

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
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), media, community councils and residents associations	Project loses political and public support during construction.	Loss of funding support	M Crosse	18%		Project	<p>Continue with Hearts and Minds Campaign</p> <p>Develop strategies to counteract and negative comments</p> <p>Regular involvement with stakeholders to keep them informed and to better understand their concerns</p> <p>Seek support from pro-tram lobby groups to promote positive views</p>	Not included in Cost QRA	Loss of funding would clearly mean the project could not progress. It is understood by CEC that this eventuality is not covered within the QRA. However CEC wants to know the financial effect of withdrawal from the project at 6 monthly intervals between programmed financial close to the transfer to operational stage. Costs of withdrawal v's costs of completion to be estimated. Given a probability has been calculated costs must be known.
286	Infraco lack of confidence in SDS designs or delivery programme	Infraco refuses to accept or fully engage in novation of SDS.	Possible delay to award; Damage to reputation; Possible extra costs or risk transferred back to tie.	B Dawson	20%		Project	<p>Complete designs and allow due diligence to be undertaken by bidders</p> <p>Consult with legal on options relating to due diligence to be carried out on design and availability of consents</p> <p>Introduce and engage Infraco bidders to SDS as early as possible</p>	Not included in Cost QRA	A value of delay to contract award must be known within a certain time window. CEC requires the costs of delay of signing per month. In addition how much would it cost for Infraco to take the design risk, is this worth buying out?

ETN Risk Register

Risk Description											
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments	
915	Policy or operational decision	Transport Scotland and CEC do not provide indemnities on payment	Bidders will not commit to contract without this assurance; Delay in bid process; Possible bidder withdrawal from negotiations and bid process.	G Gilbert	0%		Project	Ensure Transport Scotland understand implication of not resolving the funding agreement and obtain buy-in from them	Not included in Cost QRA	Funding agreement has been signed by CEC/TS	
1001		Termination due to failure to satisfy a CP within 3 months of Effective Date which tie does not waive	Potential project suspension/cancellation	S Clark	10%		Project	Costs will be recovered from Infraco up to the cap under Clause 77. tie contract management team will obtain CP document on contract award.	Not included in Cost QRA	What is the CP reference?	
1002		Termination due to failure to satisfy a CP within 6 months of the Effective Date which tie does not waive	Potential project suspension/cancellation	S Clark	10%		Project	Costs recovered from Infraco up to the cap under Clause 77. tie contract management will obtain CP document at contract award.	Not included in Cost QRA	What is the CP reference?	
1004		Failure to pay the Infraco resulting in the title in all materials, goods and equipment not transferring to CEC	Project cancellation	G Gilbert	5%		Project	Project financial reporting will provide CEC with advance notice of payment drawdown requirement. CEC to effect treasury management to support the payment requirements	Not included in Cost QRA	This would be a call on the CEC guarantee, not necessarily project cancellation.	
1005		Failure of tie to issue the Certificate of Tram Commissioning (due to tie default or due to tests not having been passed)	Project delay or potentially cancellation	S Clark	1%		Project	Tie project management will ensure that ties actions are discharged timeously so as not to disrupt tram testing and commissioning.	Not included in Cost QRA		

