



tie Limited
Tram Project Quarterly Review
Report for Transport Scotland
for Meeting
24th November 2006
09:30-11:00am

Distribution:-

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ACTIONS FROM PREVIOUS MEETING

Conclusions and Actions		
1) Further clarification required to understand 5 categories of indices applicable to indexation calculation.	tie/TS	25 th August 2006.
2) tie Ltd to provide a summary of key tests and critical decision points prior to the proposed high level meeting on 17 th August 2006.	tie	16 th August 2006.
3) TS require a copy of the governance paper prior to the next Tram Board meeting w/c 21 st August 2006. It was also emphasized that TS require sight of all papers prior to Tram Board meetings.	tie	18 th August 2006.
4) tie confirmed that further work is being undertaken and that TS will receive a functional specification by Monday 11 th September 2006.	tie	11 th September 2006.
5) tie Ltd to provide a resource loaded programme by end of month.	tie	31 st August 2006.
6) tie Ltd to review £32.7m spend profile.	tie	31 st August 2006.
7) Capital Cost Estimates are now due end September 2006. Comparison to be made against the bottom up work being undertaken by Cyril Sweett.	tie	29 th September 2006.
8) TS to explore Cabinet's ability to pre-agree against a proposed construction price range.	TS	30 th September 2006.
9) TS to pursue and confirm a decision on ability to underwrite Infracore bidding costs.	TS	25 th August 2006.
10) Promoter to supply updated QRA, top 10 High level risks and Opportunities Register to TS.	Promoter	31 st August 2006.

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STATUS OF ACTIONS FROM PREVIOUS MEETING

1	Clarification of 5 categories of indices for indexation calculation – Ken Davis/Stewart McGarrity.	Budget assumed to be £545m as previously agreed. DFBC Based on contract outturn prices and previous uplifted figures and estimates based on 5% PA and 1% for risk on these indices. No further information provided by Transport Scotland.
2	tie to provide summary of key tests and milestones prior to 17 th August.	Complete – Milestones now included in PD's monthly report. No adverse comments received.
3	TS required copy of governance paper and prior sight of papers prior to TPB.	Complete – and governance arrangements now fully implemented. CEC reserved powers to be endorsed.
4	tie to provide Functional Spec and changes authorised at TPB.	Subject to final technical review – Complete and agreed at TPB. Change control process agreed by TPB.
5	tie to provide Resource Loaded Programme to TS.	It was subsequently agreed this was not an immediate priority and tie will require detailed definition requested of Transport Scotland if this is to be pursued.
6	tie to review £32.7m spend profile.	Complete, TS confirmed tie could spend £32.7m and 8m previous year rollover by 03/07. Subsequently TS advised this could be increased to cover all Phase 1a Land Purchases. Approved at TPB. Further Grant Letter required from TS/CEC to confirm figures to end of March 07.
7	Capital Cost Estimates to be provided and compared to Cyril Sweett's estimate.	Complete, Comparisons and validation completed and figures included in DFBC. Reviewd by Stakeholders W/C 12/11
8	TS to explore Cabinets ability to pre-agree DFBC against proposed range of Construction Prices	TS action.
9	Bidder costs to be underwritten.	Complete.
10	Promoter to supply updated QRA, top 10 risks and Opps Register to TS.	Top risks and Opps register provided in PD's monthly report to TPB. Therefore complete. The updated QRA has been provided to TS and was part of the supporting information used for the Project Estimate and included in the DFBC.



EDINBURGH TRAM – TRANSPORT SCOTLAND QUARTERLY PROGRESS REPORT – NOVEMBER 2006

1. Safety

Tom Condie has joined the team as the project's full-time Health, Safety, Quality and Environmental (HSQE) manager. His current key focus is the ongoing development of the Project's Safety Management System.

A total of four Non-conformance Reports have been cumulatively reported to date and all have been issued to SDS with regard to survey and inspection works.

Issue date	Number issued	Open/Closed	Action
March 2006	1	Closed	Complete
October 2006	3	Open	Response required from SDS for all
Total	4		

The need for improvement has been raised at senior level within SDS.

Key Performance Indicators (KPI's) will be identified and reported in next month's project report.

2. Programme and Progress

2.1 Please find below a précis of key activities undertaken and milestones completed over the past quarter:-

- Tram Project Board established and governance agreed.
- Scottish Executive Gateway 2 Review, Stage 1 - satisfactorily complete
- Procurement Strategy reviewed and updated.
- DPOFA contract negotiation has commenced to align it more fully with project and TEL business plan requirements.
- MUDFA Contract was awarded on the 4th of October 2006 to Alfred McAlpine and successful 10 day start up plan concluded. Site route walk undertaken on the 12th of October 2006 and preconstruction programme received on the 25th of October 2006.
- MUDFA Contract Award included a £1.1 million discount for sign-off within 90 days of award. This discount has been realised.
- Tramco tender return date moved from 5th to 9th October following bidder requests for extension of time.
- Four Tramco bids received on the 9th of October 2006.
- The Tramco tender Evaluation Methodology was prepared and signed off prior to opening of bids on 11th October 2006.

- Tramco tender evaluation is ongoing.
- Three Infraco bidders were pre-qualified.
- Agreement reached on underwriting Infraco bid costs.
- Invitation to Negotiate (ITN) for Infraco - contract issued to preferred bidders on the 3rd October 2006 as planned.
- AmecSpie consortia withdraw from Infraco bid process.
- Phase 2 of the Infraco ITN was issued to bidders on the 31st of October 2006. This comprised the following:
 1. SDS Preliminary Design Drawings.
 2. Employer's Requirements – Addendum of amendments, and including Project Scope Rev A.
 3. Amendments to Volume 2 Part 5 (information to be provided by bidders).
 4. RDA Heads of Terms.
 5. Infrastructure Maintenance Agreement & Schedules.
- Clarification meetings are ongoing with the Infraco bidders.
- Infraco tender evaluation process drafted.
- Funding approval received from TS for certain Advance Works in respect of Line 1a.
- Land Assembly Management Plan issued.
- Land Purchase - informal letters issued for both section 1a and 1b at the end of October 2006 with the first notice being issued by 28th of November 2006.
- Design Charettes undertaken to assist planning approvals on key junctions and structures.
- Revised SDS detailed design programme received on the 5th October 2006. Programme has been subsequently 'not accepted' by tie.
- SDS estimated construction programme was received on the 16th October 2006. This programme is currently under review.
- Project programme updated to support phased delivery.
- A draft construction phase organisation chart was completed and used to update the Project Estimate
- Update of Project Estimate based on preliminary designs completed.
- Project Management plan drafted.
- Draft TEL Business Plan submitted.
- Draft Final Business case for Tram published for comments.
- OJEU notice for Owner Controlled Insurance Package (OCIP) issued 26th October 2006.
- Communication activity continues.
- A trip to Dublin took place on 19th October 2006 for Stakeholders to view the tram network, find out the benefits of a Tram system and speak to the company that delivered it. Further trips to Nottingham also undertaken.
- Further communication activities undertaken were: Radio adverts aired on Radio Forth, 98 sheet billboard advertisements, an ad van circling the city, posters and information stands for the Western General Hospital, bus and bus shelter advertising campaign throughout the city and further fact-sheets added to the current suite bringing the total to nine.
- The first of six public tram events took place on 26th October 2006. The event for the Roseburn Corridor event was attended by 333 people and was very well received. Further events take place week commencing 20th November.

2.2 Future key project milestones to achieve project funding are:-

- Draft Final Business Case to be finalised and submitted to CEC and TS by the 14th December 2006 for approval at CEC meeting on 21st December 2006.

- Scottish Gateway 2 follow up Review, Stage 2 scheduled for the 21st and 22nd of November 2006.
- Infraco initial tender submissions due on 9th January 2007 and will be used to validate authority estimates.
- Formal approval finalised by CEC on 1st February 2007 and TS on 15th February 2007.

2.3 Programme for delivery into revenue service.

- A staged approach to the delivery of phases 1a and 1b has been established with a view to achieving delivery into revenue service of phase 1a by December 2010. To achieve this an early start will be required on utilities diversions, an Infraco contract award of September 07 and probably an earlier mobilisation and procurement commitment to long lead items for certain Infraco works. These requirements will be included in the DFBC. Full milestone deliverables and related assumptions are included in the DFBC and support the intention to approve 1b at a later date and commence revenue service in December 2011. However, the project team recommend that design services and utility diversion works for 1b are included with 1a works.
- It should be noted that if the process for obtaining TRO's prevents the commencement of construction prior to completion of the TRO process then completion will be later than planned. The project is working with CEC to resolve this issue.

3. Key Issues and Concerns

- System Design Services (SDS) – Numerous meetings have been held with SDS senior management in an attempt to address issues associated with:
 - Progress of design
 - Prioritisation of the detailed design programme
 - Quality of product
 - Resourcing to meet the programme
 - Non-compliance issues

TSS are preparing a report on the Preliminary Design, which will be complete by end of November 2006.

In particular, there is concern about the impact that the timing of the delivery of utility diversion design will have on the implementation of MUDFA works. AMIS have written to the project indicating that the quality of design is far below what they would have expected at this stage and indicating that this may have an impact on their ability to deliver their first programme. However, they have offered to engage with SDS's design process to fast track the designs, add constructability input and provide value engineering expertise. This offer has been accepted.

The Project Director has now established a series of measures to improve the performance of SDS and it should be noted that SDS performance remains a key concern. It will be necessary to see instant improvement to ensure effective and timely delivery of the project.

4. Risks and Opportunities

4.1 See the paper included as Appendix A entitled Risk Management Paper and presented to the Tram Project Board on 20th November 2006.

4.2 Principal Opportunities

- These have now been removed from the Risk Register and are being tracked separately.
- The significant cost reduction opportunities that are currently being progressed are:
 - Reduction in depth of excavation for the Depot.
 - Change to a steel structure for the Edinburgh Park flyover.
- Details of current status are shown in **(Appendix B)**

5. Financial and Change Control Position

5.1 Financial Status

The current reported forecast spend to end of December 2006 is £22.5m and £40.022m to the end of the financial year 2006/2007.

The recent approvals from TS on additional spend items has been reflected in these figures. The AFC to March 2007 is maintained at £40.022m pending further work in respect of scheduling land purchase. The land acquisition figure has been adjusted to maintain the current £40.022m AFC. Further details are contained in Appendix C which identifies the monthly variances at work-stream level for: Value of Work Done (VOWD), forecast to December 2006 and March 2007.

The current AFC for the scheme has been maintained at £623m in recent project reporting and will be adjusted to reflect the new project estimates discussed at the Tram Project Board on 20th November as part of the DFBC papers. Both the Current Year Budget AFC (to December 2006) and VOWD in month are down against the corresponding forecast in the previous month.

The main reduction in forecast VOWD is due to:

- Utilities diversion (£600k) – Delayed payment from the project team to Scottish Gas Networks for advanced purchase of long lead manufactured equipment. Payment will now be made in November/December 2006 instead of October/November 2006.

More detail and explanation of the variances is shown in Appendix C.

Current Year Position

A – Current Budget Year Position (VOWD)- To December 06				
Approved Budget 06/07 £k	Current Forecast £k	Previous Forecast £k	Variance £k (Current minus Previous)	Comments
£32,678	£22,467	£22,960	(£493)	For reasons for variance refer to Appendix C

B - VOWD in current month 06/07				
Month £k (Incremental)	Current Actual £k (Cumulative)	Previous Forecast £k (Cumulative)	Variance £k (Current minus Previous)	Comment
£2,625	£16,893	£17,773	(£880)	For reasons for variance refer to Appendix C

C – Current Financial Year position - To March 07				
Approved Budget £k	Current Forecast £k	Previous Forecast £k	Variance £k (Current minus Previous)	Comments
£32,678*	£40,022	£40,022	0	Refer Appendix C for individual budget line variances.

*Budget to end December 2006

D - Anticipated Final Cost				
Budget £k	Current Forecast £k	Previous Forecast £k	Variance £k (Current minus Previous)	Comments
£545,000	£623,000	£623,000	£0	

Since the last period forecasts submitted the Year End forecast has been updated and increased to reflect Transport Scotland's request to include all Phase 1a land acquisitions within the forecast. This is reflected in the paper submitted to the Tram Project Board on 20th November and included as Appendix D.

It should be noted an update to the Transport Scotland/CEC Grant Letter will be required for these changes as the current issue covers the period to the end of December 2006 only.

6. Change Control Summary

A Change Control Process is now established on the project and a full register of changes to date is available, outlining their status. Changes to date are now covered in the Project Functional Specification and estimates which have been used as the latest baseline for the project within the DFBC.

Submitted by:- Andie Harper
Project Director on behalf
of tie Ltd.

Date:- 20/11/06

tie Limited

**Edinburgh TRAM Project
(Commercial In Confidence)**

Paper to : Tram Project Board

Subject : Risk Management Paper for Primary Risk Register

Date: 3rd November 2006

1.0 Introduction

- 1.1 The purpose of this document is to provide the monthly update to the Board with regard to the Primary Risk Register and the top risks facing the project.
- 1.2 Risk is most effectively managed when it is owned by the party best able to manage it. Risk owners are responsible for treating the risk by developing and implementing treatment plans that contain actions to reduce the likelihood of occurrence and the impact of the risk.
 - 1.2.1 The Primary Risk Register shows risks as Stakeholder Risks which are those owned by project stakeholders i.e. tie Corporate, Transport Edinburgh Limited, City of Edinburgh Council or Transport Scotland. Stakeholder owners may not have easy access to information from the project and therefore, a supporter from the project has been assigned for all stakeholder risks. Stakeholder Risks are more likely to impact directly on stakeholders than Project Risks.
 - 1.2.2 Risks that are not owned by stakeholders are owned by people who represent the project. These are shown as Project Risks. Whilst Project Risks could ultimately impact on all stakeholders, their impact may be able to be controlled within the project without having a direct impact on stakeholders. It is however, important for stakeholders to understand Project Risks, as un-controlled, the impacts may translate into a direct impact on Stakeholders.
- 1.3 Risks can be measured in terms of their significance and progress of their treatment plans.
 - 1.3.1 Risk significance is a qualitative method to show their likelihood multiplied by the level of impact i.e. the level of each risk. BLACK risks are classified as "showstoppers". These are risks that will, either by process or through having unacceptably high impacts, prevent the project from proceeding. Often black risks cannot be quantified in terms of cost and/or time impact. RED, AMBER and GREEN levels are arrived at through comparing the likelihood and impact of each risk against a scale.

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1.3.2 Each Risk Treatment Plan has a status. This shows how risk treatment is proceeding in terms of treatment strategy programme i.e. is the treatment behind (RED), on (AMBER) or ahead (GREEN) of programme. Completed treatment strategies are also shown with green treatment status.

1.4 The risks on the Primary Risk Register have been extracted from the Project Master Risk Register and are those that have a high risk significance but which also require treatment in the near future.

2.0 Risk Significance and Treatment Status Summary.

2.1 Overall the significance of risks on the Primary Register has not changed.

- 3 risks of red significance level have been added. These are:
 - Risk 279 (Additional Treatment) – provide a work prior approval application to CEC to test process.
 - Risk 344 – withdrawal or submission of non compliant bids.
 - Risk – Change in participated inflation rate.
- It is recommended that Risk 277 (Infraco Tender Documents Not Issued On Time) is removed from the Primary Risk Register as the Treatment Strategies are complete and the risk is now closed.
- Risk 339 (CEC being unsuccessful in their representation to the SE on core measures legislation) has been realised and mitigation of its effects have reverted to general project management processes. Therefore, this risk should be removed.

2.2 Two of the three Treatments with red status last month have now been completed. One remains at red. Five additional treatments have fallen behind schedule and are now at red. (A net total of six)

On the whole however, the treatment status of the key risks identified has been positive with many treatments gaining green status or remaining on target at amber.

Nonetheless as indicated last month there remains a bow-wave of activity to be addressed over the forthcoming months as the Project approaches the time line for gaining funding approval.

2.3 The Primary Register is attached as Appendix (i). This document contains a risk status summary showing the changes from last month.

