

EDINBURGH TRAM PROJECT
Risk Allocation Report

Current Period End 08-Dec-07

Sim Run P90 1A+1B 51647.10 £k

Risk Mean Sum
38634.25 £k

Total Allocation £k
Phase 1A 47036.89 Phase 1B 4610.21 £k

WBS Item	Allocated Risks			Impact Assessment 26 Nov 2007				Exposure Period		No of Periods	Sim Run Risk Mean	P90 Risk Allocation	Proportion allocated to 1A	Parameter used to Split 1A/1B	P90 Risk Allocation 1A	P90 Risk Allocation 1B	P90 Value Per Period	
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						%	Min	Most Likely										
7.3 Infraco	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.	50.00%	5000	10000	15000	12-Jan-07	03-Jan-12	42	4,997.26	6680.45	80	5344.36	1336.09	159.06	
7.2 MUDFA/Utilities	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.	95.00%	2000	5000	8500	02-Apr-07	31-Dec-08	15	4,908.40	6561.65	95	6233.57	328.08	437.44	
1.7 Miscellaneous	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	20.00%	5900	15200	22600	31-Dec-10	31-Dec-11	1	2,903.04	3880.85	80	3104.88	776.17	3880.85	
7.3 Infraco	870	SDS Designs are late and do not provide detail Infraco requires	Infraco does not have detail to achieve contract close without provisional designs	Delay to due diligence and start on site and need to appoint additional design consultants	94.50%		3000		31-Jan-07	31-Jan-08	3	2,835.00	3789.89	100	3789.89	0.00	1263.30	
1.1 Land & Property	352	Increase in land values	Higher land compensation claims than anticipated	Additional uplift on compensation claims	70.00%	0		5750	05-Mar-07	31-Dec-10	41	2,015.57	2694.46	100	2694.46	0.00	65.72	
7.2 MUDFA/Utilities	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	90.00%	0	2000	4000	02-Apr-07	31-Dec-08	15	1,795.70	2400.53	95	2280.50	120.03	160.04	
5 PALIAMENTARY PROCESS/ APPROVALS	980	Government/Parliament not persuaded of case for amendment to Traffic Order Regulations. Requirement for a mandatory public 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.	50.00%		3000		01-May-07	31-Oct-08	13	1,500.00	2005.23	100	2005.23	0.00	154.25	
7.3 Infraco	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.	95.00%	0		3000	03-Jul-06	24-Sep-08	12	1,426.17	1906.54	100	1906.54	0.00	158.88	
7.3 Infraco	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.	50.00%	400	2400	4800	01-Oct-07	31-Jan-08	3	1,268.41	1695.64	80	1356.51	339.13	565.21	
7.2 MUDFA/Utilities	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.	80.00%	1000	1250	1500	04-Apr-07	30-Sep-08	12	999.72	1336.44	100	1336.44	0.00	111.37	
7.3 Infraco	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.	50.00%	900	1800	2700	02-Oct-06	31-Jan-08	3	900.41	1203.69	100	1203.69	0.00	401.23	
5 PALIAMENTARY PROCESS/ APPROVALS	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	90.00%		1000		18-Jun-07	31-Dec-09	28	900.00	1203.14	100	1203.14	0.00	42.97	
2 PROCUREMENT CONSULTANT	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 procurement. Impact upon risk balance.	50.00%	900	1800	2700	30-Jun-06	30-Nov-08	14	898.42	1201.02	90	1080.92	120.10	85.79	
7.2 MUDFA/Utilities	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	95.00%		880		02-Mar-07	31-Dec-08	15	836.00	1117.58	95	1061.70	55.88	74.51	
1.1 Land & Property	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	50.00%	0		3300	30-Dec-11	30-Dec-15	1	826.67	1105.11	100	1105.11	0.00	1105.11	

