managers.

11. To what extent did actions on the part of TIE hold up design (see TPB papers for 3 June 2009 in which Steve Bell said that of the SDS design some was delayed by TIE and some by redesign (**CEC01021587**, page 7).

I believe TIE and CEC were involved in exploring the potential solutions, critical design issues and design charettes, key structures, key interchanges and junction issues. TIE had changed the SDS design sequences during the Infraco procurement process and SDS had to accelerate the design of structures. TIE had also changed the Mudfa priorities and this was impacting on the SDS designs for the utilities in some sections of the route.

K: The Utilities

In relation to the utilities works, and by way of overview:

1. What was your understanding of the difficulties and delays in progressing the utilities diversion works and the causes of these difficulties and delays?

   In respect of the Utilities Design works it was inaccurate records of existing 'as built' utilities or no recorded information being available from the utility companies for some parts of the route. This impacted on the surveys programme, with slow progress, complex issues with risks and uncertainty, congested utility pathways and obstructions. The tram route alignment was not finalised due to the critical design issues and charettes. These factors impacted on SDS ability to complete the design of the utilities, undertake special planning and obtain the approvals and consents. TIE MUDFA / CEC changed the MUDFA prioritisation of the route. The priorities were different in the SDS contract, thus creating a further divergence and issues between the various contracts.

2. Who was responsible for producing the utilities design?

   SDS were responsible for producing the utilities design for the works included in the SDS contract. There were some works the utility companies intended to undertake directly, which were not in the SDS contract. (Refer to CEC01786334/CEC01786335 on Mudfa contract and CEC01859952 and CEC00756972 – on the SDS Contract, Schedule 1).

3. To what extent did the late provision of utilities design cause difficulties and delays carrying out the utilities works? What were the main causes of utilities design? What steps were taken to try and address that? Were these steps successful and, if not, why not?

   I was not involved in the MUDFA construction works. However, I had escalated to TIE Directors and senior managers on several occasions and fairly explicitly, that there were contractual issues related to gaps in alignment,

connectivity, variance in obligations and duties of the parties in the SDS and MUDFA contracts, that needed to be addressed before the start of the construction works. (Refer to CEC01786334 and CEC01786335).

In document CEC01626770, I advised that the matters needed to be addressed before the start of the MUDFA construction works in July 2007. I advised that TIE was at risk of incurring costs from AMIS which could not be set of against SDS. I also advised that a BOQ should be prepared to reflect the SDS detail designs since the current BOQ did not reflect the works.

In document CEC01626559, I confirmed to the TIE MUDFA team/ Susan Clark that there was no obligation in the SDS contract to prepare the MUDFA BOQ only the C4 estimates (refer to SDS Contract, Schedule 1, Clause 3.2.1) . I also confirmed, in 3rd paragraph, that the gaps between the SDS – MUDFA contracts were identified in October / November 2006.

In document CEC01792024, I escalated the contract alignment issues between SDS and MUDFA contracts to the TIE Directors, Susan Clark and senior managers and stated that these were constraining the effective operation of the SDS/AMIS/TIE contract and that they needed to be addressed before commencing the MUDFA construction phase. I also believed that 'if we commenced the construction phase without either SDS signed up to Schedule 1 of MUDFA contract or AMIS construction rates fixed or agreed schedule of rates for particular types of work then we were likely to expose TIE to unreasonable risk since TIE were responsible for managing AMIS and SDS.

4. To what extent were problems caused by IFC utilities design being unworkable and requiring to be amended (e.g. because of limited space underground, etc)? Could further steps have been taken to try and reduce that problem?

I was not involved in the MUDFA construction works and I was not responsible for reviewing the SDS PD or DD designs. The Mudfa team, TIE technical engineering directors, Gavin Murray and TSS were responsible for

the review of the SDS PD/DD designs. I therefore have no comments on the Issue for construction (IFC) drawings. I believe the Mudfa contract would have been better if it had included Mudfa design responsibilities to complete the designs

5. We understand that TIE and PB disagreed over who was responsible for instructing utilities site investigations (to inform the design). What was your understanding of, and views on, that matter?