ETN Risk Register

Risk Description											
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments	
987	Unacceptable financial cost and/or risk	CEC do not agree to final negotiated contract	Potential cancellation of project	D Fraser	0%		Project	Ongoing member engagement	Not included in Cost QRA	See CEC comments in relation to Risk ID 187	
916	CEC do not achieve capability to deliver	CEC do not honour funding obligations	Potential showstopper to project if contribution not reached; Line 1B may depend on incremental funding from CEC	S McGarrity	0%		Project	<p>CEC has formed a multi discipline Tram Contributions Group to monitor identified sources of £45m contribution including critically developers contributions. tie are invited to that group. (see add info)</p> <p>CEC to deliver necessary contributions for 1a</p> <p>Tram Project Board to monitor progress towards gaining contributions</p>	Not included in Cost QRA	This is not a Black Flag. The £45m risk is applicable to CEC. CEC have already borrowed elements of the £45m.	
995		Short term funding beyond the existing arrangements of £60m plus 2006-07 rollover of £10.6m cannot be agreed.	Future of project placed in jeopardy	G Bissett	0%		Project	<p>Identify extent and timing of potential shortfall including allowance for cost overrun and short term programme slippage and seek agreement with CEC/TS of funding for the shortfall in the context of the New Award Letter anticipated from TS.</p> <p>If short term funding is resisted, assess scope to reduce short term expenditure and the implications for programme and cost. Tram Project Board to determine appropriate action</p>	Not included in Cost QRA	This has been overtaken by the new Grant Award Letter.	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
996	CEC and TS cannot agree on any of the following: Scope of project, quantum of funding, rate of release of funding, contribution percentages, governance arrangements	Funding agreement between CEC and TS not concluded and financial close cannot be achieved	Project unable to proceed	G Bissett	50%		Project	Seek to negotiate mutually acceptable terms between CEC and TS in the context of the New Award Letter	Not included in Cost QRA	CEC/TS funding agreement has been signed. Probability is showing at 50%. Should be 0%.
997		Components of the funding package cannot be delivered in the necessary timescale	Significant delay which threatens project continuation	G Bissett	50%		Project	Seek agreement that scope of project follows Phase 1a commitment	Not included in Cost QRA	See CEC response to Risk ID 996 above.
998		Funding arrangements cannot be concluded because a material tax exposure emerges which cannot be resolved	Failure to achieve financial close	G Bissett	5%		Project	Seek advice from PWC timeously to avoid creating funding arrangements, corporate structure or other aspects which create such a tax exposure.	Not included in Cost QRA	Tax letter from HMRC has been signed off. No issues here as far as the funding agreement is concerned.
999		Extent of concessionary fare support commitment from TS provides inadequate comfort to CEC	CEC withdraw support for FBC and project fails	G Bissett	50%		Project	Negotiate the terms of Government commitment to concessionary fare support to level which is satisfactory to CEC	Not included in Cost QRA	Sensitivity analysis should be undertaken to demonstrate the potential financial impact on TEL operations. Current assumption in business plan is that the status quo will be applied

ETN Risk Register

Risk Description											
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments	
1000		OGC Gateway 3 Review does not take place timeously or identifies material weaknesses	Delay and potential withdrawal of support from CEC and/or TS.	S Clark	20%		Project	Timeous arrangements with qualified team to prepare for review. Internal reveiw to assess compliance ahead of formal review.	Not included in Cost QRA	The OGC gateway review 3 was undertaken and reported on the 9th October. Therefore why is there still a 20% probability on risks associated.	
268	Final Business Case is not approved or is approved subject to the gaining of additional funding	Funding not secured/agreements not finalised for total aggregate funding from TS and CEC including grant/indexation at FBC; risk sharing between parties; cashflow profile; financial covenant; public sector risk allocation.	Possible showstopper; Delays and increase in out-turn cost may affect affordability. Event: also decision on line 1B.	S McGarrity	0%		Project	Acquire confidence in contingency figures tie are facilitating interaction between TS ANd CEC in the delivery of a funding agreement which will cover all funding matters including decision making on Phase 1b. This process requires each party to facilitate decision making within. Target resoluti Tram Project Board to monitor progress towards conclusion of agreement.	Not included in Cost QRA	As above - funding agreement in place with CEC/TS	
1015		[Definition of tie Default] ties failure to make payment due under Interim Certificates exceeding, in aggregate, 5% of the Contract Price	Project suspension or cancellation	G Gilbert	1%		Project	Provide forecasts, updated on a four weekly period basis. CEC to manage treasury function to ensure funds are available	Not included in Cost QRA		
1016		[Definition or tie Default] ties breach of obligation under the Agreement which materially and adversely affects the carrying out/completion of the Infraco Works[31]		S Clark	1%		Project	Apply effective project management. CEC to support tie with quick and effective decision making.	Not included in Cost QRA		

