

**LOCAL AUTHORITY MAJOR SCHEMES
APPLICATION FOR FULL APPROVAL**

Scheme Name	A380 South Devon Link Road (Kingskerswell Bypass)
Local Authority	Devon County Council

Annex 4	Quantified Risk Assessment Contents <ol style="list-style-type: none">1. Risk Register2. QRA Output3. Risk Allowance Distribution
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HARM No	Risk	Prob	Cost (£k)			Comments, Risk Management Measures and Action Plan	Owner	Time Assessment (Weeks)	
			L	ML	H			CP Time Design + Construction	CP Time Preparation
	EMPLOYER'S RISKS								
01	Planning and Supervision								
101001	Change in key staff: Consultant's.	L	0	50	100	Cost allowance for minor disruption. Residual services agreement in place up to commencement of main contract.	PB MS		
101002	Change in key staff: Employer's. Restructuring complete.	L	0	50	100	Cost allowance for minor disruption. Dissemination of knowledge through Devon CC ongoing.	DCC PE		
101003	Insufficient resources, both Consultant and Employer.	VL	20	50	200	Cost caused by need to employ more expensive staff at short notice. Programme produced for the award/post award contract and resources identified as appropriate.	PB MS		
101005	Cost increase in budget for Network Rail for supervision of works and possessions.	M	100	200	400	Costs are derived from estimate of additional resource necessary to avoid delay in contractor's programme. Budget based on Tenderer's programme, reduced scope, and Network Rail's 2010 fees meeting held 22.01.10.	DCC NB		
101006	Cost increase in budget for Network Rail for general project management and AIPs.	M	20	50	100	Costs are derived from estimate of additional resource necessary to avoid delay in contractor's programme. Budget based on Tenderer's programme, reduced scope, and Network Rail's 2010 fees meeting held 22.01.10.	DCC NB		
101007	Cost increase in budget for supervision staff because of adjustments post Eol to supervision budget.	M	145	290	435	Costs are derived from need for additional f/t resource. Tenderer has accelerated programme (relative to Works Information) to reduce site time.	PB MS		
101011	Scheme delayed due to failure to pass OGC Gateway (4ps).	L	0	0	0	Understand gateway process. <i>4ps Process now in place - next audit due 1, 2 and 3 April. See risk 101123 for delay.</i>	DCC PE		
101013	Scheme delayed due to ineffective liaison with external bodies.	M	0	0	0	Scheme now through Inquiry. Communications Plan in place. Stakeholder engagement process complete as at August 2011.	PB MS		
101016	Scheme delayed and cost increase due to prolongation of Public Inquiry and delay in DfT Decision	M	0	0	0	Risk realised. Revised Scheme cost estimate takes account of delayed programme. See Risk 101125	PB MS		
101017	Scheme delayed and cost increase due to High Court Challenge.	M	0	0	0	Delay and cost for responding to High Court Challenge difficult to mitigate - assume zero cost because of significance if realised. Programme has max 2 months only for response. See Risk 101123 for delay.	PB MS		
101019	Scheme delayed due to delay in Full Approval.	M	0	0	0	Zero cost. Assume 2 months delay as risk 101017. Delay in award difficult to mitigate. Full Approval Bid date programmed. See risk 101123 for delay.	DCC PE		
101123	Delay allowance: possible Pre-construction risk scenarios: 101011: for delay caused by late 4ps report. 101017: for delay caused by High Court Challenge leading to delayed access date. 101019: for delay in DfT decision on full approval leading to delay in starting date. Assume 10 weeks for both risks.	M	0	0	0	Costs based on Tenderer's delayed start data. Costs are assessed in risk 113001. Assumed 10 week delay based on critical path to Full Approval.	DCC PE		10
101124	Staff unfamiliar with scheme employed to supervise design and construction - Change of Employers Consultant	M	30	45	60	Cost derived from allowance for familiarisation work, thus avoiding inappropriate instructions. <i>Employer to review source(s) of supervision staff - internal or external consultant.</i>	DCC PE		
101125	Scheme delayed and cost increase consequent on having to re-issue Orders and hold further Inquiry.	VL	0	0	0	Cost associated with making revised Orders and holding Inquiry - Zero'd because of significance if realised.	DCC PE		
101126	Scheme delayed consequent on insufficient funding through CSR in accordance with required profile.	L	0	0	0	Zero cost other than inflation - Zero'd because of significance if realised.	DCC PE		

HARM No	Risk	Prob	Cost (£k)			Comments, Risk Management Measures and Action Plan	Owner	Time Assessment (Weeks)	
			L	ML	H			CP Time Design + Construction	CP Time Preparation
101127	Allowance for scheme cost increase in order to comply with Public Inquiry Inspector's recommendations	M	200	400	600	Cost based on allowance for mitigation of adverse affects, such as noise at Rock House.	DCC PE		
101128	Scheme delayed and cost increase consequent on having to re-advertise and tender main works due to alcatel challenge.	M	0	0	0	Cost associated with re-advertising and re-tendering - Zero'd because of significance if realised.major Risk.	DCC PE		
02	Land and Compensation								
102002	Cost increase due to increased land value in Torbay.	L	250	500	1000	Cost based on allowance in DCC and Torbay's Valuer's estimates. Budget based on DCC Valuers estimate in August 2011.	DCC PE		
102003	Cost increase due to successful Section 17 application	L	6000	12000	18000	Cost based on value of land increasing to 'development status'. Based on DCC experience in Barnstaple.	DCC PE		
102004	Works delayed and cost increase due to failure to implement construction of Elmcroft in time to meet main contract dates.	M	10	15	30	Cost represents amount necessary to 're-house' Smiths until new property is ready for occupation. Monitor advance works programme for key dates.	DCC PE		
102005	Cost increase of Elmcroft for provision of services and building. Moved to 06 Series.	L	0	0	0	Tender price is known, but is based on some provisional sums. Re-examine provisional sums prior to re-tender.	PB MS		
102006	Cost and compensation for occupied property 1 Aller Cottages	L	5	10	30	Valuer to constantly review programme. Home Loss Payment assumed.	DCC PE		
102007	Cost associated with providing an alternative site for Model Car Club	L	10	20	30	Valuer to review.	DCC PE		
102008	Cost increase due to issues with non NRSWA diversions Moved to 07 Series	M	0	0	0	Valuer to constantly review extent of non NRSWA diversions.	DCC PE		
102009	Cost increase due to increase in Part 1 Claims	M	500	1000	1500	Cost based on allowance for uncertainty and Barnstaple experience	DCC PE		
03	Strategic								
103001	Scheme Fails to obtain DfT Funding Allocation.	-	-	-	-	Major Risk			
103002	Failure to pass BAFB.	-	-	-	-	Major Risk			
103003	Change in Scheme Brief arising from failure to pass BAFB.	-	-	-	-	Major Risk			
103004	Failure to obtain approval through the statutory process, ie Inspector's Report is negative and Sec of State agrees.	-	-	-	-	Strategic Risk			
103006	Statutory changes e.g. aggregate tax, EU legislation changes, UK Government tax changes	-	-	-	-	Strategic Risk			
103007	Change in UK design standards. DMRB, etc, or Network Rail standards	-	-	-	-	Strategic Risk			
103008	Change in UK/EU Legislation	-	-	-	-	Strategic Risk			
103009	Health & Safety - Changes in regulations	-	-	-	-	Strategic Risk			
103010	Political - Change of Government / Sec of State	-	-	-	-	Strategic Risk			
103011	Political - Change in Government strategy, policy and targets	-	-	-	-	Strategic Risk			
103012	Foot and mouth or other disease outbreak leads to restrictions on access to land or to the Contractor's operations.	-	-	-	-	Strategic Risk			
103013	Contractor goes into receivership	-	-	-	-	Strategic Risk			
103014	Change in environmental designations	-	-	-	-	Strategic Risk			
103015	Civil unrest, riots, strikes	-	-	-	-	Strategic Risk			
04	Alignment								