   The Surveys were included in the SDS contract. Site investigations and trial pits were included in the Mudfa contract.

   The SDS contract was a contract for design services. The MUDFA contract was a construction contract for utility works.

6. There appears to have been a question regarding responsibility for preparation of Bills of Quantities for the MUDFA work. Who was responsible for preparing the MUDFA Bills of Quantities? What, if any, responsibility did PB have for that? (See your email to John Casserley dated 11 May 2007 doc **[CEC01626559].** Was this an issue in practice? Your email also noted that "gaps between the SDS and MUDFA contracts were identified in October/November 2006 and as far as I am aware there (sic) gaps remains". What were the 'gaps'? Was that resolved (and, if so, how and when)?

   Refer to Document **CEC01786334, CEC01786335 & CEC01859952** scope gaps SDS v Mudfa contracts which set out the gaps and issues between the SDS and MUDFA contracts.

   In document **CEC01626559**, I confirmed to the TIE MUDFA team that there was no obligation in the SDS contract to prepare the MUDFA BOQ only the C4 estimates (refer to SDS Contract, Schedule 1, Clause 3.2.1) . I also confirmed, in 3rd paragraph, that the gaps between the SDS – MUDFA contracts were identified in October / November 2006.

The issues were that SDS was not a party to the Mudfa contract. The obligations set out in Schedule 1 in Mudfa contract had not been agreed with SDS. Similarly AMIS were not a party to the SDS contract. SDS had obligations under the SDS contract to undertake surveys and design the utilities. SDS had refused to sign up to Mudfa contract Schedule 1. I do not know what action the MUDFA team took on these matters. I was not responsible for the Mudfa procurement, contract management or the construction works.

L: Governance

In relation to project management and governance:

1. Which body or organisation do you consider was ultimately responsible for ensuring that the contracts and works were properly managed, including managing the interface between the different contracts and works?

I believe that TIE, the organisation, was delegated responsibility for the delivery of an integrated Tram and Bus network and ensuring that the contracts and works were properly managed and delivered by TIE. TIE Tram Project Board was responsible for the delivery of the Edinburgh Tram Project. DLA were TIE's legal advisers and providing legal advice and drafted the contracts.

The TIE Project Director was responsible for delivery of the Tram Project, ensuring that contracts and works were properly managed, there was system wide integration, managing the interfaces between the different contracts and works, mitigating, gaps and instructing and managing legal advice.

The TIE Commercial Director was responsible for all the procurement and commercial matters and the MUDFA Director was responsible for delivery of the MUDFA contract and the TIE Technical Engineering Directors were responsible for the system design, Infraco procurement and construction. The TIE Project Managers managed the contracts. Refer to the Delegated Authority Rules Procedure.

2. Did you have any concerns at any stage in relation to TIE's management of the tram project or the performance of any of TIE's senior personnel or Board members?

Yes, I was concerned because the governance arrangements changed

when a new director was appointed and there were many changes at Board level, Director level and to key persons during my time on the ETN Project. These changes impacted on leadership and decision making on the Project risks and issues and the overall deliverability of the Project due to the delays and slippages to the programme and associated scope creep and cost increases.

3. Did you have any concerns at any stage in relation to whether the problems with the design were properly reported within TIE (including to the TIE board) and to others including, for example, to the TPB, CEC, TEL and TS?

I was an interim manager and not a director and I did not have visibility of the Board papers or what was reported or the discussions at the Board meetings. The management reports which I prepared reflected the current position, at that time, on the SDS contract and on the Project Changes/Projects Controls. I was concerned that SDS were blamed for all the issues by some parties in TIE with little acceptance of any responsibility by TIE itself for key matters and issues. [Refer to my responses in previous sections on these matters].