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
1017		Tax fluctuations where tie is informed of such increase within 3 month	Increase in costs	G Gilbert	10%		Project	Residual Risk - CEC to back this off to TS under funding agreement	Not included in Cost QRA	Explanation required of this risk and treatment of it.
1008		Failure of tie to create the novation agreement – risk is pre-award in that Infraco refuses to accept the novation of SDS.		G Gilbert	5%		Project	tie have developed the Facilitated Negotiations activity prior to contract award to deal with impediments to resolution. Under the Preferred Bidder Agreement award is conditional on Infraco accepting both SDS and Tramco novation.	Not included in Cost QRA	Risk of consents issues to be quantified. As commented on at Risk ID 286, how much would it cost for buy out this risk by getting Infraco to accept?
1014		Termination on tie Default, tie pays value of work done, prelims, supplies goods committed to, demobilisation (and materials removal), 15% as profit loss on all payments	Project cancellation	S Clark	1%		Project	Apply effective project management to avoid creating basis for termination	Not included in Cost QRA	As in Risk ID 187 what would be the cost of termination
870	SDS Designs are late and do not provide detail Infraco requires	Infraco does not have detail to achieve a fixed price without provisional designs	Delay to due diligence and start on site and need to appoint additional design consultants	T Glazebrook	95%	High - 25.00		Monitor design progress and quality Obtain Design Progress Dashboard from SDS	#N/A #N/A	3789.89
139	Utilities diversion outline specification only from plans	Uncertainty of Utilities location and consequently required diversion work/ unforeseen utility services within LoD	Increase in MUDFA costs or delays as a result of carrying out more diversions than estimated	G Barclay	90%	High - 25.00		Review AIPs for Structural Information Carry out GPR Adien survey Identify increase in services diversions. MUDFA to resource/re-programme to meet required timescales. In conjunction with MUDFA, undertake trial excavations to confirm locations of Utilities and inform designer		2280.50

ETN Risk Register

ARM Risk ID	Risk Description			Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
	Cause	Event	Effect							
164	Utilities assets uncovered during construction that were not previously accounted for; unidentified abandoned utilities assets; asbestos found in excavation for utilities diversion; unknown cellars and basements intrude into works area; other physical obstructions; other contaminated land	Unknown or abandoned assets or unforeseen/contaminated ground conditions affect scope of MUDFA work.	Re-design and delay as investigation takes place and solution implemented; Increase in Capex cost as a result of additional works.	I Clark	95%	High - 25.00		Carry out GPR Adien survey Identify increase in services diversions. MUDFA to resource/re-programme to meet required timescales. In conjunction with MUDFA, undertake trial excavations to confirm locations of Utilities and inform designer	6233.57	
952	Scope of works relating to Wide Area Modelling (WAM) have not been agreed with SDS because they consider this to be out with the scope of their contract.	Uncertainty about extent of construction works required on road network relating to Wide Area Modelling issues.	Potential claim from SDS to deal with additional design work; Potential construction costs to deal with WAM issues (difficult to quantify without design) over and above those already included.	K Rimmer	95%	High - 25.00		Agree design requirements relating to WAM with SDS Employ further traffic management expertise Finalise boundaries of Tram responsibility for WAM requirements Obtain design and quantify construction cost for inclusion in base estimate Provision of £500k in Draft Final Business Case estimate to deal with WAM requirements	1906.54	
342	Tram alignment at A8 crossing at Gogar co-incides BT data nests/cable (main coms link between Glasgow and Edinburgh)	A8 crossing tunnel requires special design or BT data nest/cables require to be moved	Capex cost to cover BT data nest/cable move; additional design costs; delay while works to undertake move are carried out; additional tunnelling costs.	I Clark	80%	High - 24.00		Confirmation of BT requirements to tie	1336.44	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
911	Scottish Power own and maintain a cable tunnel in the vicinity of Leith Walk that may or may not interfere with Tram construction and operation; exact location and depth of tunnel is unknown; condition of tunnel is unknown.	Presence of Scottish Power tunnel in Leith Walk requires radical solution	Tunnel may have to be decommissioned and re-laid in a more suitable location; tram alignment may require to be adjusted; special foundation solution e.g. cantilever may be required; increased capex; potential for tunnel collapse during operation and consequent disruption for tram.	M Blake	80%	High - 24.00		<p>Scottish Power to establish exact location of tunnel</p> <p>SDS to try and ensure tram alignment footprint is outwith Scottish Power alignment - confirmation via thumbnails due 16th November</p> <p>tie to undertake engineering feasibility study</p>	534.70	
935	Immunisation project not prioritised by Network Rail; Network Rail resources diverted to other projects or emergencies; Multiple iterations of design development; Tram requirements change as a result of Tram design development; Network Rail standards changes; Tram programme not able to be achieved in the first place.	Network Rail do not deliver the immunisation works before the drop dead date of October 2009.	Tram cannot be commissioned to programme; Critical delay.	S Bell	80%	High - 24.00		<p>Confirm and review importance of works with regular Transport Scotland meetings regarding Network Rail</p> <p>Ensure Immunisation Works programme allows for design development.</p> <p>Establish baseline, change control and constraints</p> <p>Monitor and challenge tie and Network Rail programme development, agree milestones.</p> <p>Review current applicable signalling standards and options for design solutions</p> <p>Review draft Immunisation Design Contract and Works Contract</p> <p>tie to agree Immunisation Design Contract with NR</p> <p>tie to agree Immunisation Works Contract with NR</p>	320.68	