3.0 Consultation

3.1 The DPD Sub Committee has reviewed this register and their comments have been incorporated.

4.0 Recommendation.

4.1 The Board is asked to note this paper.

Proposed Geoff Gilbert
Project Commercial Director Date 03/11/2006

Recommended Andie Harper
Project Director Date 03/11/2006





Approved _____ Date 03/11/2006
David Mackay on behalf of the Tram Project Board




Edinburgh Tram Network
Appendix 1 to Risk Management Paper

PRIMARY RISK STATUS SUMMARY					
Risk Significance (No of Risks)	September		October		Treatment Status (No of Treatments)
	September	October	September	October	
Black	7	7	-	-	-
Red	17	17	Red	3	6
Amber	2	2	Amber	51	37
Green	0	0	Green	15	25
Risks Added	-	3 (3 Red)	Treatments Added	-	8 (1 Red, 6 Amber, 1 Green)
Risks Removed	-	0	Treatments Removed	-	0
TOTAL	26	29	TOTAL	69	75




RISK SIGNIFICANCE

TREATMENT STATUS

-  BLACK – SHOWSTOPPER; difficult to quantify impacts
-  RED – High Risk
-  AMBER – Medium Risk
-  GREEN – Low Risk

-  RED – Treatment Strategy behind programme
-  AMBER – Treatment Strategy on programme
-  GREEN – Treatment Strategy ahead of programme or complete

Tram – Stakeholder Risks

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner*
					end Sep	end Oct		
263	Failure to demonstrate robust case for scheme against required tests of Affordability, Financial Viability, Economic Viability and Modal Shift	<ul style="list-style-type: none"> • Business case is not acceptable • Approvals delayed • Slips into purdah period 		Regular engagement with stakeholders to ensure clarity of requirements Progressive development of draft business case Updated Project estimate			Aug-Nov 06	Stewart McGarrity A&B

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

Edinburgh Tram Network
Appendix 1 to Risk Management Paper

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner*
					and Sep	end Oct		
284	Political risk to continued commitment of TS/CEC support for the Tram scheme	<ul style="list-style-type: none"> Reversal of decisions by incoming administrations in either or both of CEC and Holyrood Project becomes key political issue during election campaign Protracted decision making and unnecessary debate during consideration of Business Case 		<p>Monitor likely outcomes and do our best to brief all relevant parties about the project in a balanced way</p> <p>'Hearts and minds' campaign including Senior Executive Officer meetings with Councillors and MSPs and utilising the tram sounding board meeting with CEC and selected elected transport leads</p> <p>Regular briefings and discussions with senior CEC and TS officers particularly in relation to Full Council presentations</p>			Aug-Nov 06	<p>Willie Gallagher A</p> <p>Andie Harper B</p>
285	Poor project governance	<ul style="list-style-type: none"> Insufficient information flow to decision makers Slow or overturned decision making Failure to grasp or create opportunities 		<p>Seek clarity of Delegated Authorities of TS and CEC representatives attending Board meetings [Awaiting CEC's statement of reserved powers, otherwise all aspects agreed.]</p>			Aug 06	<p>Graeme Bissett A</p> <p>Geoff Gilbert B</p>
266	JRC model is insufficiently robust to support the Business Case.	<ul style="list-style-type: none"> Business case not approved. Time delay and resultant costs caused by redesign and remodelling. 		<p>Intense engagement of TS, CEC and TEL in the development and delivery of patronage, revenue and BCR projections during August and September.</p> <p>Hold meeting with JRC and stakeholders to discuss results to gain confidence in performance.</p> <p>Encourage approval for tram to be given appropriate priority at junctions during operation.</p> <p>Scenario modelling of JRC cost estimate</p>			End Oct 06	Stewart McGarrity A&B
267	If there is inadequate progress on the operational system including bus/tram integration, development of network service pattern and TEL Business Plan may not be sufficiently robust.	<ul style="list-style-type: none"> Delay to JRC programme. Reworking of Plans or poorly developed Infraco arrangements with consequential delays due to re-working/change. 		<p>Develop clarity on the role and planned deliverables of TEL to bring about integration including development of ticketing strategies and bus/tram service patterns.</p> <p>Model integration plans through JRC with rigorous review process using LB knowledge.</p>			Aug 06	<p>Neil Rentlison/ Bill Campbell (TEL) A</p> <p>Stewart McGarrity</p>

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

Edinburgh Tram Network
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Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner*
					end Sep	end Oct		
		<ul style="list-style-type: none"> Increased operating costs and loss of potential revenue. 		Identify optimal position for a combined tram/bus position. Prepare TEL Business Plan (incorporating business case tram for system) with development of necessary policies to cover operations.			Nov 06	B
268	Funding not secured or agreements not finalised regarding the total aggregate funding including £45m CEC contribution; developer contributions; cashflow/funding profile; financial covenant; and public sector risk allocation e.g. inflation	<ul style="list-style-type: none"> Possible showstopper. Delays and increase in out-turn cost may affect affordability. 		Ensure close and continual interactions with TS and CEC to establish funding delivery confidence and agreement. Confidence required in contingency figures. Address risk allocation with bidders through negotiation Develop and implement strategy for additional contributions			Feb 07	Graeme Bissett A Geoff Gilbert B
269	Agreement on financial over-run risks sharing has not been reached between CEC and TS due to doubts over costs staying in budget. AGREEMENT REACHED, TEXT TO BE SIGNED	<ul style="list-style-type: none"> Potential showstopper to project if agreement is not reached. 		Hold discussions with CEC & TS to ensure adequate release of funds at appropriate periods of time. Understand commitments by TS and CEC re: 1A and 1B Facilitate agreement between CEC and TS.			Dec 07	John Ramsay (TS) A
270	Uncertainty about requirements for wider area modelling and need and extent of construction works required on road network	<ul style="list-style-type: none"> Increased construction cost. Delay while additional funding is found. 		Clarify and agree boundaries of scope and funding provision between TS and CEC			Feb 07	Willie Gallagher A Trudi Craggs B
271	Failure to reach a suitable agreement with CEC regarding: 1. Roads maintenance responsibility where the tram has been installed in CEC	<ul style="list-style-type: none"> Delay to project while agreement with CEC is reached. Sacrifices being made to ensure 		Heads of Terms in place by end Oct COMPLETE - CLOSE ACTION Final agreement to be approved by Roads Authority, CEC Promoter, CEC in-house legal and tie			Dec 06	Willie Gallagher A Trudi

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

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Appendix 1 to Risk Management Paper

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner*
					end Sep	end Oct		
	maintained roads; 2. What is and is not realistically within the scope of the tram infrastructure delivery contract; 3. The way in which tram UTC priorities are handled at key junctions.	agreement is concluded.		Final alignments in place				Cragsgs B
272	Delay in land acquisition due to uncertainty of political commitment to scheme.	<ul style="list-style-type: none"> Delays to Infraco and the overall Tram project. 		Achieve approval as part of the Draft Final Business Case 1 Develop alternative programme scenarios and commentary. Manage the political risk and enfranchise all political stakeholders in the benefits of Tram.			Dec 06- Feb 07	Willie Gallagher A Trudi Cragsgs B
273	Business case is not approved during February 2007 due to lack of political commitment due to impending elections until Summer 2007.	<ul style="list-style-type: none"> Delay and resultant cost impacts (inflation) on total cost. Political support may evaporate. 		Maintain procurement programme to deliver critical business case inputs Managing expectations on the part of TS and CEC as to the certainty with respect to costs which are reflected in the business case. Ongoing fortnightly reviews with bidders and mid term contractual mark up to inform above treatment			Feb 07	Stewart McGarrity A Bob Dawson B
274	Failure to engage with Transdev in order to adjust DPOFA in line with the development of the Infraco and Tramco procurements. This includes negotiation to secure Transdev acceptance of a subcontract to support system commissioning responsibilities.	<ul style="list-style-type: none"> Failure to achieve most effective commercial solution Delay in resolution of Agreements 		Engage with Transdev to ensure adjustment to DPOFA and negotiate requirements.			Dec 06	Alasdair Richards A & B
275	Negative PR coverage due to perceived mistakes or problems	<ul style="list-style-type: none"> Damage to tie's reputation 		Control confidential information and closely monitor Fol(S)A requests			On-going	Suzanne Waugh A

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

Edinburgh Tram Network
 Appendix 1 to Risk Management Paper

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner*
					end Sep	end Oct		
	in project becoming public	<ul style="list-style-type: none"> Loss In confidence of the's delivery Funder/promoter dissatisfaction 		Develop relationship with press with support for PR advisors to control stories Communications Strategy being followed with Partners to ensure any problems are flagged up early and dealt with appropriately via the media or other stakeholders.				Mike Connelly B

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Edinburgh Tram Network
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Tram – Project Risks

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner
					end Sep	end Oct		
276	Unacceptable or inaccurate assumptions are used during JRC modelling and SDS design is based on the model.	<ul style="list-style-type: none"> Runtime performance requirements are not achieved. Business case is not approved due to doubts over model. Delay during remodelling and redesign resulting in cost and time impacts. 		Continually monitor JRC output through close interaction and progress meetings. Assumptions Approvals process. Ensure regular interaction with stakeholders to keep them informed of progress and expected model results.			End Oct 06	Stewart McGarrity
277	Infraco tender documents are not issued on time RISK CLOSED – TO BE REMOVED FROM PRIMARY RISK REGISTER	<ul style="list-style-type: none"> Delay to Infraco contract award and whole project progress. Potential showstopper due to cost and loss of political will. 		Continue to work on developing documents to issue on schedule and conduct tender and ongoing negotiations indicating the phased release of design information Identify what information is critical to pricing by Infraco. Procure legal advisor commitment to documents and deadlines set (action complete). Take on additional resource if necessary and appropriate. Ensure that governance structure facilitates fast decision making, review of documents and agreement to procurement strategy by stakeholders			Oct 06	Bob Dawson
278	Infraco tenderers seek extensions of time during tender period	<ul style="list-style-type: none"> Delay to market pricing and confirmation of business case capex requirements 		Agree bid programme with bidders Manage bid process to ensure bidders deliver to agreed dates			Aug-Sep 06 9 Jan 07	Bob Dawson
279	Third party consents including Network Rail, CEC Planning, CEC Roads Department, Historic Scotland, Building Fixing owner consent is denied or delayed.	<ul style="list-style-type: none"> Delay to programme. Risk transfer response by bidders is to return risk to tie Increased out-turn cost if 		Engagement with third parties to discuss and obtain prior approvals to traffic management plans, landscape and habitat plans, TTROs, TROs and construction methodologies in relation to archaeological and ancient monuments			Dec 06	Trudi Craggs

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

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Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment		Due Date	Risk Owner
					end Sep	end Oct		
		transferred and also as a result of any delay due to inflation		Identify fallback options CEC Planning – Mock application by SDS	New		15 Nov 06	
280	SDS deliverables are considered to be below quality levels required or late in production	<ul style="list-style-type: none"> Delay in submission of information to Infraco Delay in achieving consents and approvals Dilution of effort to de-risk Infraco pricing 		Identification of key areas requiring SDS attention. Re-focus SDS effort. Apply micromanagement to SDS delivery. Weekly reviews to press for deliverables.			Jul 07	Geoff Gilbert
281	Insufficient planning of procurements and controls on management and contract costs.	<ul style="list-style-type: none"> Weak procurement plan Cost creep Damage to reputation 		Present update on procurement plans COMPLETE – CLOSE ACTION			Sep 06	Geoff Gilbert
				Closely manage expenditure including examination of opportunities for value engineering, influence of change and optimisation of value for money			Jun 07	
282	Procurement strategy has high level of risk transfer to contractors which results in a failure to sustain suitable interest from the market throughout bid process. RISK SIGNIFICANCE REDUCED SIGNIFICANTLY	<ul style="list-style-type: none"> Increased price of bids Withdrawal of bidders during bid process 		Make risk allocation clear to bidders COMPLETE – CLOSE ACTION			Oct 07	Bob Dawson
				Identify feasible alternatives to risk allocation and allow negotiation of risk allocation			Mid Nov 06	
283	Infraco tender returns are outside forecast estimates and business case capex limit	<ul style="list-style-type: none"> Draft Final Business Case requires major change and update Business case not sustainable Confidence is lost by Funders and politicians 		Identify feasible options to enable scheme to proceed			Oct 06- Jan 07	Stewart McGarrity
				Conduct review of scenarios and approach to be taken for business case				
				Discuss contingency options with Funders and politicians				
284	If programme requires to be accelerated, early commencement of depot works	<ul style="list-style-type: none"> Potential delay and increased cost should 		Resolve whether or not Leith alternative is viable COMPLETE – CLOSE ACTION			Oct 06	Susan Clark

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

Edinburgh Tram Network
Appendix 1 to Risk Management Paper

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment			Risk Owner
					end Sep	end Oct	Due Date	
	is required (current programme has no contingency and shows depot works commencement Nov 07)	longer timescale		Gain TS agreement for early commencement of works including earthworks.				
285	tie fails to secure sufficient resource to manage all relevant processes. Especially issue of ITN, issue of Business Case and evaluation of Infraco tenders by required time.	<ul style="list-style-type: none"> Failure to advance processes at required rate resulting in programme delays and missing of milestones 		Flexible approach to resourcing including drawing on TSS support, support from other contract services providers e.g. Nicols, Dearte & Henderson etc			On-going	Colin McLauchlan
				Develop 6 month Resourcing Plan COMPLETE – CLOSE ACTION			Mid Oct 06	
				Develop Long Term Resourcing Strategy			Mid Oct 06	
187	Poor relationships with stakeholders including political, Network Rail and other major organisations, businesses, frontages, special interest groups (including Spokes, SNH etc, Equalities Transport (DDA), medial, community councils and residents associations.	<ul style="list-style-type: none"> Project loses political and public support Loss of funding support Delays due to protests 		Regular involvement with stakeholders to keep them informed and to better understand their concerns			On-going	Andie Harper
				Develop strategies through Mike Connelly to counteract any negative comments			On-going	
				Seek support from pro tram lobby groups to promote positive views			On-going	
				Continue with Hearts and Minds campaign			On-going	
339	If CEC are unsuccessful in their representation to Scottish Executive on core measures and the Traffic Regulation Orders process resumes, there could be an adverse recommendation from TRO hearing.	<ul style="list-style-type: none"> Traffic Orders delayed Delay in section of project Reporter does not approve and prevents Tram Network from going ahead Ultimately, CEC could be subject to judicial review 		Meeting with Scottish Executive		n/a		Trudi Craggs
286	Infraco refuses to accept or fully engage in novation of SDS and as a consequence award is successfully challenged	<ul style="list-style-type: none"> Significant delay to delivery of Tram Loss of Reputation Significant extra costs 		Consult with legal			Feb 07	Bob Dawson
				Introduce Infraco bidders to SDS as early as possible				
344	Withdrawal of bidders or submission of non-compliant	<ul style="list-style-type: none"> Less than 3 Infraco bids 		Develop strategy to maintain confidence in delivery of value two-way procurement	New Risk		Jan 07	Bob Dawson

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

Edinburgh Tram Network
Appendix 1 to Risk Management Paper

Master Risk ID	Risk Description	Effect(s)	Risk Sig	Treatment Strategy	Treatment			Risk Owner
					end Sep	end Oct	Due Date	
	bids due to non-project related issues	<ul style="list-style-type: none"> are submitted Less than 3 compliant Infraco bids are submitted Public sector procurement guidelines are not met resulting in significant delay 		Ongoing liaison with bidders to maintain engagement				
139 & 164	Uncertainty of Utilities location and consequently required diversion work/ unforeseen utility services	<ul style="list-style-type: none"> Increase in MUDFA costs or delays as a result of carrying out more diversions that estimated Re-design and delay to Infraco works 		Ground Penetration Radar surveys to confirm location of Utilities under Tramway. To be plotted onto drawings by SDS.	New Risk		End Nov 06	Alasdair Slessor
				In conjunction with MUDFA, create and implement schedule of trial excavations to confirm locations of Utilities			Mid Dec 06	
				Review design information and re-measure during design workshops with Utility Companies and MUDFA. Develop PC Sums into quantified estimates.			End Nov 06	
				Identify increase in services diversions. MUDFA to resource/re-programme to meet required timescales			Dec 06-Aug 07	
1	Change in anticipated inflation rate from 5% (included in base estimate)	<ul style="list-style-type: none"> Out-turn cost higher than reported 		Monitor market and inflation indexes such as BCIS to ensure that correct adjustment is applied to project estimate and update project funder at regular intervals	New Risk		Jun 07	Geoff Gilbert

*Note: A – Stakeholder Risk Owner; B – Project Support to Stakeholder Risk Owner

**Edinburgh TRAM Project
OPPORTUNITIES**

	Opportunity	Status
1	Relocation of Depot to Leith	On hold pending realisation of saving on Gogar depot excavation depth.
2	Bespoke to off shelf tramstop shelters in locations that are not aesthetically critical	Still being considered.
3	Use of ballasted track where possible	Not being pursued further (currently ballasted track where line runs through open countryside on the Airport leg).
4	Omission of Ocean Terminal To Newhaven Section	Not being pursued further at present.
5	Alternative depot solution at Gogar to reduce depth of excavation	This is being implemented.
6	Delay procurement of the 6 additional tram sets to deliver 8/16 service pattern to 2014	This is being considered.
7	Deliver Network Rail Immunisation works concurrent with Network Rail Bathgate project	Being progressed.
8	Construct Edinburgh Park Viaduct in steel rather than concrete	Potential impact on maintenance cost currently being assessed

SE Limited
 ETV PROJECT PROGRESS REPORT FOR SEPT 06 - PROJECT SPEND TO MAR 2007
 PHASING OF VALUE OF WORK DONE
 Date: 02.11.06
 Cumulative Approved Budget