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7.3 Infraco	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.	90.00%	500		1000	01-Oct-07	31-Jul-10	36	675.28	902.73	80		722.18	180.55	25.08
5 PALIAMENTARY PROCESS/ APPROVALS	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	80.00%	750	750	1000	03-Jan-06	29-Aug-08	11	666.77	891.35	100		891.35	0.00	81.03
3 DESIGN	102	Change in Design Kinematic Envelope requirements	Detail design leads to kinematic envelope impact on vertical and horizontal alignment	Realignment of track to accommodate an increased 3 dimensional safe zone around the preferred route	50.00%	0	500	3250	01-Jan-06	01-Nov-08	13	631.38	844.05	80		675.24	168.81	64.93
7.3 Infraco	279		Third party consents including Network Rail, CEC Planning, CEC Roads Department, Historic Scotland, Building Fixing Owner consent is denied or delayed	Delay to programme; Risk transfer response by bidders is to return risk to tie; Increased out-tum cost if transferred and also as a result of any delay due to inflation.	50.00%		1250		03-Jul-06	31-Dec-09	28	625.00	835.51	90		751.96	83.55	29.84
5 PALIAMENTARY PROCESS/ APPROVALS	986	Inadequate information supplied by tie.	CEC failure to sign legal agreement - legal officer level	Delay to commencement of contract	17.50%	2000	2500	3000	26-Nov-07	31-Jan-08	2	438.22	585.82	100		585.82	0.00	292.91
7.3 Infraco	22	Base estimate does not account for presence of hazardous materials on land	Hazardous materials encountered during construction	Additional treatment costs and protective measures	50.00%	100	400	2000	01-Jan-08	31-Dec-10	39	420.24	561.78	80		449.43	112.36	14.40
7.3 Infraco	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	40.00%		1000		27-Sep-07	31-Dec-11	42	400.00	534.73	95		507.99	26.74	12.73
7.2 MUDFA/Utilities	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.	80.00%	400	500	600	02-Apr-07	31-Oct-08	13	399.98	534.70	100		534.70	0.00	41.13
5 PALIAMENTARY PROCESS/ APPROVALS	989	tie fail to provide CEC with all relevant and necessary information in a timely manner. tie fail to follow agreed protocols.	CEC lack the opportunity for informed decision making	Delay to project. Increased financial liability. Impact on quality.	50.00%	500	750	1000	13-Aug-07	31-Dec-10	41	375.04	501.36	90		451.22	50.14	12.23
7.3 Infraco	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.	75.00%		500		02-Oct-06	31-Jan-08	3	375.00	501.31	80		401.05	100.26	167.10
5 PALIAMENTARY PROCESS/ APPROVALS	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	50.00%	500	750	1000	13-Aug-07	31-Jan-08	3	374.90	501.17	80		400.94	100.23	167.06
7.4 Tramco	905	Not controlled by Project	Tramco Insolvency	Trams are not delivered; legal costs; delay	1.00%	25000	25000	25000	01-Mar-07	31-Jan-08	3	250.00	334.21	80		267.36	66.84	111.40
1.3.1 NR Immunisation Project	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.	80.00%	100	300	500	30-Apr-09	31-Dec-10	21	239.88	320.68	100		320.68	0.00	15.27
2.2 Transdev	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 commencement of service, additional cost both for delay and rectification of the issue	5.00%	3000	4500	6000	30-Jun-09	31-Dec-10	19	223.67	299.00	80		239.20	59.80	15.74
7.3 Infraco	132	Realignment of existing road geometry required	Increase in off-route junction improvements, certain junctions requiring realignment of kerbs etc	Increase in design costs.	80.00%	0	250	500	03-Jul-06	26-Jan-09	16	199.83	267.14	80		213.71	53.43	16.70
7.3 Infraco	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	95.00%	100	200	300	01-Jan-07	31-Jul-08	10	190.00	254.00	100		254.00	0.00	25.40
7.3 Infraco	105	Encountering archaeological finds/burials/munitions during construction	Exhumation of archaeological finds/burials	Delay in construction programme	85.00%	0	150	500	28-Sep-07	31-Jul-10	36	183.57	245.40	90		220.86	24.54	6.82
7.4 Tramco	351	Depot not completed on time	Trams are manufactured but Depot unavailable to take delivery	Trams need to be stored resulting in storage costs	50.00%	100	300	600	01-Mar-07	30-Sep-09	25	166.53	222.62	100		222.62	0.00	8.90
7.3 Infraco	318	Failure to make arrangements with Utilities for the phasing of necessary connections; Utility Company operational constraints	Utility connections cannot proceed as planned	Potential delay to start of Infraco works in certain sections	50.00%	100		500	04-Apr-07	31-Jan-09	17	150.39	201.04	80		160.83	40.21	11.83