HARM No	Risk	Prob	Cost (£k)			Comments, Risk Management Measures and Action Plan	Owner	Time Assessment (Weeks)	
			L	ML	H			CP Time Design + Construction	CP Time Preparation
05	Engineering: Structures								
105010	Cost increase to Tunnel and delay to works - Protection of rail infrastructure required through tunnel including lineside equipment (Signalling & Telecon cables) arising from fire assessment	M	150	200	300	Cost of works necessary to the existing S&T cables as a result of the fire risk assessment. Walkover survey along affected tracks conducted in July 11. No new issues arising.	DCC NB	12	
105013	Cost increase to Culverts - Thrustboring cannot be undertaken whilst meeting NR's requirements for continuous train operations.	L	0	0	0	Cost reflects slower rate of progress than anticipated from NR current information. Not Employer's Risk therefore zero'd.	DCC NB		
105023	Cost of protecting Network Rail cables during construction (assumes cable diversions avoided)	M	100	200	300	Cost of dealing with NR unidentified services. Walkover survey along affected tracks conducted in July 11. No new issues arising, although still uncertainty re NR plant.	DCC NB		
105026	Aller Tunnel: Cost of additional structure measures arising from fire and ventilation studies.	M	100	200	400	Note: A provisional sum for the study is included in tender. Identify measures outwith current Employer's Requirements including programme implications. Delay as Risk 105010	DCC NB PB MS		
105027	Aller Tunnel: Cost increase due need to protect Global Crossing cable following Fire Risk Assessment Study	M	150	200	300	Cost of works necessary to Global Crosings cables as a result of the fire risk assessment. Walkover survey along affected tracks conducted in July 11. No new issues arising. Delay as Risk 105010	DCC NB PB MS		
105028	Aller Tunnel: Cost increase because lateral clearance in Employers Works Info subsequently increased by NR.	L	250	500	1000	Cost of additional span. Draft AIP issued to Network Rail and consent received. However, uncertainty remains until final AIP submitted by tenderer.	DCC NB PB MS		
105029	Cost increase to Culverts - Thrustboring cannot be undertaken in ground conditions. Cost increase due to revised method of working.	L	0	0	0	Cost reflects slower rate of progress than planned. Latest geotechnical information passed to tenderer and taken into account in re-pricing. Not Employer's Risk therefore zero'd	DCC NB		
06	Engineering: Other								
106003	Cost increase due to additional Accommodation Works	M	100	200	300	Cost associated with complex accommodation works details for (especially) residents. Not yet held any detailed discussions with landowners. General allowance over and above that included within current budget. NPS to commence renegotiating with landowners post DfT approval.	PB MS		
106004	Cost increase due to additional Sign Gantries	L	100	300	500	The scheme provides for a single gantry in each direction, which is not in accordance with Traffic Signs Manual. Departure from Standard to be sought for ADS.	PB MS		
106005	Brookeador Bridge removed from scheme. Cost of reinstatement	L	100	150	200	Risk is that Environment Agency will not accept the removal of Brookeador Bridge from the scheme or require further modelling work to justify the decision. Environment Agency to be informed.	DCC PE		
106006	Cost increase of Elmcroft for provision of services and building.	L	20	40	80	Tender price is known, but is based on some provisional sums.	PB MS		
106007	Cost increase of Pavement, Kerbs and Drains because of preliminary design of Value Engineered Scheme	M	200	500	1000	Tender price based on detailed design, whereas Re-pricing based on schedule of alterations.	PB MS		
106008	Cost increase of Elmcroft due to influence of client and basis of original estimate	M	50	100	200	Earlier tender price based on some provisional sums. Client has now appointed architect.	PB MS		
07	Statutory Undertakers								
107002	Cost increase and delay due to unidentified utilities found requiring diversion	L	100	200	400	Trial pitting carried out. Cost of risk reduced.	PB MS	12	

HARM No	Risk	Prob	Cost (£k)			Comments, Risk Management Measures and Action Plan	Owner	Time Assessment (Weeks)	
			L	ML	H			CP Time Design + Construction	CP Time Preparation
107005	Cost increase of sewer diversions due to uncertainty of sewer locations	L	50	100	300	Trial pitting and radar survey carried out. Risk reduced.	PB MS		
107006	Cost increase of gas main protection following risk assessment	M	200	500	1000	Radar survey carried out. Risk assessment ordered and received from National Grid. Original Risk realised. Revised slab proposal submitted to National Grid Gas and included in tender re-pricing. Awaiting comment from NGG.	PB MS		
107007	Uncertainty regarding 18% discount on estimate provided by South West Water, i.e., is 18% available?	L	100	200	400	This is particularly relevant to South West Water where confirmation that they are content that the main contractor excavates trenches is also required. <i>DCC to contact SWW direct.</i>	DCC PE		
107009	Cost of protection of fibre optic cable on NR land (Global Crossing) at cut and cover culvert locations	L	100	200	300	Full details of the implication of the works still outstanding. <i>NR records in need of clarification.</i>	DCC NB		
107010	Cost increase - C4 estimates too low due to mis-planning and inflation between current quote and immediately prior to order (C5 & C6).	M	248	495	742	<i>OO appointe drepresentative to review extent of any cost increase. Programme to request updated cost estimates and also to issue payment C6 has been prepared.</i>	DCC PE		
107011	Cost increase due to uncertainty regarding 18% discount on Wales and West and other utilities (except water).	M	100	250	500	<i>OO representative to constantly review extent of non NRSWA diversions.</i>	DCC PE		
08	Habitat and Species								
108005	Badgers - Scheme delayed (site clearance) due to insufficient time to carry out resurvey work once D&B contract granted then can't clear the setts in time.	L	15	20	30	Costs for exclusion. Licence period is 6 weeks and clearance works can only be carried out during Sept/Oct (potential for 12 month delay) <i>Draft EMMS produced and issued to tenderers. Identified items in programme are to be progressed and monitored. Action required to negotiate location of new sett with landowner.</i>	PB MS		0
108007	Bats - Cost increase due to redesign arising from unknown/changed bat commuting routes.	L	50	100	200	<i>Further surveys carried out in 2009. EMMS produced and issued to tenderers. Commuting routes confirmed during 2010. Contractor's to carry out additional surveys in accordance with the Works Inf. Identified items in advance works programme are to be progressed and monitored.</i>	PB MS	0	
108018	Japanese Knotweed - Scheme delayed (site clearance) due to failure to identify areas. (Could take 12 months to deal with.)	M	200	400	800	<i>Cost associated with specialist disposal. Employer's Requirements require Contractor to identify and treat. Consider advance surveys to check private gardens, Maddacombe woods, river banks, railway sidings.</i>	PB MS		
108019	Delay allowance for environmental measures (by Employer - see EMMS) most likely to disrupt the construction programme post start of works	M	0	0	0	The direct cost is zero. An allowance for the increase in inflation due to later works is elsewhere. This is potential delay due to failure to complete Employer's mitigation.	PB MS	16	
108020	Cost increase due to need for additional badger fencing at Yannon Lane and Maddacombe Road cuttings identified post tender.	M	30	50	80	Employer to consider extent of proposed fencing following re-survey. Planned survey of badger paths and setts deferred due to delay in scheme progress.	DCC PE		
108021	<i>Cost Increase due to need to meet environmental obligations at Inquiry, eg hedge translocation</i>	M	200	400	600	<i>Cost associated with specialist sub-contractors and limited site availability</i>	PB MS	16	
09	Water Environment								
109005	<i>Delay to works at Aller culvert due to delay in obtaining FEPA licence for Working in tidal areas</i>	L	0	0	0	<i>The Employer to apply for a FEPA licence. FEPA licence applied for in July 2011. Outcome awaited.</i>	DCC PE		
10	Archaeology								