Implementation	Approved Budget		Cumulative Approved Budget vs Forecast			
	Apr-Dec 06	Mar 07	Spent to Date (01-Mar-06)	Dec-06	Jan-07	Feb-07
1 6e RESOURCES	2,012	2,012	2,012	2,012	4,098	5,155
2 DPOF	540	540	420	480	540	5,706
3 LEGALS	2,072	2,072	235	288	328	388
4 SDS	11,278	11,278	1,654	1,864	2,072	2,415
5 JRC	838	838	1,045	1,045	1,045	13,602
6 TSS	3,580	3,580	613	874	638	712
7 UTILITIES			2,594	3,234	3,658	902
8 DESIGN SUPPORT						
9 3RD PARTY NEGOT				198	208	232
10 LAND & PROP			72	58	64	77
11 TROs						
12 COMMS/MKTS	451	451	348	412	461	635
13 TEL	55	55	105	220	268	596
14 SERV/INTEG PLANN	258	258	215	250	260	260
15 PUK	54	54	27	18	34	68
16 FINANCIAL ADVISO	86	86	42	60	67	74
17 INSURANCE	94	94	52	68	82	90
18 CONSTRUCTION UTILITIES Incl INDOPA	6,254	6,254	6,048	6,190	6,308	6,308
19 Infraco						200
20 Tranco						
99 OTHER	45	45	35	40	45	145
SPECIFIED CONTINGENCY	2,571	2,571	2,505	2,751	2,971	
BUDGET TOTAL	32,378	32,378	27,559	30,254	32,378	

Apr - Dec 06 Review	Variances (current minus previous)	Comment
4,394	(150)	New Resource profile reduces previous reported time up in resources to Mar 07
357	(58)	Transfer DFBC spend profile shows reduced spend until
1,925	(41)	delay in progressing protocols with CECTRO's.
9,552		
534		
3,238	(173)	Re-assessed to maintain current burn rate to Mar 07. New
208		
33	(12)	
521	2	
516	(45)	Monthly spend out from 80% to 85% going forward
55		
82		
88	(30)	Previously reduced scope has now stopped with immediate effect. Train FC now being undertaken in-house.
34	2	
1,280		
100	15	
22,300		

16 Limited
 ETN PROJECT PROGRESS REPORT FOR SEPT 06 - PROJECT SPEND TO MAR 2007
 PHASING OF VALUE OF WORK DONE
 Date: 02.11.06
 Cumulative Approved Budget

Implementation	Approved Budget		Cumulative Approved Budget vs Forecast					
	Apr-06	Dec-06	Jan-06	Dec-05	Jan-06	Feb-06	Mar-06	0709
1 16 RESOURCES	2,812	2,075	2,316	2,592	4,698	5,455	5,706	
2 DPOF	540	420	480	540	328	358	389	
3 LEGALS	2,072	1,055	1,384	2,072	2,418	2,654		
4 SDS	11,478	9,266	10,064	11,478				
5 JRC	638	812	624	638	702	902		
6 T89	3,685	2,844	3,234	3,585				
7 UTILITIES								
8 DESIGN SUPPORT								
9 3RD PARTY NEGOT			158	209	232	255	280	
10 LAND & PROP	72	56	61	72				
11 TR06								
12 COMMS / MKTG	487	346	412	461	566	609	638	
13 TEL	655	455	520	585				
14 SERV INTEG PLANN	260	210	230	260				
15 PUK	54	47	48	54	68	74	80	
16 FINANCIAL ADVISOR	60	40	40	60				
17 INSURANCE	994	994	994	994				
18 CONSTRUCTION UTILITIES AND INFRA	6,206	6,096	6,104	6,206				
19 INFRA							200	
20 Tranco								
99 OTHER	45	35	40	45	125	135	145	
SPECIFIED CONTINGENCY	2,371	2,465	2,751	2,972				
BUDGET TOTAL	33,278	27,553	30,384	33,278				

Value of Work Done (VOWD) Review	
Variance (current minus previous)	Comment
3,332	(50) New Resource profile reduces previous reported ramp up in resources to Mar 07
257	(20)
1,438	(41) delay in progressing protocols with CECITRO.
7,746	
596	
2,349	(83) Re-assessed to maintain current burn rate to Mar 07, with new resource profile adopted from Apr 07.
93	5
23	(12)
994	(62) Production items actuals below forecasted
385	(15) Balance from invoice reconciliation
59	
60	
68	(30) Previously reduced scope has now stopped with immediate effect. Term FBC now being undertaken in-house.
28	2
665	(80) HP Gas Diversion - long lead advance payments (\$600) now anticipated Nov 06. Previously Oct 06.
90	5

Re: Limited
 ETN PROJECT PROGRESS REPORT FOR SEPT 06 - PROJECT SPEND TO MAR 2007
 PHASING OF VALUE OF WORK DONE
 Date: 02.11.06
 Cumulative Approved Budget

IMPLEMENTATION	Cumulative Approved Budgets Forecast													
	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	
1 Re-RESOURCES	2,812	2,025	2,319	2,812	4,888	5,155	5,706							
2 DPOF	640	420	480	640	288	358	388							
3 LEGALS	2,072	1,653	1,884	2,072	2,416	2,416	2,634							
4 SDS	11,478	3,285	10,885	11,478			13,002							
5 JRC	688	612	824	838	702	802								
6 TSS	3,580	2,894	3,234	3,582										
7 UTILITIES														
8 DESIGN SUPPORT					158	202	248							
9 3RD PARTY NEGOT					58	64	72							
10 LAND & PROP	72													
11 TROS														
12 COMMS / MKTG	461	345	412	461	586	609	638							
13 TEL	592	435	520	592										
14 SERV INTEG PLANN	250	240	238	240										
15 PUK	54	43	48	54	63	74	80							
16 FINANCIAL ADVISOR	50	40	50	60										
17 INSURANCE	894	880	882	894										
18 CONSTRUCTION UTILITIES incl INFRA	6,360	6,080	6,120	6,360										
19 Infra													200	
20 Tranco														
99 OTHER	46	35	40	46	125	135	145							
SPECIFIED CONTINGENCY	2,871	2,505	2,751	2,871										
BUDGET TOTAL	32,878	27,552	30,284	32,778										

Previous	Variance current minus previous	Comment
6,018	(313)	New Resource profile reduces previous reported ramp up in resources to Mar-07
507	(115)	Transdev OFBC spend profile shows reduced spend until 2008
2,675	(41)	delay in progressing protocols with CEC/TROs.
13,002		No Change. SDS latest programme under review
702	200	For additional modelling to assess wider area impacts of the train route
4,478	(163)	Re-assessed to maintain current burn rate to Mar-07. New resource profile shows reduced reliance on TSS generating a reduced forecast from Apr-07 to completion.
260		
6,311	591	Flexibility of commitment phasing utilised to balance other downstream variances to maintain £60m forecast.
638	2	
710	(60)	Monthly spend out from £80k to £50k going forward
58		
80		
108	(70)	Previously reduced scope has now stopped with immediate effect. Train FBC now being undertaken in-house.
805	2	
3,225		
200		Design work for HV power requirements at Cogar Airport (Scottish Power) - new substation and associated HV cabling
115	30	

TRAM Project

Paper to : Tram Project Board
Subject : Funding (grant) Requirements to end of Financial Year
2006/2007
Date : 3rd November 2006

1.0 Introduction

- 1.1 The purpose of this paper is to obtain from the Tram Project Board
- Confirmation of the approved current budget figure of £40.7 million.
 - Approval for the completion of additional deliverables to be funded from this current budget.
 - Approval to increase the budget to £44.041 million to include for land Purchase on phase 1a only and,
 - Approval for all deliverables to be completed by 31st March 2007.

2.0 Background

- 2.1 A grant offer from Transport Scotland was made to City of Edinburgh Council on the 20th of July 2006 in which the Scottish Ministers offered to provide a capital grant up to a maximum of £32.7 million to be used by the Project to implement the continued development of the Tram Project to completion and approval of the draft Final Business Case by end January 2006.
- 2.2 The current forecast 2006/2007 budget at for the Edinburgh Tram Project currently stands at £40.7 million and comprises the £32.7 million indicated above plus an £8 million under-spend from financial year 2005/2006.
- 2.3 The funding offer of £32.7 million (to be spent by December 2006) was made in respect of specific deliverables as detailed in the grant offer, section 17. These (original) deliverables are:
- *“Agreement by the Scottish Ministers, tie & City of Edinburgh Council on structure/content of the draft Final Business Case by end July 2006*
 - *Agreement by Scottish Ministers, tie, Transport Edinburgh Ltd and City of Edinburgh Council of the strengthened governance arrangements by end September 2006*
 - *Endorsement of the proposed TEL business plan by the TEL Board in November 2006*
 - *Agreement on baseline programme and costs based on Phase 1a, Phase 1b resulting from proposed phasing of tram network by end July 2006 – the programme and costs shall separately identify the elements relating to Phase 1a, Phase 1b and any common elements*
 - *Positive outputs from the Joint Revenue Committee work by mid October 2006 on:*
 - a. *Bus/Tram, Integration*
 - b. *Modal shift & new travel*
 - c. *Social inclusion*
 - d. *Travel accessibility*

TRAM Project

- *Implementation of recommendations of project reviews as set out in paragraph 15;*
- *Completion of the draft Final Business Case by December 2006"*

3.0 Funding (grant) Requirements to end of Financial Year 2006/2007

3.1 Subsequent to the grant letter the Project has identified opportunities to increase it's "spend" to include the additional deliverables as confirmed in Transport Scotland's (Damien Sharp) e-mail dated 21 September 2006,

- *"MUDFA contractor's accommodation set up prior to end March 2007 – fixed costs only (£370,000)*
- *Trial holes – to ascertain service depths etc (on route 1a) (£25,000)*
- *SGN preliminary costs of HP diversion at Gogar Depot site – advance payment towards purchase of longlead items (£500,000)*
- *MUDFA preliminaries arising from 2.1 and 2.3 (£369,000)*
- *Design work for HV power requirements at Gogar/Airport (Scottish Power) (£200,000)*

The total estimated value of these works is £1,464,000."

3.2 These additional deliverables can be met within the current Total Budget of £40.7 million.

3.3 In line with Transport Scotland's recent verbal agreement to purchase all land associated with Phase 1a, funding in relation to Land and Property requires an increase in the approved current forecast budget of £40.7 million. Funding for certain District Valuers services was included in the original £32.7 million funding but not the total cost of land and property as the phasing of this has changed in this financial year as part of the updates to the Draft Final Business case.

The total land and property costs (VOWD and commitment) are currently being valued at £15.830 million in this financial year. It should be noted that section 75 and CEC owned land (termed as "gifted" land) has been valued at £5,159 million. Therefore, this amount is required to be deducted (see table below) to determine the incremental amount required in relation to the approved current forecast budget figure of £40.7 million.

<i>Table 1</i>	£k's
Total valued Amount of Land and Property (06/07)	15,830
<i>Deduct Section 75/CEC Owned (Gifted) Land</i>	(5,159)
Total Forecasted Land Budget to Mar 08	10,671
<i>Deduct Land value included in Tram Monthly Report (October)</i>	(6,850)
Incremental amount now required in relation to Land & Property	3,821

3.4 The forecast spend to the end of this financial year including the additional deliverables is summarised as follows. This is more than the current budget of £40.7m.

<i>Table 2</i>	£k's
Funding Offer	32,700
Items from 3.1 above	1,464
Adjustment to reflect current forecast since last funding approval	(794)
Land purchase	10,671
Total funding in financial year 06/07(VOWD)	44,041

3.5 Appendix 1 below details the original forecast spend at the time of the grant offer (highlighted in yellow) versus the revised forecast spend to deliver all the additional deliverables, adjusted items and purchase of land and property referred to above (highlighted in orange).

3.6 All forecast budget figures relate to phase 1a only in this financial year.

4.0 Consultation

4.1 The following have been consulted in the preparation of this paper:-

- Transport Scotland

5.0 Recommendation

5.1 It is recommended that the Board:

- Confirm the current budget of £40.7 million within the current Financial Year 2006/2007.
- Approve the additional deliverables to be funded from the current forecast and.
- Approve the increase of the budget to £44.041 million.
- Approve the completion of all deliverables (original and additional) by 31st March 2007.

Proposed Andie Harper Date:- 13/11/06
Project Director

Recommended Geoff Gilbert Date:- 13/11/06
Project Commercial Director

Approved Date:-
David Mackay On behalf of the Tram Project Board

tie Limited
ETN PROJECT - PROJECT SPEND TO MAR 2007
PHASING OF VALUE OF WORK DONE
Date:- 13.11.06

Cummulative Approved Budget
Cummulative Current Forecast vs Approved Budget

Figures in '000s	Approved Budget	Cumulative Approved Budget vs Forecast						
		Apr - Dec 06	Spend/Bud to date (Oct)	Nov-06		Dec-06		07/06
				Nov-06	Dec-06	Jan-07	Feb-07	
IMPLEMENTATION								
1 tie RESOURCES	2,612	2,028	2,319	2,612				
		2,287	3,753	4,241	4,698	5,155	5,706	
2 DPOF	540	420	430	540				
		238	238	298	328	358	389	
3 LEGALS	2,072	1,853	1,854	2,072				
		1,397	1,507	1,883	2,160	2,416	2,634	
4 SDS	11,478	9,286	10,495	11,478				
		7,713	8,722	9,333	10,202	11,792	13,002	
5 JRC	638	612	624	638				
		385	594	654	872	702	902	
6 TSS	3,585	2,894	3,234	3,585				
		2,288	2,636	3,056	3,476	3,936	4,296	
7 UTILITIES								
8 DESIGN SUPPORT								
9 3RD PARTY NEGOT			158	209	232	255	280	
10 LAND & PROP	72	56	64	72				
		13	17	22	27	32	10,718	
11 TROs								
12 COMMS / MKTG	461	346	412	461				
		332	408	623	566	609	638	
13 TEL	585	456	520	585				
		370	430	470	500	570	620	
14 SERV INTEG PLANNING	260	210	230	260				
		98	59	68	68	68	68	
15 PUK	54	42	49	54				
		30	56	62	68	74	80	
16 FINANCIAL ADVISORS	60	40	60	60				
		38	58	68	78	98	98	
17 INSURANCE	994	990	992	994				
		928	928	938	1,018	1,021	1,028	
18 CONSTRUCTION UTILITIES incl MUDFA	6,260	6,000	6,130	6,260				
		287	1,005	1,280	1,500	1,690	3,255	
19 Infraco								
				41	41	292	282	
20 Trameo								
99 OTHER	45	36	40	45				
		33	105	116	125	135	146	
SPECIFIED CONTINGENCY	2,971	2,506	2,761	2,971				
BUDGET TOTAL	32,678	27,552	30,284	32,678				
CURRENT FORECAST		18,981	20,072	22,487	28,977	29,120	32,030	

**Edinburgh TRAM Project
(Commercial In Confidence)**

tie Limited

Paper to : Tram Project Board
Subject : Update on the Functional Specification
Date : 20 November 2006

1.0 Background

- 1.1 At the Tram Project Board in September, the draft Functional Specification was tabled. The key stakeholders, the City of Edinburgh Council (CEC), Transport Scotland (TS) and Transport Edinburgh Limited (TEL) agreed to review the draft and revert to tie with comments.
- 1.2 Since the September Board meeting further work has been undertaken on the draft Functional Specification. This paper provides an update.

2.0 Progress to date

- 2.1 Following the Tram Project Board, TS reviewed the draft and provided Susan Clark with comments. On receipt of the comments a meeting was set up with Trudi Craggs of tie and Lorna Davis and Martin McKinley of TS. This meeting took place on 6 October.
- 2.2 Since then the Functional Specification has been reworked, Transport Scotland has had sight of sections 1 – 4 which have been reworked to take account of their comments. In addition, in the Draft Final Business Case which was circulated on 9 November, section 5 contained the Functional Specification as reworked at that time. This included further amendments to the previous draft forwarded to TS.
- 2.3 There have been no other comments on the draft Functional Specification circulated to the key stakeholders at the September Tram Project Board. It is therefore assumed that both CEC and TEL were happy with the previous draft.
- 2.4 Since the Draft Final Business Case was circulated further amendments have been made to the Functional Specification. The final version is attached to this paper. As all amendments to date have been improvements to the document it is anticipated that neither CEC nor TEL will have any comments or issues with this final draft.

3.0 Consultation

- 3.1 This paper was not presented to the DPD and therefore the DPD has not had an opportunity to comment on this paper or the final draft of the Functional Specification.