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7.3 Infraco	302	Steel shortage due to global demand and ongoing Corus transfer of rail production facility	Delay or price increase due to steel shortage	Long lead times, additional cost due to inflation, programme delay.	20.00%	500	750	1000	26-Apr-07	31-Jan-08	3	149.99	200.51	80	160.41	40.10	66.84	
7.3 Infraco	66	Infraco and Tram systems not compatible and/or contracts not aligned.	Inadequate system integration	Time delay and interface problems between specialist contractors / sub systems.	10.00%	0	1000	3000	01-Nov-07	31-Jan-08	3	132.95	177.73	80	142.18	35.55	59.24	
7.4 Tramco	142	Base estimate allows only for minimum on-board supervisory and comms equipment.	Specification for on-board and supervisory equipment has not been established for Trams on Phase 1A.	A high specification is required for on-board supervisory and comms equipment.	50.00%	0	75	675	19-Jul-07	01-Oct-09	25	125.75	168.10	100	168.10	0.00	6.72	
7.3 Infraco	303	Proximity in time and space to other works within Edinburgh	Third party works in Edinburgh impact on Tram infrastructure construction	CEC may limit the number of workfronts allowed; programme re-sequencing; slower overall construction rate; effective increase in preliminaries; overall programme delay	40.00%	100	300	500	30-Sep-07	31-Jul-10	36	119.77	160.10	80	128.08	32.02	4.45	
7.3 Infraco	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.	2.50%	1368		8208	29-Sep-06	31-Jul-10	36	119.62	159.91	80	127.93	31.98	4.44	
7.3 Infraco	134	Network Rail possessions over and above that estimate are required	Compensation paid to Train Operating Companies	Increased compensation paid to Train Operating Companies	5.00%	500	2000	4000	01-Oct-07	31-Jan-09	17	108.00	144.38	100	144.38	0.00	8.49	
7.3 Infraco	115	Network Rail cancels planned possessions	Planned work at interface with Network Rail is delayed	Time delay and resulting cost increase	10.00%	350	750	2000	01-Oct-07	31-Jan-09	17	103.73	138.66	100	138.66	0.00	8.16	
7.3 Infraco	1010		Occurrence of termination or omission of Infraco Works if permission to resume not granted by tie within 6 months	Project suspension or cancellation	1.00%		10000		27-Sep-07	31-Jan-11	42	101.98	136.33	80	109.06	27.27	3.25	
1.1 Land & Property	10	Costs of obtaining access rights are unknown	Cost associated with obtaining wayleaves	Increased legal costs relating to obtaining wayleaves	40.00%	50	200	500	02-Apr-07	25-Oct-06	13	100.14	133.87	100	133.87	0.00	10.30	
1.1 Land & Property	9	Reclassification of land	Land reclassification changes value	Reclassification of land increases value/ cost of land.	10.00%	1000		1000	20-Mar-07	20-Mar-12	42	100.00	133.68	100	133.68	0.00	3.18	
7.3 Infraco	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	90.00%	60		150	01-Jan-08	31-Mar-09	17	94.55	126.40	80	101.12	25.28	7.44	
7.4 Tramco	906	Currency fluctuation Euro/Sterling	Tramco pricing risk between now and awarding contract	price may go up/down	5.00%	0	1500	3000	01-Mar-07	31-Jan-08	3	78.25	104.61	100	104.61	0.00	34.87	
7.4 Tramco	71	Inadequate definition of availability, reliability and maintainability requirements	Unclear scope of desired performance levels.	Increased capex investment is necessary.	30.00%	0	250	500	01-Mar-07	30-Jul-08	10	75.29	100.65	100	100.65	0.00	10.07	
7.1.3 Depot	974	Inaccurate Topo Survey results	Increase in levels of Spoil Excavation	Increased Cost & Programme extension	25.00%	100	300	500	14-May-07	24-Aug-06	11	74.69	99.85	100	99.85	0.00	9.08	