ETN Risk Register

ARM Risk ID	Risk Description			Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
	Cause	Event	Effect							
980	Government/Parliament not persuaded of case for amendmnet to Traffic Order Regulations. Requirement for a mandatory publi hearing for TROs remains adding approximately 1 year to time required to confirm Orders.	Proposed Scottish Executive amendment of the Traffic Order Regulations fails thereby triggering public hearing	Public hearing required with additional cost (£1m) plus delay to making of TRO(s). Public hearing leads to greater risk of variation to promoted street and regulatory features. Increased difficulty of managing gap period - some constructed Infraco street features may require to be removed or altered to accord with made TRO.	K Rimmer	50%	High - 23.00		Encourage and assist SE as much as possible in order to promote change to regulations	2005.23	
47	Poor design and review processes; cumbersome approvals process; reiterative design/approvals process.	Completion of MUDFA works is delayed (due to late design/approvals) - late utility diversions in advance of Infraco works.	Increase in price and time delay in the Infraco contract; Infraco could end up delay to commencement or with utility diversion and would have to price for or have to carry out unplanned re-sequencing; Claims from MUDFA as a result of being unable to proceed with works.	G Barclay	50%	High - 23.00		<p>Incentivisation of SDS</p> <p>Micro management of design</p> <p>Review design timscales</p> <p>Review tie design review</p> <p>Revise design process</p>	1356.51	
48	Two stage tender pricing does not achieve price certainty for works at first stage.	Price certainty is not achieved	Price creep post tender (during pre-construction period). Tender evaluation period exceeds 2 months currently planned. Bidder may attempt to price low at first stage.	B Dawson	50%	High - 23.00		<p>Close principal contract conditions prior to preferred bidder selection</p> <p>Infraco to undertake due diligence on SDS design</p> <p>Minimize Infraco qualifications to price and assumptions</p> <p>Principles or formulae for adjusting prices on certain items following due diligence and value engineering</p>	5344.36	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
352	Increase in land values	Higher land compensation claims than anticipated	Additional uplift on compensation claims	A Sim	70%	High - 23.00		<p>Close out</p> <p>Initiate early negotiations between DV and landowners</p> <p>Liaise with CEC Planning</p>	2694.46	
354	Land and property values experience a net reduction in value as a result of the introduction of the Tram	Part 1 Claims for land and property - (Noise and Vibration)	Possible successful claims resulting in increased costs to project with impact after construction	A Sim	50%	High - 23.00		<p>Close out - inform base estimate</p> <p>Reduce noise & light at track-side/stops - eg noise barriers, light shields</p> <p>Reduce noise at source - wheel/rail interface design</p> <p>Reduce noise/light at receptor through design mitigation measures</p>	1105.11	
44	SDS contractor does not deliver the required prior approval consents before novation	Late prior approval consents	Delay to programme with additional resource costs and delay to infraco. Impact upon risk balance.	T Glazebrook	50%	High - 23.00		<p>Evaluation of prior approval programme</p> <p>Hold fortnightly Roads Design Group</p> <p>Hold weekly CEC/SDS liaison meetings</p> <p>Informal consultation prior to statutory consultation</p> <p>Integrate CEC into tie organisation/accomodation (office move)</p> <p>Tram Design Working Group</p>	1080.92	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
279		Third party consents including Network Rail consent are denied or delayed	Delay to programme; Risk transfer response by bidders is to return risk to tie; Increased out-turn cost if transferred and also as a result of any delay due to inflation.	T Glazebrook	50%	High - 23.00		Additional EMC modelling to give better info to NR CEC Planning - mock application by SDS Draft depot and station change proposals to NR Engagement with third parties to discussed and obtain prior approvals to plans Identify fallback options Obtain critical consents prior to financial close	751.96	
70	SDS does not provide its defined deliverables (technical specs) in accordance with the SDS contract. Infraco Proposals not fully considered.	Poor definition of design and Employers Requirements in Infraco tender documents	Creates impact on the Infraco ability to develop its tender - pricing and supply chain. Increase in time for BAFO and increase in costs. Increase in bidder queries.	B Dawson	50%	High - 23.00		Finalise Employers Requirements for Infraco tenders Monitor commercial impact of bidder queries receive bidder queries and transmit to sds pm SDS PM transmits queries and monitors response to ensure timeliness SDS to provide information to programme	1203.69	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
52	Political and/or Stakeholder objectives change or require design developments that constitute a change of scope; Planning Department requires scope over and above baseline scope in order to give approval (may be as a result of lack of agreement over interpretation of planning legal requirements).	Amendments to design scope from current baseline and functional specification.	Programme delay as a result of re-work; Programme delay due late receipt of change requirements and lack of resolution; Scope/cost creep (dealt with through change process); Project ultimately could become unaffordable.	T Glazebrook	20%	High - 22.00		Close working relationship with CEC and stakeholders Weekly critical issues meeting	#N/A	
986	Inadequate information supplied by tie.	CEC failure to sign legal agreement - legal officer level	Delay to commencement of D Fraser contract		18%	High - 22.00		Transparency of and value of risks to CEC from bespoke contract	585.82	
343	General delay to programme with various causes e.g. failure to obtain approvals on time; parliamentary processes, delays due to lack of prioritisation of BAA agreement with new owners	Delay to completion of project	Inflation at 5% causes increased out-turn cost due to delay plus revenue loss	M Crosse	20%	High - 22.00			3104.68	
893	VE process concentrates on reducing Capex to the detriment of Opex	VE Process makes TEL Business Case undeliverable	TEL Business Case becomes less undeliverable	A Richards	20%	High - 22.00		Make Tram Project Board aware of implications of VE proposals TEL/Transdev involvement in VE Workshop process to ensure balance Capex/Opex	64.17	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
903	Successful challenge from unsuccessful tram bidder	Procurement challenge by Tram bidders	prgramme risk -worst case is to start again	D Powell	1%	High - 21.00		Ensure process meets all aspects of EU procurement law	#N/A	
905	Not controlled by Project	Tramco Insolvency	Trams are not delivered;legal costs;delay	D Powell	1%	High - 21.00		Annual helth Check on Tramco post contract Award Pre contract Award health check	267.36	
906	Currency fluctation Euro/Sterling	Tramco pricing risk between now and awarding contract	price may go up/down	D Powell	5%	High - 21.00		Ensure long bid validities quoted in sterling until novation completed Preferred TRAMCO to hedge currency risk on appointment of preferred bidder	104.61	
888	Design, construction and/or testing does not meet Transdev requirements and gain approval from the ROGS Competent Person	Transdev refuse to operate system on safety ground or apply overly restrictive procedures that are not directly the responsibility of Infraco (ROGS Competent Person agrees with this)	Delay to comencement of service, additional cost both for delay and rectification of the issue	A Richards	5%	High - 21.00		Ensure Infraco Agreement requires Operator to be consulted on appropriate issues Involve Transdev fully in design, construction and testing/review process.	239.20	