During my tenure on the Project, I escalated a number of key issues and matters to the Project Director, Mr Andy Harper and the Director of Approvals and Consents, Trudi Craggs. From the start, I identified that there were critical design issues and interface issues with SDS and between the TIE contracts. I also escalated key issues and matters to the new Project Director, Mathew Crosse, Mudfa team, Susan Clark, the Commercial Director Geoff Gilbert and engineering Directors Steven Bell, David Crawley, Tony Glazebrook and Design Manager Gavin Murray for action.

4. To what extent, if at all, do you consider that changing personnel (whether within TIE, PB or others) caused or contributed to the problems that arose?

The governance arrangements changed when a new director was appointed

and there were many changes at Board level, Director level and at the manager level across key organisations / key persons on the Project. Knowledge from key persons was lost and time was taken to restructure the Project and the teams. The critical design and charettes issues emerged after there were a number of changes at Board and Director level bringing a new culture and approach to the Project. I consider that the changes at TIE and SDS, all contributed to increasing the issues, prolongation of the design, delays, reprioritisation disruption, risks and uncertainty and cost increases to the Project. These matters all impacted on the Project.

5. Do you have any views on whether any communication issues between the different parts of TIE (e.g. the design, utilities, and Infraco and procurement teams) caused or contributed to the problem that arose?

The TIE teams appeared to operate independently rather than collaboratively and at times communications were ineffective. In my view the system wide integration matters, interfaces and gaps between TIE contracts contributed to some of the problems which arose. The MUDFA team were set up in a separate office at Leith and insisted on controlling all the utility matters directly. The MUDFA team made changes to the route priorities which impacted on SDS. The Commercial Director was leading the procurement team and they were controlling the OJEU procurement process, the flow of information to and from Infraco Bidders and other stakeholders. The procurement team agreed changes to the design priorities during the Infraco procurement process, which impacted on the SDS contract and the Mudfa contract. My view is that the communications and decisions were uncoordinated and were not taking consideration of the system wide risks, interfaces and interdependencies, across the suite of TIE contracts on the Project. I believe that these contributed to the Project issues, delays, disruption, cost increases and uncertainty on the Project.

The Project structure, disaggregated procurement approach and contracts along with the complexity of designing and constructing a tram through Edinburgh city centre meant that it was difficult to influence the people in other

teams, managing other TIE contracts.

M: Final thoughts

By way of final thoughts:

1. How did your experience of the Edinburgh Trams Project compare with other projects you have worked on (both previously and subsequently)?

My experience on this Project was that it was a large complex project through Edinburgh City centre on existing road network, with a disaggregated procurement approach resulting in a high number of bespoke non standard contracts with complex multi layer interfaces, interdependencies and gaps in alignment, which created issues between the key parties and stakeholders. The complexity of the critical design issues and the resultant time needed to resolve these matters, created significant delays and disruption to the programme. This time was never recovered and the impact of delays to the SDS designs was delays to the Mudfa, approvals and consents process, the procurement of Infraco and the construction works. There was no flexibility to manage the dynamic context within the contract structure and a contractual rather than collaborative approach was in operation.

A key factor on the Edinburgh Tram Project was the high number of changes at strategic governance and leadership of the Project, compared to other Projects I have worked on, which had stable leadership and robust governance arrangements. On several occasions, in a short period of time, key Directors on the Project and at Board Directors level left the Project. Three Project Directors in 12 months, 2 Commercial Directors in 12 months and changes to the Boards Chairs and CEOs, as well as changes to Technical Directors and senior managers is excessive and not robust project governance.

This is not good for the delivery of any major Project, impacting on the project leadership, direction and decision making, CEC, the Project teams, the Designers, the Consultants, the Contractors and the wider stakeholders. These governance changes inevitable led to loss of key project knowledge,

delays as the Project restructured, risks, uncertainty and costs increased, which in turn changed the market confidence and external perception of the organisation and the deliverability of the Project.