7.4 Tramco	155	Increase in specification over and above assumptions in base estimate regarding equipment and quality specification for tram vehicles	Business case runtime and CEC requirements (change in equipment and quality specification)	Increased cost of tramsets	20.00%	160	270	600	19-Jul-07	01-Oct-09	25	69.28	92.62	100	92.62	0.00	3.70	
7.3 Infraco	11	Contractors methodology not adequately assessed	Land required for access to workfront not acquired	Additional management and acquisition costs relating to acquiring land to gain access	20.00%	300		300	08-May-07	30-Jan-09	16	60.00	80.21	80	64.17	16.04	5.01	
2.9 TEL	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	20.00%		300		31-Oct-10	31-Dec-15	3	60.00	80.21	80	64.17	16.04	26.74	
4.3 Business Case	294	Traffic model identifies areas where design is not compatible with efficient transport network operations.	Final Design impacts negatively on Final Business Case	Could be negative implications on Tram final business case. Potential to negatively impact BCR	20.00%	100	300	500	31-Mar-07	31-Jul-08	10	59.95	80.15	80	64.12	16.03	8.01	
7.3 Infraco	67	Interface with CEC as roads authority	Roads maintenance is not carried out	CEC is in breach of its statutory duties	20.00%	100	250	500	01-Jan-08	31-Jan-08	1	55.89	74.72	80	59.77	14.94	74.72	
3 DESIGN	336	Adequate scope and extent of noise and vibration prevention measures/requirements are not provided to SDS. Specifications relating to Tram noise provided by Tramco are optimistic.	Design assumptions lead to Tram noise and vibration measures being inadequate during operation	Tram design requires to be re-worked; Post construction elements need to be adjusted or re-constructed or additional noise and vibration measures need to be incorporated.	10.00%	100		1000	01-Jan-07	31-Jan-11	42	55.10	73.66	80	58.93	14.73	1.75	
7.4 Tramco	98	Problems with tram supplier (industrial relations, financial problems etc)	Delay in supply of vehicles - 1B	Time delay to operations, costs relating procurement of replacement manufacturer	25.00%	0	240	400	19-Jul-07	01-Oct-09	25	53.61	71.67	0	0.00	71.67	2.87	
7.4 Tramco	899	Stakeholder indecision/undefined role	Inability to determine and sign off aesthetic requirements for Tram	Programme delay in finalising design; potential cost impacts	20.00%	0	250	500	19-Jul-07	31-Jul-08	10	50.17	67.06	100	67.06	0.00	6.71	
7.3 Infraco	1007		Introduction of alternative Submittal Programme where tie cannot comply with the original programme (not arising from Infraco default)	Delay	10.00%		500		27-Sep-07	31-Dec-11	42	50.00	66.84	100	66.84	0.00	1.59	
7.3 Infraco	1003		Failure to liaise with any party, as reasonably required, to produce information required so that the Infraco Works can be progressed properly, according to Programme and in accordance with the Infraco Contract	Delay to project and additional costs	10.00%		500		27-Sep-07	31-Dec-11	42	50.00	66.84	80	53.47	13.37	1.59	
7.3 Infraco	1009		Suspension on instructions of ties Representative in circumstances outwith the following: Suspension provided for in the Agreement, Suspension necessary by reason of default of the Infraco, Suspension necessary for the safety of the Infraco Works.	Delay to project	5.00%		1000		27-Sep-07	31-Dec-11	42	50.00	66.84	80	53.47	13.37	1.59	
7.3 Infraco	103	Delay in design information release from specialist tram manufacturer	Delay in detailing of stops, trackway, OLE etc for Phase 1A	Time delay and consequent costs	15.00%	0	225	750	01-Mar-07	30-Nov-08	14	48.06	64.25	90	57.82	6.42	4.59	
7.3 Infraco	100	3rd party agreements impact on works not accounted for in estimate/ become apparent during construction	Increase in fencing, walls, screen requirements	Additional construction costs	30.00%	60	120	240	03-Jul-06	31-Jan-08	3	41.89	56.00	80	44.80	11.20	18.67	