Ref: Update on TRO process board paper

CEC01691907_0031

**Edinburgh TRAM Project
(Commercial In Confidence)**

4.0 Recommendation

4.1 The Board is asked to approve the final draft of the Functional Specification.

Prepared by: Trudi Craggs, Development and Approvals Director

Recommended by: Andie Harper, Project Director

Date: 13 November 2006

Approved Date:-
David Mackay on behalf of the Tram Project Board

Ref: Update on TRO process board paper



Edinburgh Tram Network

Functional Specification



Trams for Edinburgh
..connecting our Capital



Glossary

AQAP – Air Quality Action Plan
CDA – Core Development Areas
CEC – The City of Edinburgh Council
DPOFA – Development Partnering Operator Franchise Agreement
EARL – Edinburgh Airport Rail Link
HMRI – Her Majesty’s Railway Inspectorate
Infraco – Infrastructure Contract
ITI – Integrated Transport Initiative
ITN – Invitation to Negotiate
LHMP – Landscape and Habitat Management Plan
LLAU – Limits of Land to be Acquired or Used
LOD – Limits of Deviation
LRT – Light Rapid Transit
LTS – Local Transport Strategy
MUDFA – Multi Utilities Diversion Framework Agreement
OLE – Overhead Line Equipment
SDS – System Design Services
tie – tie limited
TEL – Transport Edinburgh Limited
Tramco – Tram Vehicle Supply and Maintenance Contract
TS - Transport Scotland

1 Project Objectives and targets

Purpose of Document

- 1.1 This Functional Specification has been prepared as a standalone document which refers to other scheme documents and deliverables. It is intended that this offers the reader a succinct reference document within which the strategic functionality of the project is captured.
- 1.2 This document also defines the baseline of the project for all the parties involved including the promoter, The City of Edinburgh Council (CEC); the funder, Transport Scotland (TS); tie Limited (tie) and Transport Edinburgh Limited (TEL). It will be from this baseline that changes will be identified, considered and measured.
- 1.3 This document supersedes the Project Definition Statement approved by the TEL Board on 15 May 2006.

Background and Scheme Development

Need

- 1.4 Substantial road traffic growth across the Edinburgh area combined with forecast population and employment increases will lead to significant growth in road congestion. To support the local economy, CEC identified trams as the preferred way to provide a comprehensive, higher quality public transport network to support the local economy and to help to create sustainable development.

Scheme Development

- 1.5 The tram scheme was first considered in the White paper entitled "Scotland's Transport Future" which was published in 1998. In line with the aspirations of the White Paper, CEC included the delivery of the tram network in its Local Transport Strategy (LTS) Inception Report which was published in 1998. This was followed in 1999 by CEC's New Transport Initiative (now known as the Integrated Transport Initiative) (ITI). The ITI was aimed at making a significant contribution to meeting national, regional and local transport objectives and supporting long term economic prospects and quality of life offered by South East of Scotland.
- 1.6 In 2000 CEC's LTS was published which confirmed that the development of a tram network was central to its transport policy. In addition, Waterfront Edinburgh Limited (a joint venture between CEC and Scottish Enterprise Edinburgh and Lothians) commissioned a feasibility study for a North Edinburgh Rapid Transit Solution. This study which was published in 2001 examined the technical and economic case for a rapid transit system serving north Edinburgh and concluded that a loop which connected North Edinburgh with Haymarket and the city centre using Light Rapid Transit (LRT) or tram based technology offered the best potential. In October 2001, CEC made their application to the Scottish Ministers for an "Application in Principal for an Integrated Transport Initiative for Edinburgh and South East Scotland" (the Application) setting out the underlying rationale for their ITI. Before reaching a

final ministerial decision on the Application, the Minister for Enterprise, Transport and Lifelong Learning proposed that an arm's length company should be established to further review and develop the Application and the scope of the ITI and to deliver the ITI.

- 1.7 On 30 April 2002 Transport Initiatives Edinburgh Limited (now tie limited) was incorporated. The recommendations in the Feasibility Study for a North Edinburgh Rapid Transit Solution, the Arup Report, CEC's LTS and the Application culminated on funding supporting in June 2002 from the Scottish Executive to develop the northern loop (line 1) and the western route (line 2) for Parliamentary submission. Thereafter on 18 December 2002, the Application was approved by the Scottish Ministers and as a result the Scottish Executive awarded a funding grant to support the introduction of the Edinburgh Tram (Line One) Bill for the northern loop and the Edinburgh Tram (Line Two) Bill for the western route (the Bills) to the Scottish Parliament.
- 1.8 The case for the tram was further considered in the Edinburgh LRT Masterplan Feasibility Study commissioned by CEC in December 2001 and produced and published by Arup in 2003 (the Arup report). It confirmed that the northern loop should receive the highest priority followed by the western and south eastern lines. The Arup report also concluded that LRT or tram was the appropriate choice for a city of Edinburgh's size.
- 1.9 On 28 February 2003 the Transport Minister announced that there was £375 million 'available in principle' for the Edinburgh Tram.
- 1.10 In respect of the Line 1, the option development process was revisited in 2002 and 2003 through the work carried out by Mott Macdonald in the Work Package One Report. The preferred option was broadly confirmed subject to potential alignment variants at George Street/Princes Street and Telford Road/Roseburn Railway Corridor. These options were taken forward to public consultation.
- 1.11 As for Line 2, the starting point was to examine and select the preferred route corridor through west Edinburgh. Over thirty route options were defined and three basis corridors identified. The preferred route corridor was carried forward to public consultation as were various sub-options – George Street/Princes Street; Roseburn to Carrick Knowe section; Gogar Roundabout and the alignment at the airport.
- 1.12 Public consultation took place on the preferred route alignments for both lines during May – July 2003 and as a result of the consultation responses and comments, a single preferred route alignment for each line was identified and the necessary Private Bill and accompanying documents developed.
- 1.13 On 23 December 2003 the Bills were submitted to the Scottish Parliament. CEC approved its LTS 2004 – 2007 on 22 January 2004 which reconfirmed that the development of a tram network was central to CEC's transport strategy. Thereafter both Bills were formally introduced to the Scottish Parliament on 29 January 2004.
- 1.14 The Bills, as drafted, proposed two lines which could be operated as part of a network.

- 1.15 Line 1 is a loop from St Andrew Square along Leith Walk to Leith, west to Granton, South to Haymarket via the Roseburn Railway Corridor and back to St Andrew Square via Princes Street. The overall route length is 15.6km with tramstops at 22 locations.
- 1.16 Line 2 follows a western direction from St Andrew Square via Princes Street, Haymarket, Murrayfield and South Gyle to Edinburgh Airport and with a shuttle extension from the Airport to Newbridge. In total the line covers 17.8km and has tramstops situated at 18 locations.
- 1.17 The section of tramway between St Andrew Square and Roseburn is common to both Line 1 and Line 2.
- 1.18 Both Bills were considered by separate committees. The Edinburgh Tram (Line One) Bill Committee published its preliminary stage report on 16 February 2005, which was debated by the Scottish Parliament on 2 March 2005. The Edinburgh Tram (Line Two) Bill Committee published its preliminary stage report on 9 February 2005 and it was debated on 23 February 2005. Both Bills received unanimous but qualified support to proceed to the consideration stage.
- 1.19 During the consideration stage, the promoter, CEC, sought to amend the route alignment of both Bills. In relation to Line 1, there was a small amendment at Leith. In relation to Line 2, there was an amendment at the Gyle to pull in the limits of deviation so that the alignment runs along the edge of, rather than through, the Gyle car park. In relation to the common section there was an amendment at Haymarket which moved the alignment from between Citypoint and Elgin House to in front of Elgin House along the reserved public transport corridor. These changes were assessed using the STAG appraisal guidance and supplementary accompanying documents were submitted to the Scottish Parliament with the proposed amendments to the Bills.
- 1.20 The Edinburgh Tram (Line One) Bill Committee published its consideration stage report on 1 March 2006 and this included a recommendation that the route be amended as sought by the promoter. The Edinburgh Tram (Line Two) Bill Committee published its consideration stage report on 21 December 2005. Again this included a recommendation that the route be amended as sought.
- 1.21 The Final stage debate for the Edinburgh Tram (Line One) Bill took place on 29 March at which time the Bill was passed. It subsequently received Royal Assent on 8 May 2006.
- 1.22 The Final Stage debate for the Edinburgh Tram (Line Two) Bill took place on 22 March at which time the Bill was passed. It subsequently received Royal Assent on 27 April 2006.
- 1.23 In parallel to the Parliamentary process, taking a prudent view on capital cost estimates and funding sources, an examination was undertaken by a number of parties – i.e., CEC, TEL and Transdev – to assess the optimum construction phasing of a complete network of Lines 1 and 2. This work was validated by TS.

- 1.24 The parties determined through reasoned argument and professional judgement which phases within the totality of lines 1 and 2 would be best to proceed with. Consideration was given to a range of options for the first phase of the network construction and to the pattern of construction of the subsequent phases.
- 1.25 Accordingly it was agreed that the project should be phased as follows:-
- Phase 1a –Newhaven to Edinburgh Airport
 - Phase 1b –Granton Square to Roseburn Junction
 - Phase 2 – the section along the Waterfront from Newbridge, along Starbank Road to Granton Square
 - Phase 3 – the section from Ingliston Park and Ride to Newbridge
- 1.26 The target date for the start of construction of Phase 1a is October 2007 at the Depot. The target date for the start of operation of Phase 1a is December 2010. The maximum available funding for Phase 1a is £545M.
- 1.27 The target date for the start of the construction for Phase 1b is July 2009. The target date for the start of the operation of Phase 1b is December 2011. The estimated cost of Phase 1b is £80 Million.
- 1.28 It is still the intention to construct and complete Phases 2 and 3, using the powers in the Acts. The intention is that the construction of Phase 2 would commence in line with previous timescales i.e. 2010. The construction of Phase 3 would commence by 2015. Accordingly, while these sections are not being designed as part of the current design work, the scope and the design of the project takes cognisance of future expansion.

Summary of Act powers

- 1.29 The Edinburgh Tram (Line One) Act 2006 and the Edinburgh Tram (Line Two) Act 2006 (the Acts) give the authorised undertaker various powers including:-
- the power to construct the tram line as authorised by the Acts or any part of it and to operate it as a stand alone line or as part of a network
 - Compulsory purchase powers
 - The power to construct relates to works both within the limits of deviation (LOD) and outwith the LOD. Within the LOD there is the power to construct the authorised works ie the tram works. Outwith the LOD there are limited powers mainly restricted to ancillary road works required to amend kerb lines for example. There is also the power to carry out specific works within the limits of land to be acquired or used (LLAU) – eg the construction of a substation or landscaping
 - The powers to operate include provisions in relation to fares, penalty fares, removal of obstructions along the tram line, the power to create byelaws.
 - The powers are to be exercised so as to comply with the Code of Construction Practice and the Noise and Vibration Policy and to

ensure the residual impacts are no worse than those predicted in the Environmental Statements.

- 1.30 Despite the wide powers conferred on the authorised undertaker by the Acts, various other consents still require to be obtained including:-
- Prior approvals – for structures, buildings including substations, tramstops; overhead line equipment (OLE) poles and fixings
 - Temporary traffic regulation orders for construction
 - Traffic regulation orders for operation – extent still to be determined and will be informed by the modelling outputs
 - Building fixings Agreements with owners
 - Listed Building consent (there are some powers in the Acts in this regard but this does not cover all listed buildings)
 - Scheduled Ancient Monument consent
 - Environmental consents e.g. badger licences
 - Approval of the planning authority to the Landscape and Habitat Management Plan (LHMP)
 - Her Majesty's Railway Inspectorate (HMRI) consents

Objectives

General

- 1.31 The broad policy objective of the Acts is to help to create the transport infrastructure necessary to promote and support a growing local economy and create a healthy, safe and sustainable environment. Sustainable economic growth can only take place with a step change in public transport. Road space must be created by modal shift away from cars to enable economic growth to take place without increasing congestion. A tram system will enable new development and continued growth of existing development in a sustainable way. Without it, growing traffic congestion and lack of access to development sites will curb future growth and threaten the economic prosperity of the city.
- 1.32 The Tram Project supports the national, regional and local planning and transport policies. The aim of the project is to meet the following objectives:
- To support the local economy by improving accessibility**
- 1.33 An integrated, efficient, accessible and high quality public transport system promotes economic growth to the local community which leads to social inclusion and further economic development. There will be better and easier access to employment opportunities in Granton, Leith, Muirhouse, Pilton and Newhaven which will be created as a result of the redevelopment of this area. In addition those people who reside in Granton, Leith, Muirhouse, Pilton and

Newhaven will have easy access to employment opportunities in West Edinburgh and beyond.

To promote sustainability and reduce environmental damage caused by traffic

- 1.34 The tram will help to increase the share of travel on public transport and by non-motorised modes is sustainable. Encouraging modal shift from car will reduce emissions and will help the City of Edinburgh comply with the targets set by the Air Quality Amendment (Scotland) Regulations 2002. Modal shift is fundamental to achieving the environmental, sustainability, health and traffic aspirations.

To reduce traffic congestion

- 1.35 Fundamental to the achievement of economic development and environmental aims of the vision are:
- Reduce the number of trips made by car; and
 - Reduce road traffic volume on key urban routes.
 - Reducing congestion and delays on key routes will enable cars to be used efficiently.

To make the transport system safer and more secure

- 1.36 By reducing vehicle volumes, speeds and making roads safer for both users and non-users, there will be less road traffic accidents and casualties.

To promote social benefits

- 1.37 The new system will provide an opportunity to promote social inclusion and community benefits, which are fundamental to the respective elements of the vision by:
- Improving the liveability of streets; and
 - Improving access to transport system by people with low incomes, no access to car, the elderly or mobility impairments.

Benefits of the Scheme

General

- 1.38 Although Edinburgh's economic success brings many benefits to both the City and the wider region, it also creates problems, such as traffic congestion. The tram will help to address these problems, as detailed below:

Economic regeneration and integration of land use and transport planning

- 1.39 In the parts of Edinburgh serviced by the tram such as Leith Docks, Granton Waterfront and Sighthill, regeneration is a key priority. Tram supports the development of brownfield sites by providing sustainable transport connections to areas either currently poorly served by public transport or experiencing congestion, particularly at peak times.

- 1.40 By providing a tram system to serve and connect Core Development Areas (CDA) across the City, the need for car dependence to access employment, residential and retail areas will be minimised. A tram system will ensure that there is effective, high quality public transport linking the City's strategic development and regeneration sites. Without a tram system, it is likely that major developments will be less likely to succeed and where they do, will contribute significantly more to City wide congestion as a direct result of the failure to integrate land use and transport policies. Such developments will also be likely to be diverted to less sustainable locations with less potential for effective transport integration

Traffic congestion

- 1.41 Tram, rather than directly reducing existing congestion, will operate primarily to permit further development without creating additional congestion. As other tram schemes in the UK have shown, there is greater potential for modal shift from car to tram than to buses, or guided buses, particularly if the tram is in operation before the development comes online and travel patterns have already been established. Modal shift from car is a key objective of the Local and Regional Transport Strategies because it will help to relieve the problems of traffic congestion that are experienced in the City and the wider region.

Integration with other Transport Modes

- 1.42 The introduction of tram will provide an opportunity to significantly improve integration between transport modes. The major advantage here is that integration can be planned before the start of services; this is much more effective than trying to achieve integration between already established services. With the establishment of TEL in 2005, full integration is envisaged between tram and Lothian Buses, the major local public transport provider in Edinburgh. The interchange at Haymarket and close proximity to Waverley Station and Edinburgh Park Station mean integration with heavy rail will be good. These interlinking services, along with the proposed frequency of the service, means tram will afford easier access to employment and service areas.

Environment

- 1.43 CEC has a statutory responsibility under the Environment Act 1995 to work to comply with the national air quality objectives. CEC declared an Air Quality Management Area in December 2000 covering parts of the City centre area on the basis that the levels of nitrogen dioxides are likely to exceed government targets on air quality levels in 2010 and beyond. Vehicles within the City have been shown to account for up to 88% of emissions of nitrogen oxides. CEC is currently implementing its Air Quality Action Plan (AQAP) in relation to nitrogen dioxide pollution. Trams will contribute to the objectives of the AQAP by providing an alternative to the car for a large number of journeys through the City centre so improving mobility and accessibility but without adding to current levels of nitrogen dioxide as trams have zero emissions at point of use.

Accessibility and Social inclusion

- 1.44 Social inclusion can be facilitated by providing better public transport, which allows improved access to jobs and services for those without access to a

car. Although neither line will serve anywhere not currently served by bus, and will have greater spacing between tramstops than bus, this will be off-set by the level of frequency offered by the tram. The tram links major residential developments in the North of Edinburgh and employment centres in the West of Edinburgh (South Gyle, Edinburgh Park, Gogarburn, the Airport and Newbridge) and provides enhanced reliability.

- 1.45 There is a requirement for the design of tram vehicles and tramstops to ensure that the trams and tramstops are fully accessible by people with mobility impairments, those travelling with small children and the elderly. For these groups, the advantage of tram over buses in terms of design specifications and ride-quality makes public transport more accessible for a significant section of Edinburgh's population

Streetscape

- 1.46 Linked to economic regeneration is the image of a City conveyed by its streetscape. In spite of its historical importance, parts of Edinburgh's urban environment are of much poorer quality than is desirable. Experience in France has shown that investment in trams has been a catalyst for improvements to the streetscape and environmental amenity in general, bringing both economic and social benefits. In recognition of this important role of tram, the planning authority has developed and approved a Tram Design Manual which is supplementary planning guidance which must be taken in to account when the necessary prior approvals for the project are being considered.