HARM No	Risk	Prob	Cost (£k)			Comments, Risk Management Measures and Action Plan	Owner	Time Assessment (Weeks)	
			L	ML	H			CP Time Design + Construction	CP Time Preparation
110002	Rapid Open Area Excavations - Cost of advance works increased and scheme delayed (earthworks) due to insufficient time to complete work.	L	20	50	100	Cost of working around site and additional archaeologists in order to ensure Employer meets programme. Revised programme provides for DCC to undertake this work in FY12/13 before access for main contractor. <i>Action plan in place to procure and execute to an appropriate programme prior to Contractor's works commence.</i>	PB MS		
110003	Roman site - Scheme delayed (earthworks) due to insufficient time and resource to complete site assessment. (Time in 108019)	M	62	124	186	Cost of working around site and additional archaeologists in order to ensure Employer meets programme. Revised programme provides for DCC to undertake this work in FY12/13 before access for main contractor. <i>Action plan in place to procure and execute to an appropriate programme prior to Contractor's works commence - includes demolition of Hazelbank.</i>	PB MS		
11	Ground Conditions								
12	Construction Phase								
13	Other Issues 1								
113001	Cost of pre-construction delays from all critical path risks on this register (Using Critical Path Time calculated below). Not used, instead use delay costs submitted by tenderer.	M	69	138	276	Detailed Programme produced. Manage risks on this and Contractors register. Cost of Preparation delay taken from tenderers Access Date Delay Costs Per week (£13,800/week)	ALL		
113002	<i>Delay allowance for all activities likely to delay start of scheme.</i>	M	0	0	0	<i>The direct cost allows for the increase in inflation due to completing the works later (say 6% of £100m at worst)</i>	PB MS		
113003	Actual inflation differs from assumed inflation assumption on Employers Costs	M	0	500	1000	Allowance for over and above CPI of 2.7%.	PB MS		
	TOTAL Critical Path TIME (WEEKS)					Pre-Construction delay costs are calculated by taking a weekly office management cost (2k, 3k, 4k) multiplied by the Critical Path Time Totals			10
13	Other Issues 2								
213001	Construction delay from all risks on this register (Using Critical Path Time calculated below)	M	1201	2416	3624	Manage risks on this register			
	TOTAL Critical Path TIME (WEEKS)					Construction delay costs are calculated by taking a weekly site establishment rate multiplied by the Critical Path Time Totals		56	

Notes

- ITEMS IN RED ARE TO BE REMOVED FROM THE NEXT REGISTER
- ITEMS IN BLUE HAVE BEEN ADJUSTED SINCE THE LAST REGISTER
- ITEMS IN GREEN ARE NEW RISK ITEMS
- ITEMS IN PURPLE ITALICS ARE TO BE ACTIONED

Risk Number	Description	Curve Type	Occurrence Probability	Minimum Estimate	Risk Estimate	Maximum Estimate	Average of Calculated Estimate
	WORKS						
1	P & S						
1027	Allowance for scheme cost increase in order to comply with Public Inquiry Inspector's Recommendations	1 Normal	Medium 40 %	£200,000	£400,000	£600,000	£164,481
5	Engineering: structures						
5010	Cost inc - Tunnel rail infrastructure	1 Normal	Medium 40 %	£150,000	£200,000	£300,000	£91,668
5023	Cost of Protecting Network Rail Cables During Construction (Cable Diversions Avoided)	1 Normal	Medium 40 %	£100,000	£200,000	£300,000	£77,058
5026	Aller Tunnel: Fire and Ventilation	1 Normal	Medium 40 %	£100,000	£200,000	£400,000	£105,853
5027	Aller Tunnel: Cost Increase due to need to protect Global Crossing cable following Fire Risk Assessment Study	1 Normal	Medium 40 %	£150,000	£200,000	£300,000	£91,059
5028	Aller Tunnel - clearances in Employers Works Info not specific enough	1 Normal	Low 20 %	£250,000	£500,000	£1,000,000	£121,101
6	Engineering: other						
6003	Cost inc - additional accommodation works	1 Normal	Medium 40 %	£100,000	£200,000	£300,000	£79,687
6004	Cost increase due to additional Sign Gantries	1 Normal	Low 20 %	£100,000	£300,000	£500,000	£61,853
6005	Brookeadour Bridge removed from Scheme - Environment Agency to be informed	1 Normal	Low 20 %	£100,000	£150,000	£200,000	£29,091
6007	Cost Increase of Pavement, Kerbs and Drains because of preliminary design of Value Engineered Scheme	1 Normal	Medium 40 %	£200,000	£500,000	£1,000,000	£247,294
7	Statutory Undertakers						
7006	Cost increase of gas main protection following risk assessment	1 Normal	Medium 40 %	£200,000	£500,000	£1,000,000	£247,326
8	Habitat and Species						
8005	Scheme delay - Badgers - survey delays	1 Normal	Low 20 %	£15,000	£20,000	£30,000	£4,571
8007	Scheme delay - Bats - commuting routes	1 Normal	Low 20 %	£50,000	£100,000	£200,000	£27,399
8018	Scheme delay - Japanese Knotweed found	1 Normal	Medium 40 %	£200,000	£400,000	£800,000	£218,532
8020	The likely need for additional badger fencing at the Yannon Lane and Maddacombe Road cutting identified post Tender	1 Normal	Medium 40 %	£30,000	£50,000	£80,000	£21,830
8021	Cost Increase due to need to meet environmental obligations at Inquiry, eg hedge translocation	1 Normal	Medium 40 %	£200,000	£400,000	£600,000	£159,847
13	Other Issues						
13001	Cost of pre-construction delays from all critical path risks on the register.	1 Normal	Medium 40 %	£69,000	£138,000	£276,000	£70,491
13003	Actual Inflation differs from budget assumption on Employers Costs	1 Normal	Medium 40 %	£0	£500,000	£1,000,000	£202,785
26	CR Other works						
26001	Design and Construction delay from all risks on this register (Using Critical Path Time calculated below)	1 Normal	Medium 40 %	£1,270,000	£2,540,000	£3,810,000	£1,103,292
						TOTAL	£3,125,218
	ANCILLARY WORKS						
6	Engineering: other						
6006	Cost Increase of Elmcroft for Provision of Services Building	1 Normal	Low 20 %	£20,000	£40,000	£80,000	£10,915
6008	Cost increase of Elmcroft due to influence of client and basis of original estimate	1 Normal	Medium 40 %	£50,000	£100,000	£200,000	£49,433
10	Archaeology						