ETN Risk Register

ARM Risk ID	Risk Description			Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
	Cause	Event	Effect							
54	Contractor default e.g. insolvency.	Construction bond not available in the event of Infraco default	Increase in cost and programme due to appointment of replacement contractor	B Dawson	1%	High - 21.00		Joint and several liability of consortium members + parent company guarantees prior to award	33.22	
134	Network Rail possessions over and above that estimate are required	Compensation paid to Train Operating Companies	Increased compensation paid to Train Operating Companies	S Clark	5%	High - 21.00		Ensure NR Possession risk is backed off to Infraco Review Infraco programme to ensure it is robust with respect to NR Possessions	144.38	
173	Uncertainty over extent of contaminated land on route	Tramway runs through area of previously unidentified contamination and material requires to be removed and replaced (dig and dump).	Increase in costs to remove material to special and other tip.	T Glazebrook	3%	High - 21.00		Issue containment and georeport to Infraco bidders tie to obtain ground investigation and contamination reports from SDS	127.93	
924	Tram crosses high voltage transmission cables in 4 areas (2x Leith Walk - 275kV; 2 times bridge abutment - 132kV); Design found to be inadequate; Infraco do not follow design requirements; Cable not shut down to Scottish Power requirements.	Very high voltage underground electricity transmission cables are encountered and damaged during Infraco Works	Potential to cause damage and consequent accident during work; Scottish Power delay works if cable shut down notice periods not adhered to; Significant injury (potential for multiple deaths) caused to workforce; Delay in project section.	S Clark	3%	High - 21.00		Ensure Infraco follow relevant safety procedures during construction Ensure Infraco understand and agree with design requirements near to cables. Ensure method statements refer to and deal with very high voltage cables adequately Ensure notice periods for cable shut down are understood by Infraco and incorporated into programme	#N/A	