Reliability

- 1.47 There are three key factors which will contribute to the reliability of Tram in Edinburgh when compared to other forms of local public transport:

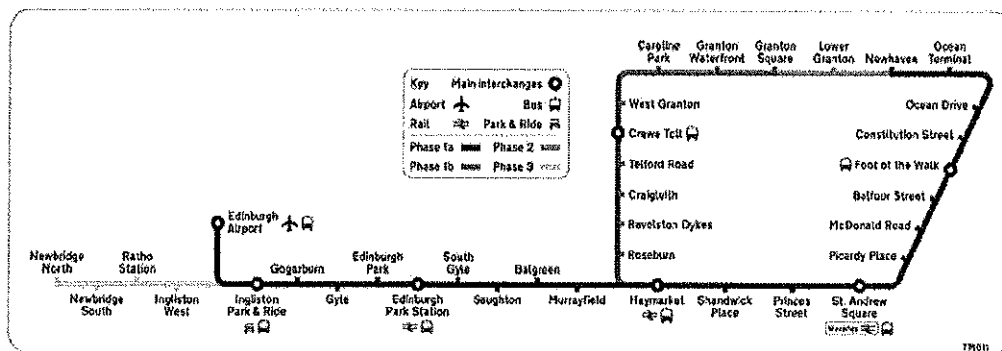
Tram will benefit from greater segregation from general traffic and is thus protected from the vagaries of traffic congestion;

Tram will use off-vehicle ticket machines and have multi-door boarding which reduce dwell time and dwell time variability at tramstops; and

Junction priority for the tram.

2 Geographical Boundaries and Interfaces

EDINBURGH TRAM NETWORK PHASING



2.1 The currently proposed phasing of implementation is:

Phase 1a Newhaven to Edinburgh Airport

Phase 1b Haymarket to Granton Square

Phase 2 Waterfront section

Phase 3 Ingliston to Newbridge

2.2 The LOD and theLLAU, as approved by the Scottish Parliament and as restricted by side agreements entered into with various objectors are shown on the baseline drawings produce by the System Design Services (SDS) designers and set out the geographical boundaries of the project.

Route Alignment - Phase 1a

Newhaven to Constitution Street

2.3 From the centre island tramstop at Newhaven on Lindsay Road to Ocean Terminal the tram will run segregated parallel to the street then on-street for a short section. A new retaining wall structure, approximately on the line of the existing pedestrian ramp, will provide access from the Lindsay Road to Dock Road. The alignment runs parallel to the existing road, segregated running to the tramstop at Ocean Terminal, which comprises both a centre island and a side platform, where a turnback facility is provided.

2.4 From Ocean Terminal, the tram runs on-street along Ocean Drive, over the existing bridge at the Victoria Dock entrance and the existing Tower Place bridge, both of which will be modified to accommodate the tramway. Two side tramstops will be provided off-street on Ocean Drive near the new casino and proposed residential developments, from where the alignment runs off-street as far as Tower Street.

- 2.5 From Tower Street, along Constitution Street, to Foot of the Walk, the tram runs on-street, a mixture of segregated and non-segregated. Two side platforms will be provided at either end of Constitution Street.

Foot of the Walk to York Place

- 2.6 The tram will run on-street (centre running) for the length of Leith Walk from Foot of The Walk to Picardy Place.
- 2.7 Platform stops, located centrally between tram lanes, are proposed at Foot of The Walk, Balfour Street, and McDonald Road.
- 2.8 The London Road and Picardy Place junctions will be modified as necessary. There will be a giratory at Picardy Place together with two side platforms.
- 2.9 The tram will cross the junction of Broughton Street, and will be centre running along York Place, to the northeast corner of St Andrew Square.

City Centre

- 2.10 The layout of the tramline through St Andrew Square will consist of double track running along North St Andrew Street, along the east side of the square and down South St Andrew Street. There will be a bi-directional stop close to the bus station.
- 2.11 From the junction of South St David Street and Princes Street the tram will continue along Princes Street. In order to allow for future extensions to the network provision is to be made for a centre platform tramstop at Waverley Bridge. In addition, there will be a single stop located between Hanover Street and Frederick Street. The alignment will continue to the west of Princes Street across the junctions with South St Charlotte Street and Lothian Road. From the West End the route will continue on a central alignment along Shandwick Place, with an island stop located between Atholl Crescent and Coates Crescent. Continuing towards Haymarket along West Maitland Street the tram will be centre running reaching Haymarket Junction, where there will be a revised junction/cross roads configuration. The roads around the junction, such as Morrison Street, Dalry Road and Grosvenor Street will also require to be re-configured. The tram will continue through the junction and through the Caledonian Alehouse, which is to be demolished, towards Haymarket Yards. A stop is proposed on a viaduct structure in front of Rosebery House which will carry the tram off street parallel to Haymarket Terrace. The stop will provide an interchange with the Haymarket heavy rail station and for buses.
- 2.12 West of this stop the alignment will make its way down through Haymarket Yards, between Verity House and Elgin House to run parallel to the heavy rail track alongside Haymarket Yards and Balbirnie Place.

Roseburn to Carrick Knowe

- 2.13 The alignment continues parallel to the railway line and crosses over Russell Road. From here the tram skirts around the northern boundary of the ScotRail depot. The tramline alignment will be supported by a retaining wall

to the rear of the business properties fronting onto Roseburn Street. An elevated stop consisting of two side platforms is proposed immediately opposite the Murrayfield turnstiles, which will service the stadium and the surrounding area.

- 2.14 The tram will cross Roseburn Street on a viaduct and will then continue to the south of the rugby stadium on an viaduct, which will extend the existing rail embankment. The tram route continues to the south of the training pitches where the increased space allows for a steep grassed embankment in preference to a vertical wall. A new bridge will be provided over the Water of Leith, and to the west the tram continues on a grassed embankment. The residents of the adjacent properties in Baird Drive will be screened from the operation of the tram by planting at the foot of the embankment and noise barriers at the top. The tram will cross Balgreen Road on a bridge at the same level as the railway. A tramstop to the west consisting of two side platforms will be accessed by a ramp from Balgreen Road. The tram will continue along the south of Carrick Knowe Golf Course in the area reserved for a dedicated transport corridor, and then will rise to cross to the south of the railway on a new bridge at the west end of the golf course.

Carrick Knowe to Edinburgh Park

- 2.15 Between Carrick Knowe and South Gyle Access the tram will follow the alignment of and will replace the guided busway, which currently runs parallel to the railway. The existing guided busway will be adapted to allow the tram to use it. Two existing bridges over Saughton Road and Broomhouse Drive will also be converted for use by the tram. Stops will be provided adjacent to Saughton Road (two side platforms) and South Gyle Access (two side platforms).
- 2.16 The tram will cross South Gyle Access on a new bridge and then run in the verge beside Bankhead Drive and the railway. A tram stop comprising two side platforms will be provided at Edinburgh Park Station to allow for interchange for passengers between light and heavy rail.
- 2.17 The tram alignment will then rise onto a viaduct and turn north to recross the railway and enter Edinburgh Park. The tram will run on a grass track, in a reserved public transport corridor, which has been included in the business park masterplan, and a tram stop consisting of two side platforms will be provided at the centre of the park.

Gogar Junction

- 2.18 The alignment crosses Lochside Avenue and South Gyle Broadway at signalised junctions and a tram stop, comprising two side platforms and located on the edge of the car park, will provide access to the Gyle shopping centre. The Tram will then pass underneath the A8 and the roundabout slip roads in a new tunnel structure.

Depot

- 2.19 A depot site has been identified between the Fife Rail Line and Gogar Roundabout. This utilises a small triangle of waste ground and some agricultural land at the edge of the greenbelt. The depot site is bounded to the north by the line of the proposed Edinburgh Airport Rail Link (EARL). The

depot will be constructed at a low level in order to minimise visual impact and to avoid disruption to the airport runway flight path, hence a significant amount of excavation will be required to lower the existing ground level by approximately 7 metres.

- 2.20 A depot building will house staff accommodation and control room for the system, together with maintenance facilities and storage. Stabling will be provided for the tram fleet, with an allowance for future fleet expansion. There will also be a tramstop, consisting of two side platforms, for staff only.

Gogarburn

- 2.21 The alignment continues west parallel to the A8 to a new stop at Gogarburn, which will serve The Royal Bank of Scotland plc's World Headquarters. The Gogar Burn will be crossed on a new bridge.

Ingliston and Airport

- 2.22 The alignment will run west through farmland to Ingliston, crossing the proposed EARL line on a bridge. The existing Park and Ride facilities at Ingliston will be extended and a tramstop consisting of two side platforms will be provided. The tram will run alongside the Gogar Burn, through the rear of the airport hotel car park and cross the airport service road. The terminus stop, which will be an island platform, will be on the site of Burnside Road and will allow for future inclusion within a transport interchange hub for heavy rail link, the tram, buses and taxis.

Route Alignment - Phase 1b

Granton Square to Ferry Road

- 2.23 The tram will run through the Granton Waterfront development area from Granton Square to the junction of West Granton Access and West Granton Road, at the northern edge of Pilton. Much of the tram in this area will form part of a transport boulevard along the new spine road. This area is currently undergoing comprehensive redevelopment and as such the tram alignment has been determined primarily through the development master-planning process. The tram alignment continues along West Granton Access and through the junction at Ferry Road. Stops are planned at Granton Square (centre platform), Granton Waterfront (two side platforms), Caroline Park (two side platforms), West Granton, midway along West Granton access (two side platform), and Crewe Toll (two side platforms). The Crewe Toll stop, which will be located next to the junction between West Granton Access and Ferry Road, will form a bus-tram interchange between the north-south orientated tramway and the main road extending east-west.
- 2.24 The tram route through Pilton is along a reserved corridor on the west verge of the newly constructed West Granton Access from West Granton Road to Ferry Road.
- 2.25 The tram will be constructed along the broad grass verge to the new road, temporary infill opened up under part of the span of the bridge carrying Crewe Road Gardens over West Granton Access.

- 2.26 The track-bed will be in-filled with grass and the route will be landscaped with any vegetation removed during construction replaced with areas of trees and decorative shrub planting.

Ferry Road to Haymarket

- 2.27 The tram will follow the former railway corridor on a full segregated alignment from Ferry Road to the point where it meets the existing heavy rail corridor just west of Haymarket. Tramstops are planned at Telford Road (two sided platform), Craighleith (two sided platform), Ravelston Dykes (two sided platform) and Roseburn (two sided platform).
- 2.28 The tram and the replacement cycleway/footpath will be constructed on the line of the old trackbed. The tram will run on the east side of the track-bed and the cycle and foot path to the west, with formal crossings as required to allow public accesses to the east.
- 2.29 The combined width of the tram tracks and the cycleway and footpath will be approximately 11 metres, compared to the original railway of 8 metres and the current cycleway of 3 metres. Through the majority of the existing cutting and embankments retaining structures will be required to accommodate the required widening.
- 2.30 Where the railway corridor passes under narrow and low arched bridges, the track bed will be lowered to allow the tram tracks to be offset from the bridge centre-line and thus allow room for a narrower cycleway/footpath.
- 2.31 The cycleway and footpath will be surfaced in a fine grade blacktop as existing, while the tram track, with the exception of crossings, will incorporate a grass finish.

Interchanges

General

- 2.34 The integration with buses, achieved through Service Integration Plans (see section 6 - Operational Integration with Bus) is dependent on successful physical integration of bus and tramstops at key locations.
- 2.35 Several key locations have been identified as being critical for an effective interchange infrastructure and these now form part of the scope of the project.
- 2.36 Since Royal Assent, various options have been developed for interchanges. The base assumption for all interchanges is that where possible, interchange should strive to be cross platform, under cover, timetabled and simple. It should seek to avoid the necessity for passengers to cross roads, walk distances greater than 50 metres or have gradients greater than 2.5%. However, specific characteristic of the location and/or design constraints may make it impossible to comply with this
- 2.37 For Phase 1a there are two designated bus/tram interchanges:

Foot of the Walk

- 2.37.1 This interchange is the key to being able to curtail bus routes at the northern end of Leith Walk. As the numbers of passengers involved in what will be enforced modal interchange is significant, a high quality of design, minimising both walking distances and waiting times, must be achieved. Some provision for terminating buses has to be built into the design, however, the network design will address the issue in such a way as to minimise the total number of terminating buses.
- 2.37.2 At this stage the interchange solution for the Foot of Leith Walk is being developed. Space available, road layout and traffic movements constrain the area and key design issues identified are in relation to Traffic Management, use of tram lanes by buses and whether the tramstop location is north or south of the Foot of Leith Walk.

St Andrew Square

- 2.37.3 An interchange at the east end of the city centre is essential to accommodate buses reaching the city centre from points west and south of the West End which currently continue via Leith Walk. These are the routes which need to be truncated in order to achieve modal transfer on Leith Walk. In addition, there will be certain "through" bus services.
- 2.37.4 The design proposal involves reopening of South St. David Street for buses to run south - north and north - south, with trams accommodated in St. Andrew Street and the east side of the Square. Interchange stops will be located on the north side of St. Andrew Square (buses) and close to the bus station (trams). The design proposals meet the basic operational requirements of both bus and tram, gradients and distance requirements for passengers.

- 2.38 In respect of Phase 1b, and in addition to the interchanges required for Phase 1a, there is also a requirement for an interchange at Crewe Toll.
- 2.39 The interchange at Crewe Toll is essential to meet the commitment given during the parliamentary process to provide a feeder service linking the tram route with the Western General Hospital.
- 2.40 The location has sufficient space to maximise the potential for good tram/bus interchange. All bus and tram movements into and inside the interchange are required to be controlled by traffic signals.

Other interchange opportunities

Haymarket

- 2.41 Interchange between tram and bus, and, in some cases, heavy rail is a key function to be taken into account in the design of all tramstops. Locations other than those referred to above are not, however, crucial to any alterations to bus services which are entailed in the Service Integration Plans. While not a critical factor in relation to planned alterations to bus services, one interchange in particular is highly significant in regard to interchange between heavy rail and TEL bus and tram, namely, Haymarket.
- 2.42 In this case, there are no plans to curtail bus services to feed into trams but the separate objective of ensuring the best possible opportunity for interchange between heavy rail and both trams and buses necessitates the provision of appropriate interchange infrastructure at Haymarket. It is essential, therefore, that tramstop and bus stop locations at Haymarket are at the core of plans developed by CEC under the Haymarket interchange project. It is also vital that tram project work takes account as far as is possible, bearing in mind the geographic constraints of the limits of deviation, of future plans for Haymarket redevelopment.
- 2.43 Further interchange opportunities have been identified at the following locations:
- 2.43.1 **Ingliston Park & Ride** - The tram service from/to Ingliston will be a direct replacement of the existing bus service X48. The approved extension of the existing Park and Ride, as well as potential future integration opportunities with regional bus services, necessitate high quality interchange facilities.
- 2.43.2 **Edinburgh Park Station** - The design proposes a tramstop directly outside the rail station, thus allowing for interchanging between tram and heavy rail. However, if the proposed Park & Ride facility at Hermiston Gait is approved, a high quality interchange would be essential at this location.
- 2.43.3 **Granton Square & Newhaven** - Following on from the decision for phased construction, there is an opportunity to provide quality interchanges with bus at the end of Phase 1a in Leith and at the end of Phase 1b in Granton, thus linking the ends of the network along the seafront.

3 Interfaces with Other Projects and Functional Boundary

Edinburgh Airport Rail Link (EARL)

- 3.1 The proposed alignment runs close to the section of Phase 1a between the Depot and the new airport station and careful interface will be required between the two projects particularly in relation to the requirement for electrification and signalling control of the heavy rail system.

Edinburgh Waverley Infrastructure Enhancement

- 3.2 This project commenced on site in January 2006 and will construct a new bay platform at Haymarket Station which will be parallel to the alignment through Haymarket Yards and will be adjacent to the access to be created as part of Phase 1a to the Haymarket Station car park. There has been close interaction between the two projects to date and this will need to continue to ensure that both projects can be implemented.

Edinburgh Airport Outline Masterplan

- 3.3 Commitments have been made with Edinburgh Airport Limited, New Ingliston Limited and Meadowfield Limited regarding the need to ensure that any future access road to the airport can be accommodated alongside the depot. The depot has been designed to ensure that this commitment can be achieved. In addition the tramstop location at the airport and the interaction with the EARL hub needs to be coordinated to ensure that an integrated transport hub is created.

Ingliston Park and Ride Phase 2

- 3.4 Phase 2 of Ingliston Park and ride lies adjacent to the Ingliston Park and Ride tramstop, Phase 3 of the Tram Project, Phase 1 of the Ingliston Park and Ride site and EARL. Due to these significant interfaces, careful consideration is being undertaken in the detailed design in order to ensure all of the projects benefit from the extension. In order to facilitate this, CEC has instructed tie, which is also delivering the tram project and EARL, to undertake the design with a view to commencing construction as part of the advanced works required for the tram project, to allow patronage to increase in advance of the tram coming in to service. By instructing tie to carry out the design, design will have regard to and will respond to the needs of both EARL and tram. However there will need to be continued interaction between all three projects as the extension to the Park and Ride progresses.