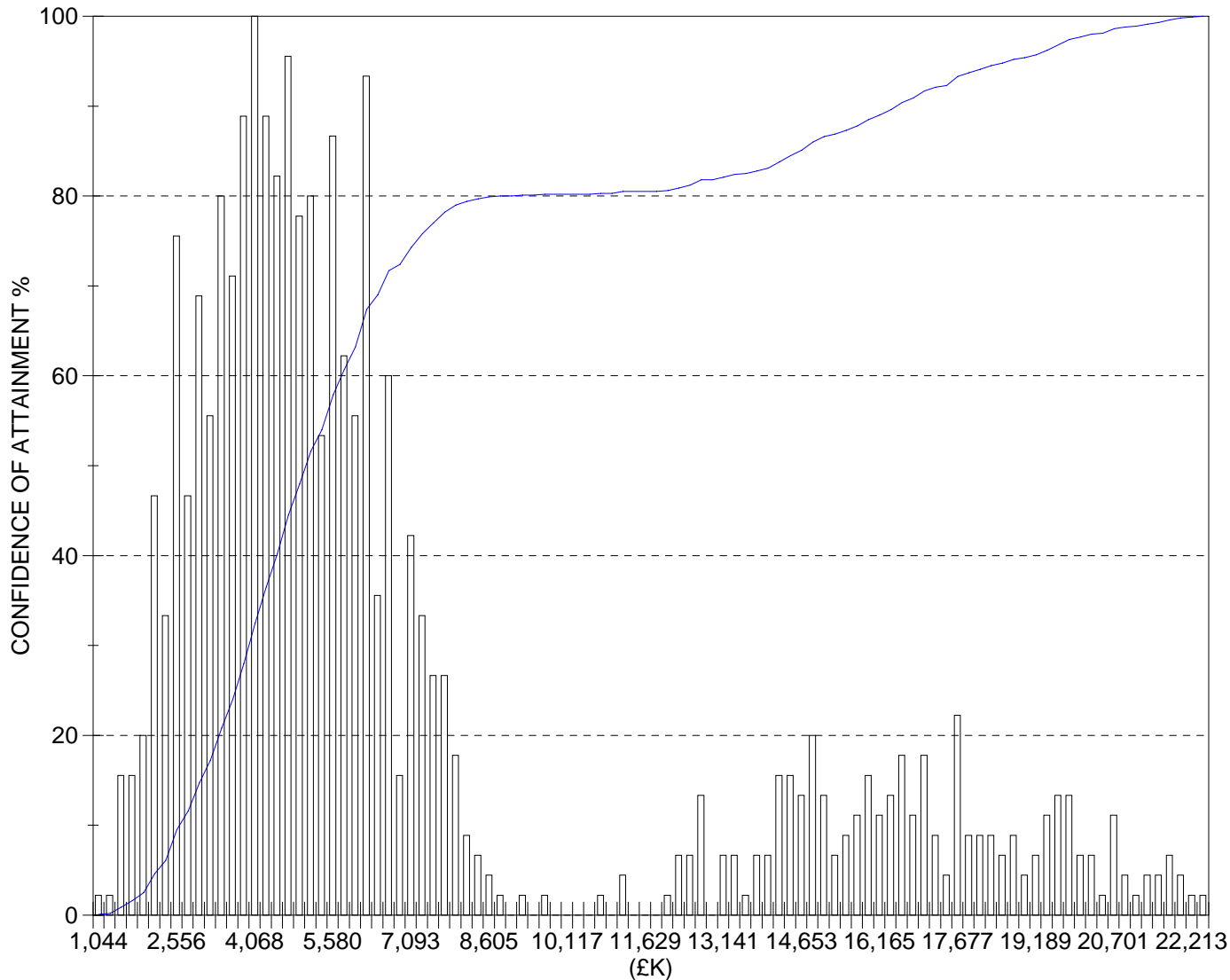
A380 South Devon Link Road (Kingskerswell Bypass)

Employers Risk Associated with P+S, Land, Works, Ancillary Works and Statutory Undertakers

Basic Cost at Q3/2011

Risk Number	Description	Curve Type	Occurrence Probability	Minimum Estimate	Risk Estimate	Maximum Estimate	Average of Calculated Estimate
10002	Scheme delay - Rapid open area excavations	1 Normal	Low 20 %	£20,000	£50,000	£100,000	£12,520
10003	Scheme delay - Roman site - Site assessment	1 Normal	Medium 40 %	£62,000	£124,000	£186,000	£49,692
						TOTAL	£122,560
	STATUTORY UNDERTAKERS COSTS						
7	Statutory Undertakers						
7002	Cost inc - additional diversions	1 Normal	Low 20 %	£100,000	£200,000	£400,000	£55,254
7005	Cost inc - uncertainty of sewer locations	1 Normal	Low 20 %	£50,000	£100,000	£300,000	£36,889
7007	Uncertainty regarding 18% discount on estimate provided by South West Water, i.e. is 18% available	1 Normal	Low 20 %	£100,000	£200,000	£400,000	£57,837
7009	Fibre Optic Cable on NR land (Global Crossing) at cut and cover locations	1 Normal	Low 20 %	£100,000	£200,000	£300,000	£40,631
7010	Cost inc - C4 estimates too low	1 Normal	Medium 40 %	£247,500	£495,000	£742,500	£208,322
7011	Cost increase due to uncertainty regarding 18% discount on Wales & West and other utilities (except water)	1 Normal	Medium 40 %	£100,000	£250,000	£500,000	£126,755
						TOTAL	£525,688
	P & S						
1	P & S						
1001	Change in key staff: Consultants	1 Normal	Low 20 %	£0	£50,000	£100,000	£8,892
1002	Change in key staff: Employers	1 Normal	Low 20 %	£0	£50,000	£100,000	£10,222
1003	Insufficient resources both C & E	1 Normal	Very Low 10 %	£20,000	£50,000	£200,000	£11,406
1005	Cost inc - Network Rail(NR) Supervision	1 Normal	Medium 40 %	£100,000	£200,000	£400,000	£106,665
1006	Cost Inc - NR Project Management	1 Normal	Medium 40 %	£20,000	£50,000	£100,000	£25,282
1007	Cost inc - Accelerated Construction Programme	1 Normal	Medium 40 %	£145,000	£290,000	£435,000	£109,527
1024	Staff unfamiliar with scheme employed to supervise design and construction - Change of Employers Consultant	1 Normal	Medium 40 %	£30,000	£45,000	£60,000	£18,591
						TOTAL	£290,585
	LAND						
2	Land						
2002	Cost increase due to increased land value in Torbay	1 Normal	Low 20 %	£250,000	£500,000	£1,000,000	£111,794
2003	Cost Increase due to successful Section 17 application	1 Normal	Low 20 %	£6,000,000	£12,000,000	£18,000,000	£2,357,050
2004	Scheme delayed and cost increase due to failure to implement construction of Elmcroft in time to meet main contract dates	1 Normal	Medium 40 %	£10,000	£15,000	£30,000	£7,897
2006	Occupied property 1 Aller Cottages	1 Normal	Low 20 %	£5,000	£10,000	£30,000	£3,678
2007	Cost associated with providing an alternative site for Model Car Club	1 Normal	Low 20 %	£10,000	£20,000	£30,000	£3,994
						TOTAL	£2,484,413
	PART 1 CLAIMS						
2	Land						
2009	Cost Increase due to Part 1 Claims	1 Normal	Medium 40 %	£500,000	£1,000,000	£1,500,000	£424,990
						TOTAL	£424,990