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7.4 Tramco	900	SDS & Infraco procurement not familiar with chosen tram reqts	Depot design is not compatible with tram	Programme delay whilst Infraco modify Depot; Performance risk on Tramco TMA.	15.00%	10	250	500	19-Jul-07	01-Oct-09	25	38.39	51.32	100		51.32	0.00	2.05
1.1 Land & Property	357	Landowner disagrees with District Valuer s Assessment of land value and submits a Certificate of Appropriate Alternative Development - Plot 322	Submission of CAAD Claim for Plot 322	Increase in land value for plot	10.00%		375		03-Apr-06	31-Dec-15	42	37.50	50.13	100		50.13	0.00	1.19
1.1 Land & Property	358	Landowner disagrees with District Valuer s Assessment of land value and submits a Certificate of Appropriate Alternative Development - Plot 327	Submission of CAAD Claim for plot 327	Increase in land value for plot	10.00%		375		03-Apr-06	31-Dec-15	42	37.50	50.13	100		50.13	0.00	1.19
7.4 Tramco	97	Problems with tram supplier (industrial relations, financial problems etc)	Delay in supply of vehicles - 1A	Time delay to operations, costs relating procurement of replacement manufacturer	15.00%	0	260	450	19-Jul-07	01-Oct-09	25	35.81	47.87	100		47.87	0.00	1.91
7.3 Infraco	54	Contractor default e.g. insolvency.	Construction bond not available in the event of Infraco default	Increase in cost and progamme due to appointment of replacement contractor	1.00%	0	3300	6300	12-Jan-07	31-Dec-11	42	31.06	41.52	80		33.22	8.30	0.99
7.3 Infraco	1006		Failure to comply with the Submittal Programme timescales	Delay and additional costs	50.00%		50		27-Sep-07	31-Dec-11	42	27.00	36.09	80		28.88	7.22	0.88
1 GENERALOVERALL	169	Concurrent major projects in Edinburgh	Other major projects in Edinburgh interface with Tram	Delay in sequence in certain areas, Additional interface project management costs.	50.00%	0		100	01-Mar-07	31-Dec-10	41	25.06	33.49	80		26.80	6.70	0.82
1.1 Land & Property	26	Protracted negotiation, additional claims, late acquisitions or late claims in relation to land and property	Use of legal advisors required beyond current budget	Legal/ advisor budget may be exceeded	25.00%	100		100	20-Mar-07	21-Mar-12	42	25.00	33.42	100		33.42	0.00	0.80
1.1 Land & Property	6	CEC fails to manage existing assets or changes	tie required to assume asset management role during and following construction	Increased legal and management costs to deal with change. Delay to construction programme.	20.00%	50	100	200	11-Apr-07	30-Dec-10	41	23.30	31.14	100		31.14	0.00	0.76
7.4 Tramco	143	Base estimate allows only for minimum on-board supervisory and comms equipment.	Specification for on-board and supervisory equipment has not been established for Trams on Phase 1B.	A high specification is required for on-board supervisory and comms equipment.	50.00%	0	25	100	19-Jul-07	01-Oct-09	25	20.90	27.94	0		0.00	27.94	1.12
7.1.3 Depot	981	Existing Spoil Site Unable to accept future spoil	Increase in the Lothian Valuation Joint Board rateable value of the spoil site	New Landfill site will have to be found and agreements reached. Possibility of increased costs	80.00%	0	25	50	19-Jul-07	31-Mar-08	6	20.00	26.74	100		26.74	0.00	4.46
7.3 Infraco	1013		Indirect Losses sustained in by Third Parties claiming against tie or Infraco or because of third party agreements or land consents	Additional cost	1.00%		2000		27-Sep-07	31-Jan-11	42	20.00	26.74	90		24.06	2.67	0.64