2. Based on your experience with TIE, do you have any views on what were the main reasons for the failure to deliver the project in the time, within the budget and to the extent projected?

Based on my experience with TIE, it would appear that from the outset, the complexity of delivering the Edinburgh Tram network route through the city centre on operational roads, on third party land, whilst also diverting the utilities under the MUDFA contract was a major challenge. The risks, uncertainty, the complexity of the inter-dependencies and the initial programme timescales were underestimated and unrealistic. These matters alongside the Governance, Resourcing and Technical critical design issues and constant changes during the Project were contributing factors to the delays, disruption and costs increases and the failure to deliver the Project in accordance with the requirements.

i. Governance

The changes to structure, leadership and governance arrangements and the need for restructuring of the Project, on many occasions, all impacted on the leadership, decision making and delivery of the Tram Project.

ii. Technical Design

The complexity of delivering the Edinburgh Tram route network through the City centre on operational roads, whilst diverting the utilities at the same time, created uncertainty and a number of technical design challenges. There was a lack of flexibility and cohesive understanding on the project scope and brief, the interfaces and interdependencies between TIE-SDS. These led to delays to procurement processes, delays to SDS RDP, PD and DD designs and changes to scopes of work throughout the contracts which led to increased risks, issues, uncertainty and gaps in alignment with other TIE contracts, resulting in the overall Project delays,

disruption and cost increases. The disaggregated procurement process with bespoke non standard inflexible contracts, created interfaces, risks, uncertainty and inter-dependencies across the multiple TIE contracts and, complex management and co-ordination requirements, for TIE to manage. The contract structure did not provide flexibility to deal with the design dynamics and context of designing and constructing a tramway through Edinburgh city centre, on third party land, whilst at the same time, undertaking major utility diversions across the city.

iii. Resources

The resources required for the design and the construction processes and the overall programme timescales were underestimated or unrealistic from the outset, with additional time and resources needed to deliver the Project. The right people and resources were impacted by the leadership changes and culture changes and there was a tendency to work in 'silos' rather than cross functional cohesive collaborative teamwork with a partnering ethos.

3. Do you have any comments, with the benefit of hindsight, on how these failures might have been avoided:

i. **Governance** - Improved leadership and governance with less complex, more robust governance arrangements, implemented by fewer changes to the Project Structure, leadership and governance arrangements during the Project with clear roles and responsibilities. TIE, TEL, CEC and TS (Leaner and more streamlined for quicker decision making). The RICS has published new research on Supply Chain Sustainability and Rail Infrastructure Leadership.

ii. **Technical Design** – Improved technical design management and coordination, embracing collaboration and innovation to develop the project requirements. Standard Contracts 'back to back' to mitigate the gaps and issues in the alignment of the TIE suite of Contracts. More collaboration and integrated design co-ordination between SDS, Mudfa and Infraco before work commences on site based on shared risks,

outcomes and success factors to collaboratively manage changes and costs. Improved programme management, risk management, commercial management and controls to deliver the Projects on time, within budget and providing a sustainable network which benefits all stakeholders.

iii. **Resources** – Improved understanding of the Project requirements and the skills and right resources required to deliver the Project. More sustainable teams and collaborative partnership working to encourage innovation and find sustainable solutions, rather than the silo approach. Implement structured training and development for all staff focussed on individual and organisational improvements and shared success factors for the benefit of the Tram Project and Edinburgh. .

4. Are there any final comments you would like to make that fall within the Inquiry's Terms of Reference and which have not already been covered in your answers to the above questions?

No further comments. Thank you.

I confirm that the facts to which I attest in the answers contained within this document, consisting of this and the preceding 100 pages are within my direct knowledge and are true. Where they are based on information provided to me by others, I confirm that they are true to the best of my knowledge, information and belief.

Witness signature.....Ailsa McGregor ....

[redacted]

Date of signing..... 8 December 2017.....