Risk Management - Cost Risk Analysis




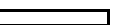
Scheme Base Estimate : £0 Risk Allowance : £6,973,457 STDV of Risk Allowance : £5,161,309
 (All values exclusive of VAT)

Statistical Analysis

MEAN	£6,973,457
MEDIAN	£5,051,020
MODE	£4,068,434
Std. Dev.	£5,161,309
MINIMUM	£1,044,356
MAXIMUM	£22,428,905

Maximum Scheme Cost	Confidence of Attainment
£2,181,985	5 %
£2,607,825	10 %
£3,014,327	15 %
£3,372,416	20 %
£3,690,424	25 %
£3,948,431	30 %
£4,203,437	35 %
£4,488,769	40 %
£4,747,308	45 %
£5,052,459	50 %
£5,419,853	55 %
£5,742,476	60 %
£6,105,058	65 %
£6,524,497	70 %
£7,193,314	75 %
£8,820,556	80 %
£14,616,704	85 %
£16,488,753	90 %
£18,648,808	95 %
£22,428,905	100 %

Legend

Confidence of Attainment % 
 Individual Probability % 

Highways Agency Risk Assessment

Scheme Description : A380 Kingskerswell Bypass

Reference : 43444

Region : South

Works :	£0	Risk Allowance :	£6,973,457
P&S :	£0	Standard Deviation :	£5,161,309
Land :	£0	SBE + Risk Allowance :	£6,973,457
Scheme Base Estimate :	£0	SBE + Risk Allowance + 1SD :	£12,134,766

RCTPI Date : 00/00/0000

RCTPI Index :

Stage :

Risk Number	Description	Curve Type	Occurrence Probability	Minimum Estimate	Risk Estimate	Maximum Estimate	Average of Calculated Estimate
01	P & S						
01001	Change in key staff: Consultants	1 Normal	KK Low 20 %	£0	£50,000	£100,000	£8,892
01002	Change in key staff: Employers	1 Normal	KK Low 20 %	£0	£50,000	£100,000	£10,222
01003	Insufficient resources both C & E	1 Normal	KK Very Low 10 %	£20,000	£50,000	£200,000	£11,406
01004	Cost inc - Scheme change - arising from Inquiry	1 Normal	KK Low 20 %	£0	£0	£0	
01005	Cost inc - Network Rail(NR) Supervision	1 Normal	KK Medium 40 %	£100,000	£200,000	£400,000	£106,665
01006	Cost Inc - NR Project Management	1 Normal	KK Medium 40 %	£20,000	£50,000	£100,000	£25,282
01007	Cost inc - Accelerated Construction Programme	1 Normal	KK Medium 40 %	£145,000	£290,000	£435,000	£109,527
01008	Cost inc - Short tender period	1 Normal	KK Medium 40 %	£0	£0	£0	
01009	Scheme delay - Railways assurance case	1 Normal	KK Very Low 10 %	£0	£0	£0	
01010	Actual inflation differs from budget	1 Normal	KK Low 20 %	£0	£0	£0	
01011	Scheme delay - OGC Gateway 3	1 Normal	KK Low 20 %	£0	£0	£0	
01012	Scheme delay - Dft decision	1 Normal	KK Low 20 %	£0	£0	£0	
01013	Scheme delay - ineffective liaison with External bodies	1 Normal	KK Medium 40 %	£0	£0	£0	
01014	Scheme delay - NR Agreements	1 Normal	KK Low 20 %	£0	£0	£0	
01015	Scheme delay - Planning application	1 Normal	KK Very Low 10 %	£0	£0	£0	
01016	Scheme delay - PI prolongation	1 Normal	KK Medium 40 %	£0	£0	£0	
01017	Scheme delay - High Court Challenge	1 Normal	KK Medium 40 %	£0	£0	£0	
01018	Scheme delay - change in Procurement strategy	1 Normal	KK Low 20 %	£0	£0	£0	
01019	Scheme delay - Delay in award	1 Normal	KK Low 20 %	£0	£0	£0	
01020	Scheme delay - NR approval method statements	1 Normal	KK Very Low 10 %	£0	£0	£0	
01021	Scheme start delay allowance - all activities	1 Normal	KK Medium 40 %	£0	£0	£0	
01022	Delay Allowance for period between receipt of Quality Submission and announcement of select list price	1 Normal	KK Medium 40 %	£0	£0	£0	
01023	Delay allowance: four possible pre-construction risk scenarios: 101017: for delay caused by High Court Challenge leading to delayed access date...	1 Normal	KK Medium 40 %	£0	£0	£0	
01024	Staff unfamiliar with scheme employed to supervise design and construction - Change of Employers Consultant	1 Normal	KK Medium 40 %	£30,000	£45,000	£60,000	£18,591

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Risk Number	Description	Curve Type	Occurrence Probability	Minimum Estimate	Risk Estimate	Maximum Estimate	Average of Calculated Estimate
01025	Scheme delayed and cost increase consequent on having to re-issue Orders and hold futher Inquiry. See Major Risk Register	1 Normal	KK Low 20 %	£0	£0	£0	
01026	Scheme delayed consequent on insufficient funding through CSR in accordance with required profile. See major Risk Register.	1 Normal	KK Low 20 %	£0	£0	£0	
01027	Allowance for scheme cost increase in order to comply with Public Inquiry Inspector's Recommendations	1 Normal	KK Medium 40 %	£200,000	£400,000	£600,000	£164,481
01028	Scheme delayed and cost increase consequent on having to re-advertise and tender main works due to alcatel challenge. See Major Risks Register.	1 Normal	KK Medium 40 %	£0	£0	£0	
02	Land						
02001	Scheme delay - NR CPO	1 Normal	KK Very Low 10 %	£0	£0	£0	
02002	Cost increase due to increased land value in Torbay	1 Normal	KK Low 20 %	£250,000	£500,000	£1,000,000	£111,794
02003	Cost Increase due to successful Section 17 application	1 Normal	KK Low 20 %	£6,000,000	£12,000,000	£18,000,000	£2,357,050
02004	Scheme delayed and cost increase due to failure to implement constuction of Elmcroft in time to meet main contract dates	1 Normal	KK Medium 40 %	£10,000	£15,000	£30,000	£7,897
02005	Cost Increase of Elmcroft provision of services and building	1 Normal	KK Low 20 %	£0	£0	£0	
02006	Occupied property 1 Aller Cottages	1 Normal	KK Low 20 %	£5,000	£10,000	£30,000	£3,678
02007	Cost associated with providing an alternative site for Model Car Club	1 Normal	KK Low 20 %	£10,000	£20,000	£30,000	£3,994
02008	Cost increase due to issues with non NRSWA diversions.	1 Normal	KK Medium 40 %	£0	£0	£0	
02009	Cost Increase due to increase in Part 1 Claims	1 Normal	KK Medium 40 %	£500,000	£1,000,000	£1,500,000	£424,990
03	Strategic						
03001	Failure to obtain Regional Funding Allocation	1 Normal	KK Medium 40 %	£0	£0	£0	
03002	Failure to pass Major Scheme Bid	1 Normal	KK Medium 40 %	£0	£0	£0	
03003	Change in Scheme Brief	1 Normal	KK Medium 40 %	£0	£0	£0	
03004	Approval through statutory process	1 Normal	KK Medium 40 %	£0	£0	£0	
03005	Comprehensive Spending Review	1 Normal	KK Medium 40 %	£0	£0	£0	
03006	Statutory Changes	1 Normal	KK Medium 40 %	£0	£0	£0	
03007	Change to UK design standards	1 Normal	KK Medium 40 %	£0	£0	£0	
03008	Change in UK/EU Legislation	1 Normal	KK Medium 40 %	£0	£0	£0	