1.3.1 NR Immunisation Project	932	Information handed over in draft format as part of continual design development; Downstream Tram design change that impacts on requirements; Zone of interference not defined adequately.	SDS gives wrong or insufficient information to Network Rail	Network Rail design their works inappropriately for final Tram requirements; Network Rail are unable to complete their design in time to meet programme; Cost to change design; Delay during redesign; Final works are not suitable and consequently Tram cannot be commissioned to programme.	5.00%	100	300	500	02-Apr-07	30-Oct-09	26	15.32	20.48	100		20.48	0.00	0.79
7.3 Infraco	205	Network Rail issue new Group and Company Standards during construction. Design and construction is aligned to current Network Rail Group and Company Standards.	Network Rail emerging Group and Company Standards are different at time of construction	New standards require to be adopted resulting in re-design, delay and increased construction cost.	20.00%	0		150	01-Oct-07	31-Aug-10	37	15.28	20.42	80		16.34	4.08	0.55
7.3 Infraco	68	Interface with Transdev	Supply of commissioning services from Transdev to Infraco.	Delay and costs incurred by Infraco.	1.00%	0	1000	3000	30-Sep-09	31-Dec-11	17	12.16	16.25	80		13.00	3.25	0.96
7.3 Infraco	1012		Occurrence of any referable delay/costs caused by suspension by ties Representative		1.00%		1000		27-Sep-07	31-Dec-11	42	10.00	13.37	80		10.69	2.67	0.32
7.1.3 Depot	876	Agreement with SEPA to use Gravity Drain Proposal	Gravity Drain Proposal	Cost & time saving	79.50%	12.5	12.5	12.5	19-Mar-08	08-Jul-08	4	9.94	13.28	100		13.28	0.00	3.32
2.2 Transdev	890	DPOFA amendment is not fully negotiated	Key performance indicators for DPOFA are not agreed	In absence of KPIs, would have to refer to Dispute Resolution to resolve issues.	2.50%		300		23-Jan-07	31-Oct-08	13	7.50	10.03	80		8.02	2.01	0.77
2.1 tie Resources	58	Poor performance (quality) by Infraco during construction; poor materials; latent defects	Infraco fails to deliver construction quality; latent defects occur during or after Infraco maintenance period	Rework, stakeholder criticism, negative PR, programme delay if quality issue occurs during construction, operations affected by rework, project management costs to deal with issues	10.00%	25	62.5	100	31-Dec-10	30-Dec-16	1	6.25	8.36	80		6.88	1.67	8.36
3 DESIGN	104	Delay in design information release from specialist tram manufacturer	Delay in detailing of stops, trackway, OLE etc for Phase 1B	Time delay and consequent costs	15.00%	0	25	83	01-Jan-07	30-Sep-08	12	5.45	7.29	0		0.00	7.29	0.61
7.1.1 Invasive Species	869	Surveying team unable to obtain access to Network Rail, BAA and other privately owned land because they were not cleared to access this land (including PTS).	Extent of Invasive Species Area Exceeds Estimate from Survey	Underestimating the extent of works; leads to an increase in cost	17.50%		20		17-Apr-07	01-Apr-09	19	3.50	4.68	100		4.68	0.00	0.25
2.9 TEL	889	Unsuccessful negotiation. TEL believes costs inflated too much.	Target operating costs for Phase D are not agreed.	TEL Business Case becomes undeliverable. Potential to undertake Dispute Resolution to gain agreement.	1.00%		300		04-Jan-10	06-Jan-19	13	3.00	4.01	80		3.21	0.80	0.31
7.3 Infraco	150	Blackspots for radio/mobile communications	Geographic areas where radio/mobile communications cannot obtain signal	Additional remedial equipment required e.g. repeater masts, booster packs etc	50.00%	0		10	30-Sep-09	31-Dec-10	16	2.48	3.31	80		2.65	0.66	0.21
7.3 Infraco	304	Infrastructure design development e.g. building fixing approvals not achieved as designed	Utilities (diverted by MUDFA or left in place) are found to be in the path of infrastructure works at time of construction	Additional utilities diversions are required to be undertaken by Infraco with additional cost and programme impacts	20.00%	0		25	01-Oct-07	31-Dec-10	41	2.46	3.29	95		3.13	0.16	0.08