ETN Risk Register

Risk Description											
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments	
928	Major single safety incident (including a dangerous occurrence) during construction	Safety incident during construction	Delay (potentially critical) due to HSE investigation and rework. PR risk to tie and stakeholders.	S Clark	5%	High - 21.00		All Site Staff to get CSCS or equivalent Develop and Implement Incident Management Processes HSQE Audits, site inspections and Management Safety Tours to be carried out Safety Induction to be carried out for all site staff Site Supervisors to be appointed by tie	#N/A		
1013		Indirect Losses sustained in by Third Parties claiming against tie or Infraco or because of third party agreements or land consents	Additional cost	S Clark	1%	High - 21.00		Agree programme and methodologies with significant Third Parties	24.06		
1010		Occurrence of termination or omission of Infraco Works if permission to resume not granted by tie within 6 months	Project suspension or cancellation	S Clark	1%	High - 21.00		Suspensions are generally due to Infraco default. If tie responsibility - unlikely to apply to whole of works and partial suspension could be deployed for affected area.	109.06		

ETN Risk Register

ARM Risk ID	Risk Description			Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
	Cause	Event	Effect							
931	Utilities assets uncovered during construction that were not previously accounted for; unidentified abandoned utilities assets; known redundant utilities; unknown live utilities; unknown redundant utilities.	Unknown or abandoned assets impacts scope of Infraco work	Re-design and delay as investigation takes place and solution implemented; Increase in Capex cost as a result of additional works.	T Glazebrook	90%	High - 20.00		GPR surveys in areas where there are likely to be services MUDFA trial holes to verify GPR surveys	722.18	
977	Legal challenge. Extension of statutory consultation process. Large number of objections. TRO process is subject to a public hearing process.	Delay in achievement of TRO(s) due to a large number of public objections and/or a legal challenge to using a TTRO to construct Infraco.	Requirement to start construction using TTROs	K Rimmer	90%	High - 20.00		Use of TTROs to undertake construction of permanent works in advance of permanent TROs being approved.	1203.14	
914	Required approval/acceptance turnaround time does not reflect SUC standard practice; SUCs do not have enough resource or process capability to achieve 20 day turnaround	Statutory Utility Companies unable to meet design approval/acceptance turnaround time to meet programme	Additional period required for design approval/acceptance turnaround	T Glazebrook	95%	High - 20.00		SDS to obtain consent for design in accordance with programme requirements - Scottish Water and all Telecoms SDS to obtain consent for design in accordance with programme requirements - SGN and Scottish Power	1061.70	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
105	Encountering archaeological finds/burials/munitions during construction	Exhumation of archaeological finds/burials	Delay in construction programme	S Clark	85%	High - 19.00		<p>Agree protocol AMIS to re-programme works accounting for hot-spots</p> <p>Assess Infraco programme to determine if float contained within the high risk areas</p> <p>Check to ensure that AMIS programme has adequate float</p> <p>Identify hotspots</p> <p>Meet Archaeologist</p> <p>Review Infraco programme regarding archaeological hotspots and ensure adequate programme float</p>	220.86	
938	Failure to reach agreement on roles and requirements	ties overall interface with Network Rail, including consents, approvals and involvement in projects prevents project success.	Drop dead date of October 2009 not achieved; Costs increase beyond budget.	S Bell	80%	High - 19.00		<p>Employ dedicated, competent Project Manager to oversee development, programme and implementation</p> <p>Establish critical path and importance with Network Rail Senior Management Team</p> <p>Facilitate the development of a shared viewed on requirements</p> <p>SDS to prepare requirements specification and necessary technical reports</p> <p>Support legal agreements/approval process with Network Rail</p>	#N/A	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
271	Inadequate quality of submission of approval. Partial submission of package. Programme compression. Lack of CEC resources.	Failure to process prior approvals applications within 8 weeks	Delay and disruption to Infraco programme	T Glazebrook	80%	High - 19.00		<p>Agree approvals submission arrangements with CEC to align with SDS design programme and procurement programme.</p> <p>Assure the quality and timing of submissions</p> <p>Final agreement to be approved by Roads Authority, CEC Promoter, CEC in-house legal and tie</p> <p>Finalise alignments and gain agreement from CEC</p> <p>Where appropriate increase case officer resource to cope with programme compression</p>	891.35	
940	SDS not novated to Infraco; SDS requirements in relation to Immunisation Works after novation not clearly defined; tie/Infraco and Infraco/SDS contracts not aligned or integrated.	Infraco not competent to provide design requirements/challenge design of Immunisation Works	Immunisation Works requirements not adequately specified; Issues arise during Tram commissioning.	S Bell	50%	High - 18.00		<p>Clarify that bidders understand issues relating to design requirements for Immunisation Works (post Consolidated Proposals)</p> <p>Clarify with SDS that they understand all of the issues</p> <p>Review emerging risk allocation and budget provision for Infraco</p> <p>Review proposed novation and Infraco contract regarding Network Rail interface works and in particular Immunisation Works within that</p>	#N/A	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
59	Poor performance (time) by Infraco during construction	Infraco fails to deliver to programme within Liquidated Damages cap	Stakeholder criticism, negative PR, extended programme delay to system.	S Clark	70%	High - 18.00		<p>Agree optimum programme with preferred Infraco bidder</p> <p>Detailed evaluation of Infraco programme to ensure it is robust</p> <p>Ensure contractual controls are in place</p> <p>Robust programme monitoring to be established to detect slippage</p>	#N/A	
926	Complexity of traffic management proposals require additional approvals (relating mainly to city centre)	Approvals for traffic management proposals are not approved or take so long to approve that work cannot commence in line with the programme	Delay to project.	G Barclay	50%	High - 18.00		Review traffic management requirements for rev 6 programme and the alignment of these requirements with programme start dates	#N/A	
989	tie fail to provide CEC with all relevant and necessary information in a timeous manner. tie fail to follow agreed protocols.	CEC lack the opportunity for informed decision making	Delay to project. Increased financial liability. Impact on quality.	M Crosse	50%	High - 18.00			451.22	
990	SDS are behind programme with design review certificates and tie have decided not to extend programme period to account for this.	CEC carry financial impact of uncertified designs provided to Infraco	Modifications required to the designs post-contract award resulting in additional costs	D Fraser	50%	High - 18.00			400.94	