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03009	H & S - Changes in regulations	1 Normal	KK Medium 40 %	£0	£0	£0	
03010	Political - Change of Govt / Sec of State	1 Normal	KK Medium 40 %	£0	£0	£0	
03011	Political - Govt strategy, policy & targets	1 Normal	KK Medium 40 %	£0	£0	£0	
03012	Disease outbreak - access restrictions	1 Normal	KK Medium 40 %	£0	£0	£0	
03013	Contractor goes into receivership	1 Normal	KK Medium 40 %	£0	£0	£0	
03014	Change in environmental designations	1 Normal	KK Medium 40 %	£0	£0	£0	
03015	Civil unrest, riots, strikes	1 Normal	KK Medium 40 %	£0	£0	£0	
03016	Unitary Authority Status causes delay in progressing the Scheme. Assume announcement end March 09.	1 Normal	KK Medium 40 %	£0	£0	£0	
04	Alignment						
04001	Cost inc - RSA	1 Normal	KK Medium 40 %	£0	£0	£0	
05	Engineering: structures						
05001	Cost inc - lack of suitable working space	1 Normal	KK Low 20 %	£0	£0	£0	
05002	Cost inc - historical design information	1 Normal	KK Low 20 %	£0	£0	£0	
05003	Cost inc - NR future policies limit 'disruptive' track possessions	1 Normal	KK Medium 40 %	£0	£0	£0	
05004	Scheme delay - NR takes underbridges design in-house	1 Normal	KK Very Low 10 %	£0	£0	£0	
05005	NR may not adopt culverts	1 Normal	KK Low 20 %	£0	£0	£0	
05006	Cost inc - NR maintenance hinders Const programme	1 Normal	KK Low 20 %	£0	£0	£0	
05007	Cost inc - Tunnel length change	1 Normal	KK Low 20 %	£0	£0	£0	
05008	Cost inc - Tunnel electrification	1 Normal	KK Very Low 10 %	£0	£0	£0	
05009	Cost inc - Tunnel signals re-siting	1 Normal	KK Very Low 10 %	£0	£0	£0	
05010	Cost inc - Tunnel rail infrastructure	1 Normal	KK Medium 40 %	£150,000	£200,000	£300,000	£91,668
05011	Cost inc - Tunnel lighting and maintenance	1 Normal	KK Medium 40 %	£0	£0	£0	
05012	Cost inc - Culverts FRA conditions	1 Normal	KK Very Low 10 %	£0	£0	£0	
05013	Cost inc - Culverts thrustboring NR requirements	1 Normal	KK Low 20 %	£0	£0	£0	
05014	Cost Inc - Culverts thrustboring insufficient cover	1 Normal	KK Medium 40 %	£0	£0	£0	
05015	Cost inc - Retaining walls NR requirements	1 Normal	KK Low 20 %	£0	£0	£0	
05016	Cost inc - Retaining walls form of construction	1 Normal	KK Low 20 %	£0	£0	£0	
05017	Cost inc - Lack of Appreciation for Railway working constraints	1 Normal	KK Medium 40 %	£0	£0	£0	
05018	Cost inc - Additional track monitoring works	1 Normal	KK Low 20 %	£0	£0	£0	

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05019	Cost inc - Culverts affect track leveling	1 Normal	KK Medium 40 %	£0	£0	£0	
05020	Cost inc - Kerswell Gardens OB redesign	1 Normal	KK Low 20 %	£0	£0	£0	
05021	Cost of provision of insurance against Possesion overing	1 Normal	KK Medium 40 %	£0	£0	£0	
05022	Cost of Bridge Works existing structures Torbay Ring Road	1 Normal	KK Low 20 %	£0	£0	£0	
05023	Cost of Protecting Network Rail Cables During Construction (Cable Diversions Avoided)	1 Normal	KK Medium 40 %	£100,000	£200,000	£300,000	£77,058
05024	Cost of re-negotiating disruptive possessions if December 2010 not available due to delay or lack of resources (Reading)	1 Normal	KK Medium 40 %	£0	£0	£0	
05025	Cost to scheme if need to re-negotiate disruptive possessions and culvert construction delay occurs.	1 Normal	KK Medium 40 %	£0	£0	£0	
05026	Aller Tunnel: Fire and Ventilation	1 Normal	KK Medium 40 %	£100,000	£200,000	£400,000	£105,853
05027	Aller Tunnel: Cost Increase due to need to protect Global Crossing cable following Fire Risk Assessment Study	1 Normal	KK Medium 40 %	£150,000	£200,000	£300,000	£91,059
05028	Aller Tunnel - clearances in Employers Works Info not specific enough	1 Normal	KK Low 20 %	£250,000	£500,000	£1,000,000	£121,101
05029	Cost Increase to Culverts - Thrustboring cannot be undertaken in ground conditions. Cost Increase due to revised method of working,	1 Normal	KK Low 20 %	£0	£0	£0	
06	Engineering: other						
06001	Add costs - Works to Existing A380 at Kingskerswell	1 Normal	KK Medium 40 %	£0	£0	£0	
06002	Cost inc - Flood risk protection during const	1 Normal	KK Low 20 %	£0	£0	£0	
06003	Cost inc - additional accommodation works	1 Normal	KK Medium 40 %	£100,000	£200,000	£300,000	£79,687
06004	Cost increase due to additional Sign Gantries	1 Normal	KK Low 20 %	£100,000	£300,000	£500,000	£61,853
06005	Brookeadoor Bridge removed from Scheme - Environment Agency to be informed	1 Normal	KK Low 20 %	£100,000	£150,000	£200,000	£29,091
06006	Cost Increase of Elmcroft for Provision of Services Building	1 Normal	KK Low 20 %	£20,000	£40,000	£80,000	£10,915
06007	Cost Increase of Pavement, Kerbs and Drains because of preliminary design of Value Engineered Scheme	1 Normal	KK Medium 40 %	£200,000	£500,000	£1,000,000	£247,294
06008	Cost increase of Elmcroft due to influence of client and basis of original estimate	1 Normal	KK Medium 40 %	£50,000	£100,000	£200,000	£49,433
07	Statutory Undertakers						
07001	Cost inc - C3 estimates too low	1 Normal	KK Medium 40 %	£0	£0	£0	