Haymarket Masterplan

- 3.5 Given the potential for interchange at Haymarket, CEC needs to have regard to the tramstop locations when developing the Haymarket Masterplan. It is also vital that the tram project takes account of, as far as is possible, the future plans of the Haymarket area. To this end a representative of the project attends all of the Haymarket Interchange Masterplan Steering group meetings.

Granton Masterplan

- 3.6 This sets out the development aspirations for this area in North Edinburgh. There will need to be close interaction between the CEC Planning Authority and the tram project so that the project can help to maximise the redevelopment and regeneration of this area.

Waterfront Masterplan

- 3.7 Similarly to the Granton Masterplan, this sets out the development aspirations for the Waterfront area. Some of the development is underway and has been completed however to ensure that the Masterplan can be implemented in full, there will again need to be close interaction between the CEC Planning Authority and the tram project.

Leith Docks Development Framework

- 3.8 This Framework sets out the development aspirations of the Leith Docks areas which is one of the biggest development opportunities in Edinburgh. CEC has already been working closely with Forth Ports, the largest landowner in this area in relation to the redevelopment of this area. The tram project will require to continue to work closely with both CEC and Forth Ports.

St Andrew Square Capital Streets Plan

- 3.9 Given the status and importance of the St Andrew Square and the plans to improve the streetscape and setting of this area in advance of the tram works, the project and CEC will require to work closely together, to try to co-ordinate the works required for both project and minimise any unnecessary work. The aim of CEC is to create a public realm space and the aim of the project is to create a transport interchange. These aims are not mutually exclusive and accordingly careful interface will be required.

City Centre Management

- 3.10 Given the tram runs through the city centre, the project will continually consult and work with the City Centre Management Company to minimise any impacts to retailers from the construction of the tram and to continue to ensure buy-in for the project from the retailers.

Road Network/Road Traffic Management Interfaces

- 3.11 A large section of the tram network runs along/within the road network within the city centre. To avoid this resulting in an unacceptable impact on road users and the road network, there will need to be close liaison with the roads authority both in respect of the impacts of construction and the operation of the tram. Traffic management plans will require to be agreed with the roads authority and both temporary traffic regulation order and traffic regulation orders will be required in respect of the construction and operation phases respectively.

Network Rail Interfaces

- 3.12 A large section of the tram runs alongside the main Edinburgh to Glasgow heavy rail main line. Given the differences in the currents used to power a light rail scheme compared to a heavy rail scheme, there will be a need to carry out immunisation works to the heavy rail system. Accordingly, there will need to be close interaction with Network Rail and due cognisance taken of the various other heavy rail schemes and developments, which are either committed or in the process of being consented to, to try to ensure all of the necessary works are carried out as efficiently as possible in terms of time and money.

4 System Capability

Vehicle Capability

4.1 The supply of trams is within the scope of this project. The tram must comply with specific design criteria including the following:

- High safety standards, compliance with Railway Safety Principles and Guidance
- High reliability, minimum maintenance required and ease of repair
- Proven design and technology and industry standard technology
- Operable in conjunction with a track gauge of 1435mm
- At least 230 passenger total carrying capacity with standees @ 4 passengers/ m²
- At least 80 seats, of which a minimum of 16 seats must be accessible to passengers without using steps
- Up to 10 m² of floor area to be allocated to full height luggage racks
- Trams nominal 40m in length in order to be able to meet the passenger and luggage carrying capacity identified above
- Nominal width of 2.65m externally
- At least 70% of the floor area will be low floor with a height above rail level of between 300mm and 400mm
- Passenger doors will be situated within the low floor areas and on both sides. All doorways will allow for level boarding access at 300 – 350mm above the top of the rail.
- The slope of the floor at the entrance shall be less than 5%
- Double door clearance width of no less than 1300mm and clearance height of no less than 2050mm
- In line with the Rail Vehicle Accessibility Regulations 1998, wheelchair spaces will be accessible directly from these doorways without steps.
- Maximum operating speed of 80kph
- Operable from a nominal 750dc overhead power supply
- Modular construction (ease of maintenance)
- Minimum operating capability of at least 100,000km per year
- Bi-directional
- Fitted with equipment to automatically indicate the trams position to and communicate with a central control centre
- Provision for wheel chairs
- Capable of supporting a 600kN buffing load
- CCTV equipment to provide rear views
- Seats will be at least 450mm wide
- Headroom through the seating area will be at least 2.3m to ceiling in the low floor areas and where uneven floor height is proposed, 2.1m to the ceiling in the high floor areas
- If loss of overhead supply, batteries will allow all essential systems to operate for a minimum of 30 minutes
- Door performance – 12 seconds for the doors to open and close which includes DDA requirements and passenger and driver reaction times
- Single roof mounted pantograph with Maximum and minimum operating heights of 6.7m and 3.8m respectively
- The pantograph will comprise a base frame, frame, horned slipper holder, pantograph spring and electrical raising/lowering device

Route capability

4.2 The performance criteria of the route include the following:

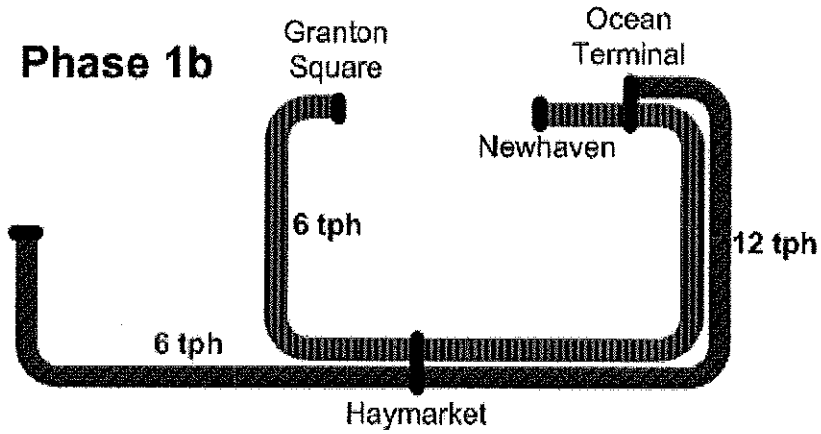
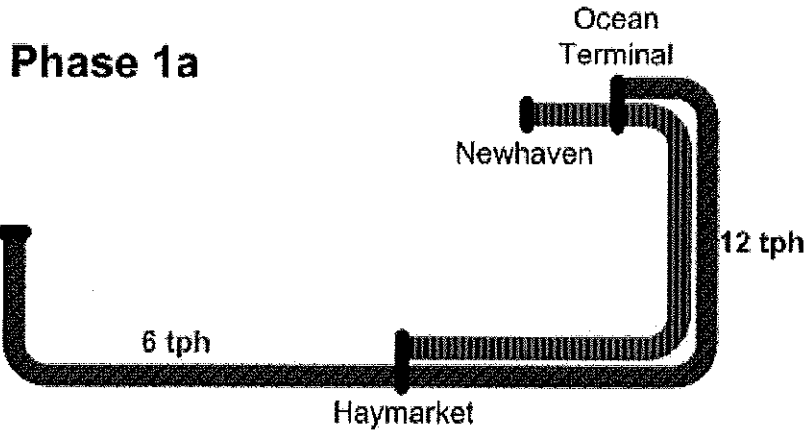
- Phase 1a has a target journey time (including layover and dwell times of 25 seconds at each stop) of 44 minutes and thirty seconds in each direction.
- Phase 1b has a journey time of 16 minutes and thirty seconds (including layover and dwell times of 25 seconds at each stop)
- The design of the network will enable 99% of all tram journeys to be no earlier than 1 minute and no greater than 2 minutes late. This reliability will be measured at:-

- a Edinburgh Airport (arrival and departure)
- b Edinburgh Park Station (arrival)
- c Haymarket (arrival)
- d Foot of the Walk (arrival)
- e Leith (arrival)
- f Picardy Place (arrival)
- g Crewe Toll (departure)
- h Granton Square (departure)

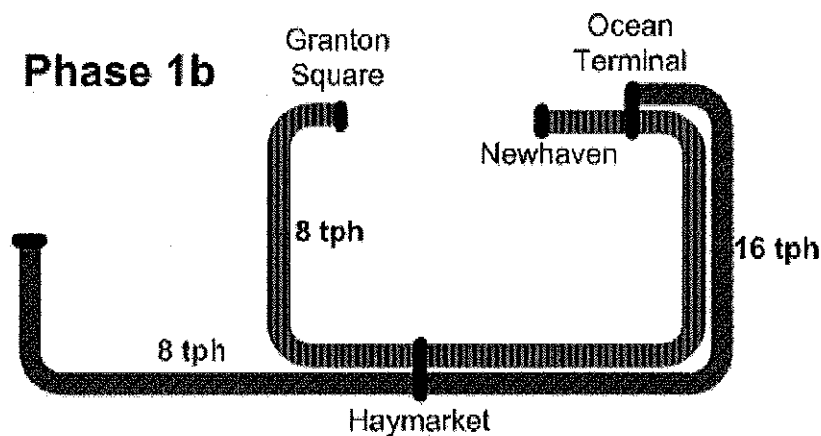
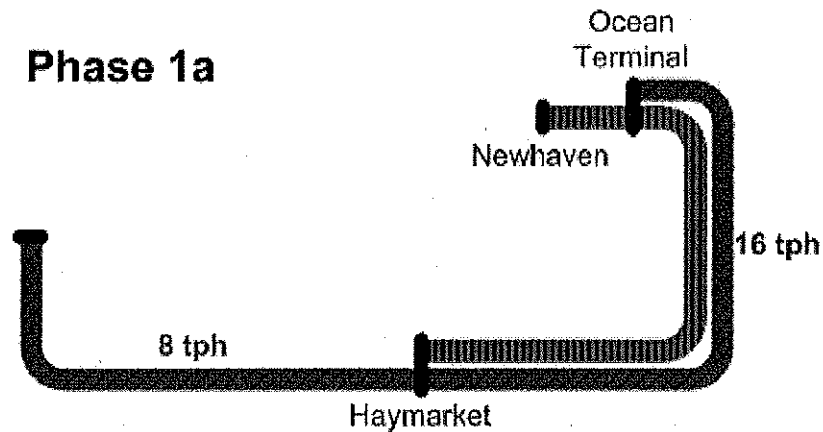
- The scheme has been designed to allow a service frequency of up to eight trams per hour in each direction for each of the two services, giving a frequency of up to 16 trams per hour on the common section. The following diagrams show the proposed tram service patterns. These are based on the following assumptions and conditions:-

- a basic frequency of 6 or 8 trams per hour service (combined to give a total of 12 or 16 trams per hour) is required during the daytime to replace withdrawn bus services (and therefore demand and capacity) on Leith Walk
- Short workings between Edinburgh Airport/Granton Square and St Andrew Square are based on the ability to turn trams at St Andrew Square.
- Edinburgh Airport Service tram frequency is ramped up/down from Ocean Terminal. Granton Square or Haymarket service tram frequency is ramped up/down from Newhaven
- Trams going into service between the Depot and Ocean Terminal/Newhaven will run "in service" from the Gyle
- Haymarket or Granton Square service trams going out of service running between Newhaven and the Depot will run "in service" as far as the Gyle
- St Andrew Square curtailed trams going out of service running between St Andrew Square and the Depot will run "in service" as far as the Gyle
- Edinburgh Airport service trams going out of service will run "in service" from Ocean Terminal to Edinburgh Airport with a short "dead run" from Edinburgh Airport to the depot
- the period of time between the last tram returning to the depot at night and the first tram leaving the depot in the morning is about 4 hours 30 minutes. Consequently the maintenance window will allow works on the system infrastructure for about 3 hours and 45

minutes, depending on the location each night and allowing time for the implementation and withdrawal of isolations.



Peak Service Patterns for 6 & 6 tram per hour scenario



Peak Service Patterns for 8 & 8 tram per hour scenario

- The general design principal is to provide the optimum segregation for the tram way, which will allow for consistency of run time and reduced interaction with other road traffic and which in turn should lead to increased patronage and benefits.
- The route is all double track
- There will be one depot which will provide maintenance and stabling facilities for the entire fleet of trams on the initial network
- There will be turnback facilities at:-
 - a Edinburgh Park Station
 - b Balgreen Road
 - c Haymarket
 - d Shandwick Place
 - e York Place
 - f Foot of the Walk
 - g Ocean Terminal
 - h Crewe Toll
- A tram must always be present at the Airport tramstop

- The layover will be 4 minutes minimum or 10% of the timetabled runtime, whichever is the greater
- There will be layover facilities at the airport, Ocean Terminal and Granton Square
- The depot halt at Gogar will be the location where drivers changeover
- The system will operate as a "line of sight" tramway with tramway signalling provided at road junctions and at tram crossings as appropriate.
- The following assumptions have been made as part of the run time simulation model, however it should be noted that these are for design purposes only and that the eventual speeds will be agreed with HMRI prior to [shadow running]:-
 - Maximum speed of 80kph
 - Assumed deductions in speed to reflect horizontal and vertical alignment
 - Assumed deductions in speed to reflect line of sight conditions
- Provision will be made in the design for a delta junction at Roseburn.

5 Operations and Control Functionality

Control Room

- 5.1 The Control Room will be the focal point for the control and operation of the Edinburgh Tram Network. Its purpose is to provide a working place for the operational employees to manage and coordinate day-to-day activities associated with system operations.
- 5.2 The control room will be located on the first floor of the depot building and will comprise a number of workstations, at which control room staff sit and use equipment to remotely control or retrieve data from the system. The operator interface will be designed to carry out control functions in an ergonomically efficient manner.
- 5.3 The control room workstations shall provide indication and control of auxiliary systems and services as follows:-
- operation of passenger help/passenger emergency help point system
 - tram position and detection system status and alarms
 - public address announcements, volume level control and indications
 - "no-break" power supply status and alarms
 - intruder alarms
 - communications systems status and alarms
 - ticket vending machine and validator alarm indications
 - closed circuit television
 - system plant/services status indications and alarms
 - supervisory control and data acquisition system
 - traction power system
 - operational radio system
 - emergency telephones
 - performance monitoring system
 - central data recording and storage
 - central time
 - security
 - passenger information display management
 - communications network management
 - video/closed circuit television image printing; and
 - fire alarm system

Tram signals/Urban Traffic Control

- 5.4 Equipment at or near tramstops and at road crossings will be needed to facilitate tram signal and traffic controls. This will include poles and signs, together with control boxes and a small electrical supply pillar. Small control cabinets will be required close to all signals. Stop equipment cabinets will house all other control equipment. The tramline will be signalled using road type signals. The road signals will interface with the urban traffic controls and will require small pillars or cabinets to house the vehicle recognition system.

6 Operational Integration with Bus

- 6.1 It is a critical element of planning for the tram system that the operation of bus and tram (and other modes) should be as fully integrated as possible. The principal bus operator in Edinburgh is Lothian Buses, which is majority owned by the public sector. To facilitate tram/bus integration and maximise the operational and service opportunities this presents, CEC established TEL.
- 6.2 The objective is to deliver an integration plan which:-
- Creates a combined bus and tram network which will be financially viable from the start of tram operation
 - Avoids unnecessary duplication of provision, and thereby maximises operating efficiencies
 - Minimises enforced passenger interchange between modes, except where interchange infrastructure is assumed to be deliverable.
- 6.3 TEL will actively plan and manage the two operations as a single economic unit to provide an integrated transport network. Operationally, TEL will retain its bus set-up and take full advantage of the appointment of Transdev as the operator for the tram system. Key areas for integration and key strategies for TEL will be set out in the TEL Business plan:
- Fares strategy
 - Ticketing strategy & systems
 - Revenue protection
 - Service integration & service patterns
 - Interchanges
 - Operational support systems
 - Safety and Quality management
 - Risk management and Insurance
- 6.4 The business plan will also consider likely competitors' responses and opportunities for integration with other bus operators and other modes of transport

7 Project Constraints

General

- 7.1 The system will need to address the effect on the World Heritage Status of Edinburgh and tie is seeking to minimise or eliminate any adverse impact the tram system may have, by working closely with CEC Planning Authority to develop complementary solutions. The initial design work proposed as part of the recommended procurement option is targeted on the most sensitive sections of the route, with the aim of facilitating planning solutions in these areas. The topography, layout, numerous ancient monuments and Sites of Special Scientific Interest, have all been evaluated and have shaped the routing of the tram system, tie is committed to minimising any adverse impact on these areas.
- 7.2 During the construction phase there will be periods where 'restricted' or 'no construction' can be achieved in certain areas, primarily during the Edinburgh Festival and the run up to Christmas. tie will need to ensure that the scheduling of construction takes into account when areas will be curtailed, and minimise any potential down time by pragmatic targeting of resources.