ETN Risk Register

Risk Description										
ARM Risk ID	Cause	Event	Effect	Risk Owner	Prob	Significance	Black Flag	Treatment Strategy	P90 Risk Allocation	CEC Comments
1011		Occurrence of any delay caused by Utilities Works, MUDFA Works, breach of Third Party Agreements, Unplanned City Events, New Utilities and/or any other event referred to as a Compensation Event	Delay and additional cost	S Clark	40%	High - 18.00		Construction programme has been sequenced and interleaved with that of Infraco's. Infraco programme to be shared with CEC and significant third parties and monitored on a period by period basis to avoid programme clashes.	507.99	
172	Area of possible contamination and unstable ground (unlicensed tip) has been highlighted during desk study immediately to east of Gogar Burn - investigation for CERT project indicates that this consists of building rubble and domestic waste.	Tramway runs through area of possible contamination and special foundation is required to cope with unstable ground	Increase in costs to provide special foundation solution	T Glazebrook	95%	High - 17.00		<p>Include SI Report and Information in next issue of information to Infraco.</p> <p>Monitor design progress and include costs in base estimate.</p> <p>Obtain ground investigation information.</p>	254.00	
865	Buildings contain asbestos that was not uncovered during surveys	Asbestos found during demolition works and excavations for construction	Cost and delay during investigation and removal	T Condie	90%	High - 17.00			101.12	
178	Procurement Strategy novates SDS to InfraCo after Detailed Design; Limited input on buildability from Infraco.	Infraco due diligence process reveals that design rework will be required after novation of SDS.	Bids will be higher than envisaged in base estimate as Infraco will price for re-work.	G Gilbert	75%	High - 16.00		Undertake bidder due diligence on designs and apply value engineering within the bid process to capture bidder buildability input	401.05	
132	Realignment of existing road geometry required	Increase in off-route junction improvements, certain junctions requiring realignment of kerbs etc	Increase in design costs.	T Glazebrook	80%	High - 16.00		Increase in off-route junction improvements, certain junctions requiring realignment of kerbs etc	213.71	
								Sum of Black Flag	43,178	
								Sum of remainin	3,859	
									47,037	