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Risk Number	Description	Curve Type	Occurrence Probability	Minimum Estimate	Risk Estimate	Maximum Estimate	Average of Calculated Estimate
07002	Cost increase and delay due to unidentified utilities found requiring diversion	1 Normal	KK Low 20 %	£100,000	£200,000	£400,000	£55,254
07003	Scheme delay - SU orders and planning	1 Normal	KK Medium 40 %	£0	£0	£0	
07004	late identification of offline diversion routes	1 Normal	KK Low 20 %	£0	£0	£0	
07005	Cost inc - uncertainty of sewer locations	1 Normal	KK Low 20 %	£50,000	£100,000	£300,000	£36,889
07006	Cost increase of gas main protection following risk assessment	1 Normal	KK Medium 40 %	£200,000	£500,000	£1,000,000	£247,326
07007	Uncertainty regarding 18% discount on estimate provided by South West Water, i.e. is 18% available	1 Normal	KK Low 20 %	£100,000	£200,000	£400,000	£57,837
07008	SU's surveys and diversion	1 Normal	KK Low 20 %	£0	£0	£0	
07009	Fibre Optic Cable on NR land (Global Crossing) at cut and cover locations	1 Normal	KK Low 20 %	£100,000	£200,000	£300,000	£40,631
07010	Cost Inc - C4 estimates too low	1 Normal	KK Medium 40 %	£247,500	£495,000	£742,500	£208,322
07011	Cost increase due to uncertainty regarding 18% discount on Wales & West and other utilities (except water)	1 Normal	KK Medium 40 %	£100,000	£250,000	£500,000	£126,755
07012	Cost increase due to diversions required outside the site rights and wayleaves boundary	1 Normal	KK Low 20 %	£0	£0	£0	
07013	Cost increase due to progression of further diversions not yet issued to the tenderers	1 Normal	KK High 70 %	£0	£0	£0	
07014	Cost increase due to private sewer transfer not allowed in SWW C4 estimates	1 Normal	KK Medium 40 %	£0	£0	£0	
07015	Cost increase due to the CCTV of the existing SWW services results in additional works	1 Normal	KK Low 20 %	£0	£0	£0	
08	Habitat and Species						
08001	Failure at PI - Insufficient Survey and Assessment	1 Normal	KK Very Low 10 %	£0	£0	£0	
08002	Scheme delay - surveys, method statements, licences	1 Normal	KK Medium 40 %	£0	£0	£0	
08003	Scheme delay - Amphibian - discovery	1 Normal	KK Low 20 %	£0	£0	£0	
08004	Scheme delay - Amphibians - Defra Licence	1 Normal	KK Medium 40 %	£0	£0	£0	
08005	Scheme delay - Badgers - survey delays	1 Normal	KK Low 20 %	£15,000	£20,000	£30,000	£4,571
08006	Scheme delay - Bats - ID mitigation sites	1 Normal	KK Medium 40 %	£0	£0	£0	
08007	Scheme delay - Bats - commuting routes	1 Normal	KK Low 20 %	£50,000	£100,000	£200,000	£27,399
08008	Cost inc - Bats - Culvert design	1 Normal	KK Very Low 10 %	£0	£0	£0	
08009	Scheme delay - Bats - discovery of new roosts	1 Normal	KK Medium 40 %	£0	£0	£0	

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08010	Additional unknown Bat roosts discovered during site clear	1 Normal	KK Medium 40 %	£0	£0	£0	
08011	Scheme delay - Bats - Defra licence	1 Normal	KK Medium 40 %	£0	£0	£0	
08012	Scheme delay - Bats - Mitigation measures	1 Normal	KK Medium 40 %	£0	£0	£0	
08013	Scheme delay - Birds - mitigation measures	1 Normal	KK Medium 40 %	£0	£0	£0	
08014	Cost inc - Dormice - NE site clearance conditions	1 Normal	KK Low 20 %	£0	£0	£0	
08015	Scheme delay - Fish - ID translocation sites	1 Normal	KK Low 20 %	£0	£0	£0	
08016	Cost inc - Reptiles - Translocation works	1 Normal	KK Low 20 %	£0	£0	£0	
08017	Scheme delay - Reptiles - EN licence	1 Normal	KK Low 20 %	£0	£0	£0	
08018	Scheme delay - Japanese Knotweed found	1 Normal	KK Medium 40 %	£200,000	£400,000	£800,000	£218,532
08019	Construction Delay allowance - Environmental measures	1 Normal	KK Medium 40 %	£0	£0	£0	
08020	The likely need for additional badger fencing at the Yannon Lane and Maddacombe Road cutting identified post Tender	1 Normal	KK Medium 40 %	£30,000	£50,000	£80,000	£21,830
08021	Cost Increase due to need to meet environmental obligations at Inquiry, eg hedge translocation	1 Normal	KK Medium 40 %	£200,000	£400,000	£600,000	£159,847
09	Water Environment						
09001	Scheme delay - EA approval	1 Normal	KK Very Low 10 %	£0	£0	£0	
09002	Permanent Works Consents - re-submission	1 Normal	KK Low 20 %	£0	£0	£0	
09003	temp works consents - EA requirements	1 Normal	KK Very Low 10 %	£0	£0	£0	
09004	Scheme delay - Flood risk evidence at PI	1 Normal	KK Very Low 10 %	£0	£0	£0	
09005	Delay in obtaining FEPA licence for Working in Tidal Areas	1 Normal	KK Low 20 %	£0	£0	£0	
10	Archaeology						
10001	Failure at PI - Insufficient Survey and Assessment	1 Normal	KK Very Low 10 %	£0	£0	£0	
10002	Scheme delay - Rapid open area excavations	1 Normal	KK Low 20 %	£20,000	£50,000	£100,000	£12,520
10003	Scheme delay - Roman site - Site assessment	1 Normal	KK Medium 40 %	£62,000	£124,000	£186,000	£49,692
101022		1 Normal	KK Very Low 10 %	£0		£0	
11	Ground Conditions						
11001	Cost inc - lack of survey data	1 Normal	KK Medium 40 %	£0	£0	£0	
11002	Cost inc - Excavation in hard rock	1 Normal	KK Low 20 %	£0	£0	£0	
11003	Cost inc - discovery of asbestos	1 Normal	KK Low 20 %	£0	£0	£0	
11004	Cost increase due to potential need for ground freezing for culvert excavations	1 Normal	KK Medium 40 %	£0	£0	£0	

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12	Construction Phase						
12001	Scheme delay - Adverse weather	1 Normal	KK Low 20 %	£0	£0	£0	
12002	Scheme delay - Water abstraction licence	1 Normal	KK Very Low 10 %	£0	£0	£0	
12003	Ground Conditions - discover diseased carcass	1 Normal	KK Very Low 10 %	£0	£0	£0	
12004	Ground Conditions - Contaminated land	1 Normal	KK Low 20 %	£0	£0	£0	
12005	TM problems	1 Normal	KK Low 20 %	£0	£0	£0	
13	Other Issues						
13001	Scheme delay - all risks	1 Normal	KK Medium 40 %	£69,000	£138,000	£276,000	£70,491
13002	Delay allowance for all activities likely to delay start of scheme.	1 Normal	KK Medium 40 %	£0	£0	£0	
13003	Actual Inflation differs from budget assumption	1 Normal	KK Medium 40 %	£0	£500,000	£1,000,000	£202,785
14	Contractors Risks(CR) - Design, Planning and Supervision						
14001	Actual inflation differs from assumed rate at tender	1 Normal	KK Medium 40 %	£0	£0	£0	
14002	Cost increase due to measurement omissions / design development (estimate or pricing based on inadequate information)	1 Normal	KK Medium 40 %	£0	£0	£0	
14003	Cost increase due to Network Rail costs for technical approval, possessions, supervision, etc,	1 Normal	KK Medium 40 %	£0	£0	£0	
14004	Railway possessions not available when expected, causing delay to construction and standing resources	1 Normal	KK Medium 40 %	£0	£0	£0	
14005	Cost increase due to designer having to redesign works for unforeseen difficulties or for failure to manage interfaces	1 Normal	KK Medium 40 %	£0	£0	£0	
14006	Scheme delayed due to submission dates missed by designer	1 Normal	KK Medium 40 %	£0	£0	£0	
14007	Stage 2 and 3 Safety Audits identifies changes to Scheme	1 Normal	KK Medium 40 %	£0	£0	£0	
15	CR - Land						
15001	Scheme delayed due to land entry not obtained on time	1 Normal	KK Very Low 10 %	£0	£0	£0	
16	CR Strategic						
16001	Not applicable for Contactor	1 Normal	KK Medium 40 %	£0	£0	£0	
17	CR Alignment						
17001	Cost increase due to redesign of alignments required to ensure buildability	1 Normal	KK Very Low 10 %	£0	£0	£0	
17002	Cost increase due to redesign of alignments required to accord with published Side Road Orders	1 Normal	KK Very Low 10 %	£0	£0	£0	