Specific Policies and constraints

- 7.3 In addition, various documents were prepared during the Parliamentary process, which impose constraints on the construction and operation of the tram. These include:-
- 7.4 **Code of Construction Practice** – this was developed during the parliamentary process and the Bill amended to provide that the authorised undertaker must use all reasonably practicable means to ensure that the works are carried out in accordance with the Code of Construction Practice. This document sets out the working hours, noise levels during construction, methods of minimising dust, vibration, and the like during the construction period, consultation requirements etc.
- 7.5 **Noise and Vibration Policy** – again this was developed during the parliamentary process and the Bills were amended to provide that again the authorised undertake must use all reasonably practicable means to ensure that the Noise and Vibration Policy is applied to the use and operation of the tram. This imposes operational requirements on the tram and infrastructure contractors and thereafter the operator and maintainers. The scheme must be designed and constructed so as to endeavour to comply with the policy failing which there will be a need for further mitigation measures e.g. noise barrier following the operation of the tram. The policy also sets out monitoring requirements and the basis of an insulation scheme. Generally the provisions reflect the provisions of the 1996 Regulations which apply in England and Wales.
- 7.6 **LHMP**– this was also developed during the parliamentary process in response to the objectors along the Roseburn Corridor. This sets out the likely impacts on the Corridor, the mitigation and the ongoing management of the Corridor once the tram is constructed and is operational. This requires

the approval of the planning authority prior to the works along the Roseburn Corridor commencing.

- 7.7 **Environmental Statement** – the Bills were amended so as to provide that the residual impacts of the scheme must be no worse than as assessed in the Environmental Statements.
- 7.8 **Tram Design Manual** – this has been developed and approved by the Planning Authority as supplementary planning guidance which will be a material consideration in the assessment of all the prior approval application.
- 7.9 **Side Agreements** – various agreements have been reached with objectors (in exchange for an objector withdrawing its objection) which contain provisions which will constrain the construction of the tram. For example in relation to the SRU, the LLAU has been redefined; working hours on event days have been restricted and there is a requirement to pass through the area within 18 months.

Programme Constraints

- 7.10 There are various programme restrictions which may affect the construction of the tram network which include the following:-
- The August Festival period will run from the first Sunday in August to the first Sunday in September
 - The area affected by the August Festival restrictions will be from Haymarket to Picardy Place
 - The December Christmas market restriction will run from first December to the first working day of the New Year inclusive
 - No work can commence at Haymarket Station prior to 17 November 2007
 - Edinburgh Park has an 18 month construction window on the north site and a 24 month construction window on the south site (which includes the bridge) from the commencement of the works
 - Seasonal constraints on site clearance of trees and shrubs
 - Constraints associated with badger and other protected species
 - CEC has requested that the Fastlink guided busway is kept operational as long as possible in the construction programme
 - There is an 18 month window to complete the main civils work adjacent to Murrayfield

8 Project Worksopce

Track

- 8.1 The nature of tramline surfacing (track, swept path, affected roads and footpaths) is dependent upon its environment. The various track finishes will include the following:-
- Tar macadam or other similar road surfacing
 - Block paviers, stone setts or the like
 - Grass eg the Roseburn Corridor
 - Ballast eg depot area and off street sections
 - Concrete or similar hard surface eg on a bridge or other structure, an apron or special surface in the depot, sidings and tramstops
- 8.2 On street, trackslab construction (reinforced concrete) must provide strength to support the traffic / tram loads (including risk of voids beneath) together with appropriate stray current protection. Steel rails precoated with a resilient material are fixed within the trackslab. The trackslab may also be designed for specific circumstances to mitigate ground borne vibrations and noise. Off-street the rails may be fixed within "grasstrack" (usually a "lawned" type slab or unit construction) or traditional ballast and sleeper type arrangement.
- 8.3 The different track forms will comprise the following:-
- Street running track (integrated and segregated)
 - Grass track
 - Direct fixation track
 - Ballasted track
 - Special trackforms in the depot and tramstops
- 8.4 The trackform provided shall:
- Facilitate ease of construction and minimise disruption to other road users and the public during the construction phase on all roads and across all junctions between Haymarket and Ocean Terminal via Princes Street;
 - Minimise the potential for stray current and be in accordance with the requirements and codes of practice for stray current and the tie Earthing and Bonding Policy document;
 - Ensure simplicity of overall maintenance and ease of rail replacement and relaying. Minimise the disruption to other road users caused by the future repair or replacement;
 - Comply with the operational noise and vibration requirements as stated in the Noise and Vibration Policy;
 - Integrate fully with roads, such that differences in roads surfaces, specifically finished levels and skid resistance, are minimised as far as is reasonably practicable;
 - Take account of the potential vandalism risk posed by the type of trackform, e.g. ballast which could be thrown at trams; and
 - Integrate fully with surrounding area functionality and appearance, to ensure that hazards to pedestrians, the mobility impaired and cycle

users are minimised as far as is reasonably practicable, and such that track surface finishes are in accordance with all design requirements, guidance and aspirations.

- 8.5 The following track elements shall be determined in the study in order to ensure compatibility between the wheels and rails of all operational and maintenance vehicles using the system in terms of sufficient adhesion and the mitigation against the risk of derailment, wear, noise and vibration:
- Various track alignment criteria
 - Rail sections
 - Points and crossing configurations including checking of wheels adjacent to and on approaches to rail crossings
 - Provisions for checking of wheels on small radius curves, adjacent to and on approaches to discontinuities in the rail, such as at rail movement joints
 - Possible provision for flange running at rail crossings and other discontinuities in the rail
 - Rail grades.
 - Consideration of all parameters against full defined construction and maintenance tolerance including the interface between new wheels and worn rails and vice-versa
 - Rail inclination
 - Rail lubrication
- 8.6 Track will be a standard tramway track with steel rails set to standard gauge (1.435m).
- 8.7 Trackwork components to be provided include but are not limited to the following:-
- Rails;
 - Sleepers and points and crossing bearers;
 - Turnouts;
 - Points and points motors.
 - Points baseplates and slippers;
 - Points rollers;
 - Crossings;
 - Check rails and check rail fastening systems;
 - Guard rails and guard rail fastening systems;
 - Transition rails;
 - Rail joints (fishplated and welded);
 - Insulated rail joints;
 - Isolatable rail joints and provisions for access to associated rail/cable connections;
 - Rail movement joints;
 - Rail fastening systems;
 - Rail pads;
 - Baseplates;
 - Resilient baseplate systems;
 - Rail embedment for street running track;

- Paved trackbed and concrete trackbed systems;
- Grooved rail drainage systems (including boxes);
- Buffer stops and vehicle arrestor systems;
- Ballast;
- Granular filtering;
- Granular blanketing;
- Geotextile membranes;
- Plastics membranes;
- Geosynthetic reinforcement;
- Provision and installation of signs and markers; and
- Grasstrack.

8.8 The track will be double track.

Depot

- 8.9 The depot is to be located at Gogar and will require to comply with the Civil Aviation Authority regulations in relation to bird strike given the site's proximity to the emergency runway at Edinburgh Airport.
- 8.10 There will be road access from the A8 Gogar Roundabout. All existing utilities and services will be relocated. The depot will be secured by a continuous 2.4m high security fence and will have a CCTV system.
- 8.11 The depot will accommodate a minimum of thirty two 40 metre births. Staff and visitor parking is to be provided.
- 8.12 The main tram workshop, other workshops, stores, management, administration, operations and maintenance offices and staff welfare facilities (support accommodation) and the control room for the complete Edinburgh Tram Network, shall be contained within a steel framed building clad in an insulated panel cladding system. The roof of the building shall be insulated to a suitable standard with the minimum number of penetrations.
- 8.13 The building workshop shall accommodate a minimum of two tram maintenance roads, a wheel lathe road and a further tram service road.
- 8.14 The support accommodation shall be arranged on two floors set to one side of the main tram maintenance workshop. The Control Room shall be located at first floor level with the Equipment Room set below. A view of the depot external stabling area and tram entry/exit point shall be provided to control room staff from within the Control Room.
- 8.15 The depot shall be provided with the appropriate electricity supplies including 400V/415V for individual items of workshop equipment both inside and outside the building, 230V for internal domestic use and 110V for small tools.
- 8.16 Natural light in offices shall be maximised and all rooms shall be placed within the building in locations appropriate to their function.
- 8.17 Additional service space shall be provided for the accommodation of gas, compressed air and battery charging equipment as well as for the accommodation and systems directly linked to the tram operations.

- 8.18 Full heating and ventilation will be provided throughout the building with air conditioning to the Control Room, Equipment Room, training and meeting rooms.
- 8.19 The plant and equipment to be provided and installed will include the following:-
- Vehicle shunter
 - Vehicle lifting jacks/stands
 - Tram cleaning equipment
 - Air-con repair
 - High-level access platforms
 - Wheel hub removal/press
 - Tyre splitter
 - Depot furnishings
 - Cleaning (shot blast/wet spray)
 - Workshop cranes
 - Craneage (general)
 - Underfloor wheel lathe
 - Tram washing plant
 - Bogie maintenance area
 - Body shop
 - General tool shop, welding/cutting, machining etc
 - Re-railing equipment
 - Pan maintenance and load-test jig
 - Permanent way/track-way maintenance vehicles/ancillary engineering vehicles
 - Stores (computerised/inventory and maintenance linked software)
 - Small tools
 - Spares/consumables
 - Fork lift truck
 - Temporary lighting stands/equipment
 - Mobile/fixed staging for tram and end of tram inspections
 - Road/rail vehicle
 - Accommodation bogies
 - Mobile generators
 - Rail groove cleaning equipment
 - Mobile platforms (road/rail based)
 - Rail grinding equipment
 - Track measurement equipment
 - Sand plant
 - Mobile paint shop booth

Tramstops

- 8.20 Tramstops will be either platform stops, side platform stops or combined side and island platform stops (see section 2 for details of the type of stop at each stop location). The tramstops must be long enough to cater for a 40m tram.
- 8.21 Side platforms are to a minimum of 3m wide. Island platforms will be a minimum of 4 metres wide. The platform height must match the requirements of the tram to ensure level access in accordance with the Rail Vehicle Accessibility Regulations.

- 8.22 Tramstops shall be compliant with:
- The requirements of the Tram Design Manual;
 - Her Majesty's Railway Safety Principles & Guidance;
 - Disability Discrimination Act requirements;
 - Rail Vehicle Accessibility Regulations;
 - The Mobility and Access Committee for Scotland (MACS);
 - The Department for Transport Inclusive Mobility Guide to Best Practice on Access on Pedestrian and Transport Infrastructure; and
 - The Building Regulations (Part M).
- 8.23 In addition the tramstop must comply with the following:-
- Mobility-impaired access and egress to and from each platform. The minimum width of ramps provided on the Edinburgh Tram Network System shall be 2m between handrails;
 - Ramps, if required, shall have a maximum gradient of 1 in 20;
 - No ramp shall be longer than 10m without the incorporation of a landing;
 - Landings shall be no shorter than the width of the ramp; and
 - Mobility impaired tram access/egress points shall be clearly defined within the platform finish if required by the tram design and consistent with tram stopping tolerances.
- 8.24 Tramstop finishes are to be in accordance with the Tram Design Manual. Provision is to be made for 400mm wide tactile strips. The platform edge is to have a 65mm wide white inset line to the leading edge of the line-side coping. Disabled boarding points will be indicated.
- 8.25 Each tramstop will be equipped as is appropriate for the location of the stop. Such equipment may include any of the following:-
- Shelters and canopied waiting areas
 - Tramstop lighting columns
 - Public address
 - Tramstop CCTV
 - Passenger help points and emergency points
 - Braille assistance
 - Tramstop name signs
 - Advertising/information signs and displays including real time passenger information displays
 - Litter bins
 - Guardrails, handrails and cycle racks
 - A perch rail/seating
 - Ticket vending machines
- 8.26 Each stop will be provided with a Stop Equipment Cabinet, which will house the majority of the control equipment such as communication and signalling equipment. Where practicable, this would be co-located with a sub-station. Such cabinets are generally metal units with a 1-2m frontage, up to 1m depth and 1.5m high

Structures

- 8.26 The project requires the construction or modification to a number of structures along the route:-

Phase 1a

- Lindsay Road Retaining wall
- Victoria Dock Entrance Bridge
- Tower Place Bridge
- Leith Walk Railway Bridge
- Haymarket Station Viaduct
- Russell Road Bridge
- Russell Road Retaining Wall One and Two
- Water of Leith Bridge
- Baird Drive Retaining Wall
- Balgreen Road Bridge
- Balgreen Road Retaining Wall One
- Carrick Knowe Underbridge
- Saughton Road Bridge
- Broomhouse Road Bridge
- South Gyle Access Bridge
- Edinburgh Park Station Bridge
- A8 underpass
- Gogar Burn Bridge
- Gogar Burn Culverts
- Gogar Burn Retaining Walls
- Murrayfield Tramstop Retaining Wall
- Rsoeburn Street Viaduct
- Murrayfield Stadium Retaining Wall
- Murrayfield Stadium Underpass
- Murrayfield Training pitches retaining wall
- Bankhead Drive Retaining Wall
- Gyle Stop Retaining Wall
- A8 retaining wall
- Depot Internal Retaining Walls
- Depot Access Bridge
- EARL underbridge

Phase 1b

- Roseburn Corridor Retaining Walls
- Roseburn Terrace Bridge
- Coltbridge Viaduct
- St George's School Access Bridge
- St George's School Foot Bridge
- Ravelston Dykes Bridge
- Craigeith Drive Bridge
- Holiday Inn Access Bridge
- Queensferry Road Bridge
- Groathill Road South Bridge
- Telford Road Bridge
- Drylaw Drive Bridge
- Ferry Road Retaining Wall
- Crewe Road Garden Bridge

8.27 Due cognisance will be taken of the historical status of any of the structures affected by the works.

- 8.28 The structures are to be designed and constructed to comply with the Noise and Vibration Policy.
- 8.29 The design is to minimise the need for bearings and movement joints within the structures. Where bearings are used either elastomeric or pot type bearings will be used to accommodate longitudinal and transverse translations and rotations while minimising lateral loads on sub-structures. All bearing must be replaceable under full live loading.
- 8.30 The structures are to be designed to comply with the loadings imposed by construction and maintenance vehicles.
- 8.31 All elements are to be designed and provided to cater for tensile breakage of one rail at any location at ultimate limit state only. Clearances will be to HMRI requirements.
- 8.32 Finishes to all concrete components of the works shall comply with the following:-
- | | |
|--|--------|
| • All buried and permanently submerged surfaces | F1, U1 |
| • Pier tops, bearing shelves and hidden surfaces | F2, U2 |
| • Parapet coping, exposed surfaces | F3, U3 |
| • Main Bridge deck | U4 |
- 8.33 The structures are to be designed for minimal maintenance requirements.

Roads and Utilities

- 8.34 The majority of the works required to divert or protect utilities will be carried out by the contractor appointed under the Multi Utilities Diversionary Framework Agreement (MUDFA).
- 8.35 In addition the roads and utilities works will include the following:-
- Road and junctions (including all necessary off-alignment works);
 - Site clearance;
 - Safety barriers and fencing;
 - Drainage works including track drainage;
 - Earthworks;
 - Surfacing;
 - Road lighting;
 - Traffic signage and road markings;
 - Traffic signals and tram signals;
 - Landscaping;
 - Temporary and permanent traffic measures;
 - All associated cable ducting required for the works;
 - Depot access and utilities, including within the depot;
 - Utility diversion works whether carried out by MUDFA, Infracore or otherwise; and
 - Removal of all redundant services and apparatus affecting the works.
- 8.36 The tram network shall be segregated from the road wherever feasible using a variety of means as appropriate to the features and constraints of the individual locations. These include the use of road markings and varying

surface types for visual or textural delineation. The design of the segregation details shall optimise their effectiveness without significantly compromising safety and operational factors, including the operation of junctions and emergency and maintenance access.

- 8.37 Wide-area modelling of traffic impacts consequent to the design shall be provided as a pre-requisite to approval, and prior agreement with the City of Edinburgh Council on the Traffic Regulation Orders and Temporary Traffic Regulation Orders necessary to implement the design and complete the works.
- 8.38 The roads design will meet the standards set out in the Design Manual for Roads and Bridges (DMRB), City Development Transport – Development Quality Handbook – Movement and Development and the Tram Design Manual.
- 8.39 Where cycleways are provided, for example along the Roseburn Corridor, these shall be design and constructed in accordance with the relevant guidelines including:
- Design Manual for Roads and Bridges;
 - City of Edinburgh Council “Roads Development Guidelines”;
 - Scottish Executive’s “Cycle by Design”; and
 - Sustrans “Cycle Friendly Infrastructure Guidelines for Planning and Design”
- 8.40 All surfacing materials and drainage will comply with the DMRB. Road signs will comply with the Traffic Signs Regulations and General Directions 2002 and Chapter 8 of the Traffic Signs Manual. The works are to be consistent with “Edinburgh Standards for Streets”.
- 8.41 The traffic and tram signalling systems shall support the run-time of the tramway whilst minimising the impact on other road users. It shall be fully integrated with the City of Edinburgh Council’s urban traffic control system. A protocol will require to be developed with the City of Edinburgh Council regarding the installation and integration of the traffic and tram signals. The signalling system shall incorporate recent/current technological developments as appropriate, to optimise the combined efficiency of the tram and traffic signals.
- 8.42 The traffic management system shall accommodate the direct and consequential impacts of the Tram system and will be subject to approval by tie and CEC.
- 8.43 Road lighting will conform with CEC policy and with the Tram Design Manual. The lighting columns and Overhead Line Equipment (OLE) poles will be rationalised to minimise road clutter.
- 8.44 Road User Safety Audits shall be carried out as required by The City of Edinburgh Council and sufficient to demonstrate the integrity of the design process to HMRI.