EDINBURGH TRAM PROJECT

Risk Allocation Report

Current Period End 08-Dec-07

Sim Run P90 1A+1B 51647.10 £k

Risk Mean Sum 38634.25 £k

Total Allocation £k
Phase 1A 47036.89
Phase 1B 4610.21 £k

WBS Item	Allocated Risks			Effect	Impact Assessment 26 Nov 2007				Exposure Period		No of Periods	Sim Run Risk Mean	P90 Risk Allocation	Proportion allocated to 1A	Parameter used to Split 1A/1B	P90 Risk Allocation 1A	P90 Risk Allocation 1B	P90 Value Per Period	
	Risk ID	Cause	Risk Event		Prob	Current Impact Assessment £k			Start	End									
						%	Min	Most Likely											Max
7.4 Tramco	319	Trams are not compatible and interoperable with each other and other parts of the system	Trams found to be incompatible during commissioning	Delay to commissioning, costs to deal with issue	10.00%	0		50	01-Oct-09	31-Dec-10	16	2.45	3.28	100		3.28	0.00	0.20	
2 PROCUREMENT CONSULTANT	337	Unsuccessful tenderer challenges procurement process (Tramco or Infracore)	OJEU procurement process is challenged	Possible retender; Delays; Legals costs to deal with challenge	5.00%	0		100	12-Jan-07	30-Jan-08	3	2.43	3.25	100		3.25	0.00	1.08	
7.1.2 Badger Relocation	894	Ineffective/inappropriate Proposals; new setts must be built before old ones can be closed and licenses will not be issued until nearer time of closure; animals must have settled in new home before closure of old one can take place	Roseburn Badger Proposals for closure of old setts not approved by SNH	Delay in accessing land to construct Tram works and hence in Programme	17.50%	0	12.5	25	01-Oct-08	28-Nov-08	2	2.21	2.96	0		0.00	2.96	1.48	
11.1 Construction	964	The design for the lighting has yet to be approved by CECs Street Lighting section	Additional time or cost could be incurred in relation to the street lighting works	Compliance with their requirements may incur abortive works resulting in additional cost and delay to programme	17.50%		12.5		28-Aug-07	31-Dec-07	2	2.19	2.92	80		2.34	0.58	1.46	
3 DESIGN	162	Land is not acquired yet	Gaining access to land prior to purchase for advanced works	Increased management costs and delays to design	10.00%	0		30	02-Apr-07	28-Sep-08	12	1.50	2.01	80		1.60	0.40	0.17	
7.1.2 Badger Relocation	883	Ineffective/inappropriate Proposals; new setts must be built before old ones can be closed and licenses will not be issued until nearer time of closure; animals must have settled in new home before closure of old one can take place	Gogarburn Badger/Otter Proposals for closure of old setts not approved by SNH/SEERAD	Delay in accessing land to construct Tram works and hence in Programme	10.00%	0	12.5	25	01-Oct-07	30-Nov-07	1	1.26	1.68	100		1.68	0.00	1.68	
7.1.1 Invasive Species	879	Contractor is unable to get access to worksite due to access route being outside LOD and owned by others	Access to land to eradicate invasive species is not available when required	Programme Delay; contractor refuses to take ownership of risk 869 or includes high contingency in tender to allow for.	10.00%	0	10	20	12-Mar-07	01-Apr-09	19	1.00	1.34	3		0.04	1.30	0.07	
2 PROCUREMENT CONSULTANT	76	Introduction of TEL as client	Change of client during works	Delay and cost during re-negotiation of DPOF contract and additional approvals process	5.00%	12.5		12.5	03-Jul-06	30-Jan-08	3	0.63	0.84	80		0.67	0.17	0.28	
11.1 Construction	993	Due to a terrorism event relating to Edinburgh Airport or due to the mitigation of the risk of such an event occurring traffic restrictions introduced in the vicinity of the airport cause unacceptable delays for vehicles accessing and exiting from the site	Free access cannot be guaranteed to the P&R site	Delays to construction vehicles could have impact on completion date and cost of construction, delays for car park users or buses could detract from usefulness and viability of facility	2.50%		12.5		01-Oct-07	31-Mar-09	19	0.31	0.42	100		0.42	0.00	0.02	
11.1 Construction	964	Prevarication over scope of project	Delay to start of work thereby jeopardising funding	Funding cannot be realised from SEStran and CEC to complete project	2.50%	12.5	12.5	12.5	01-Apr-08	30-Jun-08	3	0.31	0.42	0		0.00	0.42	0.14	
2.9 TEL	188	Distribution Network Operator costs of supply are unknown	Power supply costs increase during Operation	Opex is not certain	0.00%	5	10	15	20-Apr-09	24-Aug-19	23	0.00	0.00			0.00	0.00	0.00	
2.9 TEL	188	Distribution Network Operator costs of supply are unknown	Power supply costs increase during Operation	Opex is not certain	0.00%	5	10	15	20-Apr-09	24-Aug-19	23	0.00	0.00	80		0.00	0.00	0.00	
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