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17003	Cost increase due to redesign of alignments required to accord with published CPO (Arising from differences in ground level mapping)	1 Normal	KK Very Low 10 %	£0	£0	£0	
17004	Cost increase due to new retaining walls to keep within CPO due to change in vehicle restraint design standards	1 Normal	KK Low 20 %	£0	£0	£0	
18	CR Engineering: Structures						
18001	Retaining walls - Cost increase due to change in NR policy on clearance to track during construction	1 Normal	KK Very Low 10 %	£0	£0	£0	
18002	Retaining walls - Scheme delayed (during construction) due to buildability problems whilst maintaining traffic flows	1 Normal	KK Low 20 %	£0	£0	£0	
18003	Culverts - Cost increase due to difficulty in thrust bore through embankments of unknown material	1 Normal	KK Low 20 %	£0	£0	£0	
18004	Yon Street Overbridge - Cost increase due to foundation design to account for poor ground conditions	1 Normal	KK Medium 40 %	£0	£0	£0	
18005	Flyover - Cost increase due to sacrificial retaining walls required for buildability whilst maintaining traffic flows	1 Normal	KK Low 20 %	£0	£0	£0	
19	CR Engineering: Other						
19001	Drainage general - Cost increase to allow for unknown systems and extent of measures required	1 Normal	KK Medium 40 %	£0	£0	£0	
19002	Accommodation Works general - Cost increase due to unforeseen works	1 Normal	KK Low 20 %	£0	£0	£0	
20	CR Statutory Undertakers						
20001	Scheme delayed and cost increase due to unforeseen SU Apparatus exposed during construction	1 Normal	KK Medium 40 %	£0	£0	£0	
20002	Delay due to late procurement of SU diversions	1 Normal	KK Medium 40 %	£0	£0	£0	
21	CR Habitat and Species						
21001	Bats - Cost increase to provide temporary measures if tunnels not constructed in time for bats to start using	1 Normal	KK Medium 40 %	£0	£0	£0	
21002	Fish - Scheme delayed (during construction) due to insufficient time for fisheries work to be undertaken	1 Normal	KK Very Low 10 %	£0	£0	£0	
22	CR Water Environment						

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22001	Flood risk - Cost increase (during construction) due to unusual storm event causing flooding of site and 3rd Party damage for long periods	1 Normal	KK Very Low 10 %	£0	£0	£0	
22002	Water quality - Scheme delayed (during construction) due to pollution incident which shuts down works	1 Normal	KK Very Low 10 %	£0	£0	£0	
23	CR Archeaology						
23001	Archaeology - Scheme delayed (earthworks due to discovery of unknown sites	1 Normal	KK Very Low 10 %	£0	£0	£0	
23002	Archaeology - Scheme delayed (temporary works) due to identification of potential sites	1 Normal	KK Very Low 10 %	£0	£0	£0	
24	CR Ground Conditions						
24001	Increase in costs due to misinterpretation of historic ground investigation data by D&B team	1 Normal	KK Low 20 %	£0	£0	£0	
24002	Cost increase due to poor or inadequate existing pavement construction at Newton Abbot Bypass, Riviera Way & Torbay Ring Road tie-ins	1 Normal	KK Low 20 %	£0	£0	£0	
24003	Water table higher and more active than anticipated resulting in additional batter drain and filter drain requirements esp in colluvial soils	1 Normal	KK Medium 40 %	£0	£0	£0	
24004	Increase in cost due to treatment of contaminated water intercepted from contaminated land at Yannon Lane landfill site	1 Normal	KK Low 20 %	£0	£0	£0	
24005	Unforeseen contaminated land - general	1 Normal	KK Low 20 %	£0	£0	£0	
24006	Unforeseen (soil filled) cavities exposed requiring ground treatment	1 Normal	KK Low 20 %	£0	£0	£0	
24007	Effect of Aller Valley trunk sewer. Weakened the ground due to construction of sewer (SI was prior to sewer construction)	1 Normal	KK Low 20 %	£0	£0	£0	
24008	Ground treatment (grouting) contaminates groundwater resources	1 Normal	KK Low 20 %	£0	£0	£0	
24009	Cost increase to rectify railway track levels caused by settlement of ground beneath Aller Junction embankment and/or beneath Aller Tunnel	1 Normal	KK Low 20 %	£0	£0	£0	

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24010	Cost increase due to provision for enhanced foundation at Yon Street Overbridge and adjacent retaining walls due to steep strata dip	1 Normal	KK Low 20 %	£0	£0	£0	
24011	Cost increase due to enhanced foundation provision for Maddacombe Road OB due to uncertain limestone conditions	1 Normal	KK Low 20 %	£0	£0	£0	
24012	Cost increase due to insufficient suitable structural fill for embankments etc, esp Yannon Lane/Maddacombe cutting	1 Normal	KK Low 20 %	£0	£0	£0	
25	CR Construction Phase						
25001	Cost increase should major subcontractor go into receivership	1 Normal	KK Very Low 10 %	£0	£0	£0	
25002	Protestor action	1 Normal	KK Very Low 10 %	£0	£0	£0	
25003	Overheating of local economy - availability of local resources	1 Normal	KK Very Low 10 %	£0	£0	£0	
25004	Railway possessions not available when expected, causing delay to construction and standing resources	1 Normal	KK Medium 40 %	£0	£0	£0	
25005	Cost increase due to possession overruns which cause train delay costs	1 Normal	KK Medium 40 %	£0	£0	£0	
25006	Scheme delayed and cost increase due to unplanned Network Rail works during construction period	1 Normal	KK Low 20 %	£0	£0	£0	
25007	Scheme delayed and Cost increase due to discovery of Japanese Knotweed	1 Normal	KK Medium 40 %	£0	£0	£0	
25008	Scheme delayed and cost increase due to adverse weather conditions	1 Normal	KK Medium 40 %	£0	£0	£0	
25009	Scheme delayed due to unexpected archaeological finds (during watching brief)	1 Normal	KK Medium 40 %	£0	£0	£0	
25010	Scheme delayed due to watching brief slow progress due to unfamiliar archaeologists	1 Normal	KK Medium 40 %	£0	£0	£0	
25011	Scheme delayed and cost increase due to restrictions on construction methods due to noise levels	1 Normal	KK Medium 40 %	£0	£0	£0	
26	CR Other works						
26001	Design and Construction delay from all risks on this register (Using Critical Path Time calculated below)	1 Normal	KK Medium 40 %	£1,243,000	£2,499,000	£3,810,000	£1,103,292