Substations

- 8.45 Eleven new 11kV substations will be built along the route to accommodate the traction power supply:-

- Cathedral Substation
- Craigleith Substation
- Granton Mains East Substation
- Granton Road Substation
- Haymarket Terrace Substation
- Leith Sands Substation
- Leith Walk Substation
- Russell Road Substation (initially to be a track paralleling hut)
- Bankhead Drive Substation
- Ingliston Park and Ride Substation
- Jenner's Depository Substation

- 8.46 There will also be a substation at the depot. The substations will be spaced along the route at approximately 2km spacing, as dictated by the needs to supply power to the system. The substation buildings will be approximately 15m by 4 m plan area, which includes a provision for DNO supply.
- 8.47 Each Edinburgh Tram Traction Power Substation shall include:
- The traction substation enclosures (where substations are containerised);
 - The associated Scottish Power HV (11 kV) three-phase power supplies with associated HV switchboard, metering and local emergency tripping facility;
 - 230V LV services with associated metering and distribution equipment for substation services i.e. Lighting, small power etc;
 - Traction substation transformer-rectifier/s and equipment;
 - Traction dc switchboards;
 - Feeder and bypass isolators;
 - Substation earthing;
 - Negative busbars;
 - Batteries / chargers;
 - SCADA interface marshalling panels;
 - Associated internal power and control cabling; and
 - Miscellaneous items to complete.
 - Provision for a 11 kV supply to the Depot services transformer.
- 8.48 The Russell Road Track Paralleling Hut shall be provided with similar equipment as all other substations, however an HV supply from Scottish Power will not be provided and the substation shall be used as a Track Paralleling Hut in the first instance.
- 8.49 The equipment at the Depot traction and services substation shall comprise three HV supply cables from three Scottish Power circuit breakers, or ring main units feeding two indoor transformer-rectifier units for depot stabling traction and main line traction, and the other to the services transformer in the Depot building.
- 8.50 One four-panel 750 V dc switchboard, with direct acting overcurrent protection, relay overcurrent protection, thermal image, earth fault protection on three (two for the yard and one for the workshop) track feeder circuit breakers and direct acting reverse current protection on the Rectifier circuit breaker will be fed from one rectifier transformer; a three panel 750V dc switchboard feeds the main line in the usual way described above.

- 8.51 The whole of the depot yard shall be earthed on the negative side including the workshop traction supplies.
- 8.52 The enclosure of the yard and workshop circuit breaker shall be solidly earthed, and also connected to the rectifier negative pole.
- 8.53 Two negative busbar cubicles (one for the yard rectifier and the other for the main line rectifier), a tripping and closing battery and charger, all associated internal power and control cabling, and earthing shall be provided.
- 8.54 In an annex segregated from the main enclosure for fire protection, two motorised track feeder isolators with motorised earthing function and a motorised load break bypass isolator with over-current detection and tripping relay shall be provided.
- 8.55 At all substations, control and indication multi-pair cabling shall be provided and connected to a SCADA remote terminal unit (RTU).
- 8.56 Subject to the agreement of Scottish Power, the 11 kV feed to each traction substation shall be derived from and form part of the local Distribution Network Providers (Scottish Power) Network ring with a dedicated ring main unit or switchboard feeding the Edinburgh Tram Network rectifier of the traction substation. In the event Scottish Power is unable to agree to this electrical arrangement then additional HV switchgear shall be provided in series with the Scottish Power switchgear.

Overhead Line Equipment

- 8.57 The OLE will be energised at a nominal 750v in accordance with BS EN 50163:2004:Railway Applications – Supply voltage of traction systems.
- 8.58 The Overhead Line Equipment shall utilise a single contact wire system, with additional parallel (buried) feeders. Standard materials will be used with the exception of the route sections from Newhaven Road to Ocean Drive and Caroline Park to Granton Square transtops where stainless steel material (for tubes and fittings) shall be provided. The contact wire will be supported by either side poles, centre poles or building fixings as appropriate to the particular location.
- 8.59 For safety considerations in areas where tram path is shared with the public traffic the contact wire height and the profiling of the wire shall take into account the interface with the public busses (open-top busses in particular).
- Her Majesty's Railway Inspectorate's requirement for minimum wire heights where a support has failed;
 - Minimise the risk of contact with wire from open top double decker buses, over-height road vehicles, window cleaners carrying ladders and any third party work;
 - Activities associated with the Edinburgh festival, Christmas fun-fair on Princes Street, and similar public events; and
 - Provide the necessary clearance for designated high-load routes.

- 8.60 Aerial parallel feeders shall not be permitted. All parallel feeders shall be buried, located in suitable ducts running along the tracks, with cross feeding to the Overhead Line Equipment conductors at suitable intervals.

Communications and signalling

- 8.61 The Tram Position and Detection System shall monitor the efficient and effective movement and overall regulation of trams running on the Edinburgh Tram Network. The Tram Position and Detection System shall include both tram borne and trackside equipments.
- 8.62 The Tram Position and Detection System shall collect in real time the following from each tram for transmission to the Control Centre:
- Tram number;
 - Tram run number;
 - Tram destination;
 - Driver staff identity number;
 - Driver duty number; and
 - Tram in service/out of service.
- 8.63 The Tram Position and Detection System shall provide a number of functions which shall include:
- Tram identification;
 - Tram position on network (outside of depot);
 - Tram progress monitoring;
 - Route setting;
 - Processing of manual and automatic 'Tram ready to start' and advance signal demands requests from trams;
 - Permit trams to safely transverse tram/road crossings;
 - Provide controlled entry to and exit from the depot berthing & maintenance facilities.
- 8.64 The systems to be provided includes the following:-
- Tram position, route setting and detection system
 - Passenger information display systems
 - Telephone network
 - Public address system
 - Operational radio system
 - Passenger help/passenger emergency help points
 - Closed circuit television
 - Supervisory control and data acquisition (SCADA)
 - Operational data network
- 8.65 There will be a Control Room which shall be the focal point for the control and operation of the Edinburgh Tram Network. Its purpose shall be to provide a working place for the Operational employees to manage and coordinate day-to-day activities associated with system operations (see section 5).

9 Maintenance Effects and Requirements Post – Completion

- 9.1 This section relates to life cycle maintenance and renewals post-project completion, i.e. the operational period following completion, commissioning and acceptance by the operator.
- 9.2 It is assumed that the system will be maintained over its expected life to a high standard which includes refurbishment and /or renewal of major system components during the life cycle of the system. For the purpose of the Draft Final Business Case and the TEL business plan, a life expectancy of 60 years has been assumed for the whole system.
- 9.3 High level requirements for maintenance and renewals for the whole network are outlined in the Life Cycle Costs report prepared as part of the Draft Final Business Case and TEL Business Plan development. The underlying systems and operations requirements are based on the draft Operations and Performance Requirements Specification document which is part of a suite of documents being developed in line with the ongoing design of the system.
- 9.4 Life expectancy for key system components are summarised below and achieving these will depend on the delivery of a robust maintenance and renewals regime. The regime will comprise day-to-day maintenance (daily maintenance and operational maintenance of systems / sub-systems), planned refurbishment of major systems for the Tram fleet (including e.g. livery, upholstery, motors, pantographs) and planned renewals as dictated by the specified performance criteria of the individual system.

System Element	System life expectance (replace at end of year)
Trams – refurbishment	15 years
Trams – replacement	30 years
CCTV	15 years
Ticket Vending Machines	15 years
Passenger Help Points	15 years
Passenger Information Displays	15 years
Public Address	10 years
Radio Communication Systems	15 years
Control Room Equipment	15 years
Signalling	20 years

Overhead Line Equipment	40 years
Traction Power Equipment	35 years
Track – off street locations	30 years
Track – on street locations	50 years
Buildings	50 years
Structures	120 years

The details of the maintenance to be performed by InfraCo/TramCo is set out in the Infraco/Tramco ITN and contract documents.

10 Performance Effects and Requirements Post- Completion

- 10.1 Post completion performance effects and requirements form part of the sensitivities considered in the TEL business plan. An operational performance regime will be established between TEL and the operator and maintainer. Key performance indicators are likely to include tram punctuality, systems availability, systems reliability as well as qualitative measures for cleanliness, appropriateness of passenger information provision, helpfulness of staff.

11 Safety and Environmental Effects and Requirements Post-Completion

Safety

- 11.1 Project Design will consider safety risks to those who maintain and operation the completed project as required by the CDM regulations. To do this a safety assessment will be undertaken to identify such risks and develop project specific risk control measures if such risks are not adequately addressed in company standards.
- 11.2 These safety risks are referred to as Hazards. Reference should be made to the Hazards Log.
- 11.3 Areas of known or potential vandalism and route crime should be identified, particularly at overbridges.

Environment

- 11.4 Post completion environmental impacts and mitigation measures are identified in the project Environmental Management Plan. In particular noise, vibration and visual impact are considered. There is an obligation in the Acts to use reasonably practicable endeavours to ensure that the residual impacts are no worse than as predicted in the Environmental Statements.

**Edinburgh TRAM Project
(Commercial In Confidence)**

Paper to : **Tram Project Board**
Subject : **Infraco and Tramco Revised Process To Award**
Date : **15th November 2006**

1.0 Introduction

1.1 This paper sets out the revised process to award of the Infraco contract and concurrent award of the Tramco contract resulting from the staged approach to the delivery of Phase 1b).

2.0 Background

2.1 Following discussions with Transport Scotland and CEC regarding the Preliminary Design Stage Project Estimate Update it has been concluded that it is the project stakeholder's intention to commit to Phase 1b) for delivery at a later date.

2.2 From the discussions to date with bidders it is clear that there is insufficient clarity in the design information issued with the Infraco bid to obtain a de-risked price by the 9th January 2007 as envisaged by the Procurement Strategy, particularly in respect of key structures.

2.3 In order to secure the detailed design delivery for Phase 1a) it has been necessary to prioritise the development of the Phase 1a) designs ahead of those for Phase 1b). This means that the design information necessary to minimise the pricing risks within the Infraco tender will not be available to meet the deadline for closing the Infraco deal in July 2007.

2.4 As a consequence the price for Phase 1b) will now be negotiated during August and early September 2007 when the necessary detailed design information is scheduled to be available.

2.5 The above has resulted in a change to the process and timing for the evaluation, negotiation and award of contracts for Infraco and Tramco. In essence the tender will now be a three stage process:-

- Initial bid for Phases 1a) and 1b)
- Refined bid for delivery of Phase 1a)
- Negotiation of Phase 1b)

This is outlined in more detail in Appendix A.

3.0 Communication

3.1 Given the sensitivities in respect of commitment to Phase 1b) it is proposed that a form of words is agreed for communication of the revised tender process to bidders. This is enclosed as Appendix B.

tie Limited

**Edinburgh TRAM Project
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6.0 Consultation

6.1 This paper has not been circulated prior to this Board meeting.

7.0 Recommendation

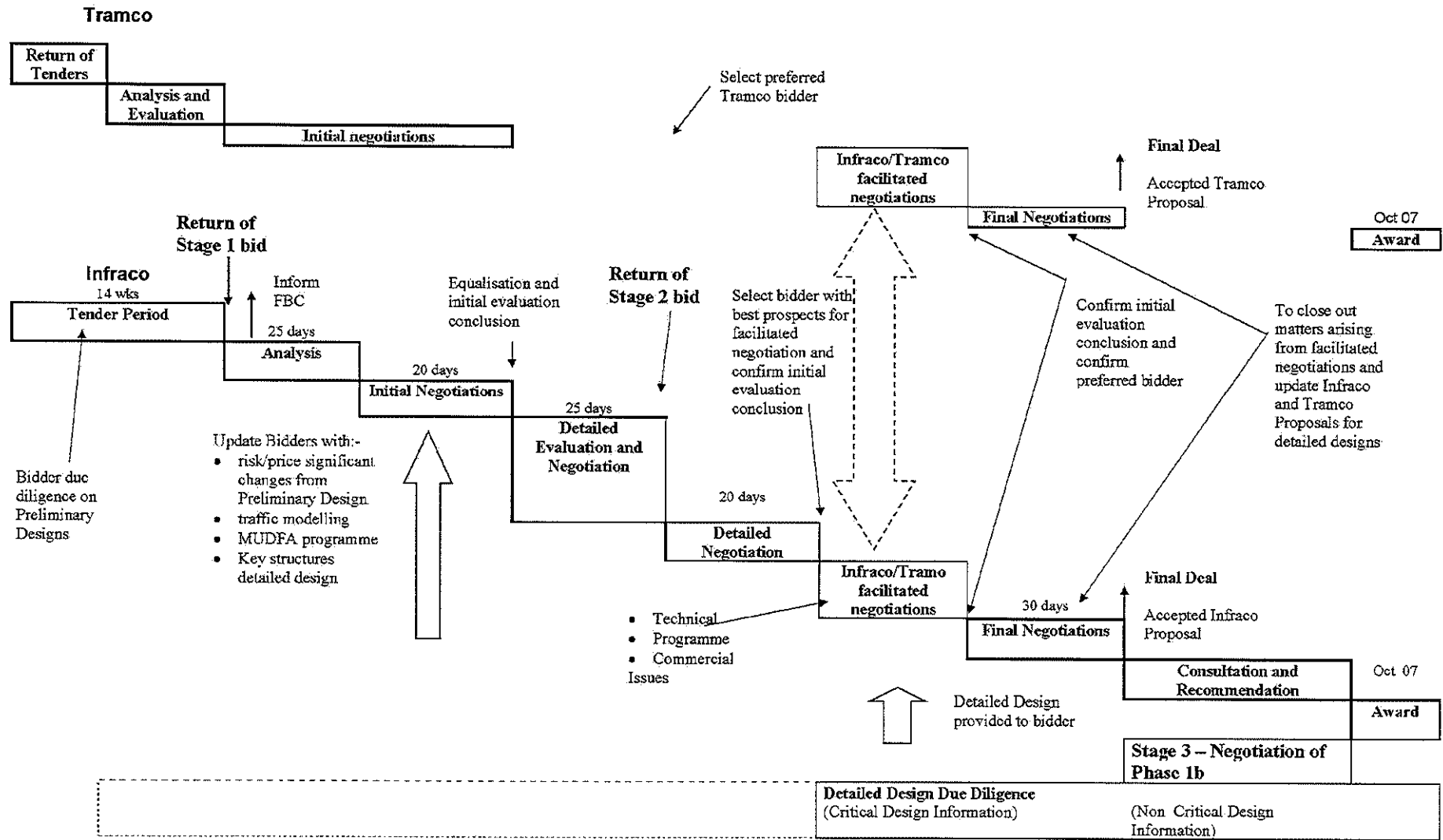
7.1 It is recommended that the Board approve the revised tender approach and the proposed form of words for communication to Bidders.

Proposed Geoff Gilbert Date:- 15/11/06
Project Commercial Director

Recommended Andie Harper Date:- 15/11/06
Project Director

Approved Date:-
David Mackay on behalf of the Tram Project Board

TENDER AND EVALUATION AND NEGOTIATION PROCESS



CEC01691907_0079

DRAFT WORDING ON 'PHASE 1b'

tie and its Stakeholders, Transport Scotland, CEC and TEL are now agreed on the basis for implementation of the Edinburgh Tram Network.

Currently the tender documents provide for a number of mandatory variants including two principal options on the extent, namely:

- The Network currently approved by Parliament – Phases 1a and 1b (Contractual Sections A, B, C and D)
- Phase 1a only (Contractual Sections A and B)

Recent consideration by **tie** and its Stakeholders recognizes that the currently proposed variants do not adequately reflect what may ultimately form the basis of the contract and that this does not help bidders to properly consider all aspects of their proposals.

The Project Stakeholders are agreed that the desired outcome is to deliver both Phases 1a and 1b of the Edinburgh Tram Network and that these Phases would be delivered in a staged manner. The timing of the Project's commitment to Phase 1b will be subject to future funding release and the overall level of Infraco bids for Phase 1b.

Accordingly **tie** would like Infraco bidders to base their initial tender on the following:

- Design, Construction and Maintenance of Phases 1a (Contractual Sections A and B) to form the basis of the 'core works'
- An option for the Design, Construction and Maintenance of Phases 1b (Contractual Sections C and D) to form the basis of an 'extra over' pricing, assuming commencement in July 2009.

In preparing this proposal Bidders are to assume that the Depot will be sized to suit the entire Network and that all Utilities diversions for the Network are complete before commencement.

A similar option will be requested from the tram supply bidders for a staggered option on the delivery of tram vehicles for each Phase.